UNITED STATES GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT

IMPERIAL COUNTY, CALIFORNIA

VOLUME II OF II
APPENDICES

State Clearinghouse No. 2001121133

View From Shoveler Annex

Lead Agencies:

CEQA
County of Imperial
El Centro, California

APRIL 2006

NEPA
Bureau of Land Management
El Centro Field Office

IMPERIAL COUNTY, CALIFORNIA
UNITED STATES GYPSUM COMPANY
EXPANSION / MODERNIZATION PROJECT

VOLUME II OF II

APPENDICES

Lead Agencies:

CEQA
COUNTY OF IMPERIAL
El Centro, California

NEPA
BUREAU OF LAND MANAGEMENT
El Centro Field Office

With the Technical Assistance of:

RESOURCE DESIGN TECHNOLOGY, INC.
4509 Golden Foothill Parkway, Suite 2
El Dorado Hills, California 95762

APRIL 2006

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Notice of Preparation

NOTICE OF PREPARATION OF A JOINT ENVIRONMENTAL IMPACT REPORT

TO: **Responsible and Trustee Agencies and interested members of the public**

FROM: **Imperial County Planning/Building Department**
939 Main Street, Suite B-1 (Attn. Jurg Heuberger, Planning Director)
El Centro, CA 92243

SUBJECT: **NOTICE OF PREPARATION-** United States Gypsum Company (USG) Expansion/Modernization Project (/DEIR)

DATE: December 20, 2001

United States Gypsum Company (USG) Expansion/Modernization Project (DEIR)

Agency: Imperial County will be the lead agency and will prepare, with assistance of a third party consultant, a Draft Environmental Impact Report (EIR) on the proposed USG Expansion/Modernization Project.

Action: Notice of Preparation to prepare an Environmental Impact Report (EIR) for the proposed USG Expansion/Modernization Project.

Summary: The action to be evaluated by this EIR is the proposed expansion and modernization of the United State Gypsum Company's Plaster City wallboard manufacturing operations and its Fish Creek Quarry operations (Proposed Project). The wallboard manufacturing facilities are located in Plaster City approximately eighteen (18) miles west of El Centro, just North of Interstate 8. The Fish Creek Quarry operations are located on Split Mountain Road, which is approximately 26 miles north by northwest of Plaster City. Water for the facility is delivered via pipeline from the Ocotillo-Coyote Wells Groundwater Basin. All of USG's facilities are located in Imperial County, California.

Project Background: The Plaster City plant has been in operation for over 75 years. Generally, the proposed project consists of construction of new buildings, a doubling in wallboard production by removing one operating production wallboard line and installing a new, state-of-the-art high speed line and increased mining of gypsum from 1.1 million tons per year (mty) to approximately 1.9 mty on land reserves owned and mined by USG. The Proposed Project also consists of expanding existing and planned quarry areas and creating a new overburden storage site. To accommodate the expanded operations water usage will increase. The project will also include modernizing the existing warehouses, storage structures, rail loading facility and upgrading electrical transmission lines (by Imperial Irrigation District), maintaining the 26-mile narrow gauge rail line which runs between the Plaster City plant and the quarry, replacing the 26-mile existing pipeline that runs between Ocotillo and the plant and relocating a short portion of the interstate rail line that runs through the Plaster City Plant. Accumulated off-specification materials are intended to be recycled.

The EIR will be prepared in accordance with the decision of the California Court of Appeal, wherein the Court set aside the County's previous decision to adopt a Negative Declaration for portions of the project described above. Although certain aspects of the project have already been implemented pursuant to the County's previous actions, for purposes of this EIR the "baseline" for evaluating the potential impacts of the project on the environment shall be the physical conditions that existed prior to project implementation.

Alternatives: This EIR will evaluate alternatives to the Proposed Project. Development of potential alternatives will be made in conjunction with the local community, Imperial County, and state and federal agencies involved in the process. As required by CEQA, the County will also analyze the "no project" and "no action" alternatives as a baseline for gauging the impacts of the project.

Anticipated Environmental Impacts: The project has potential for significant impactsin the following areas:

- Water quality and water usage issues at Ocotillo, the plant and the quarry;
- Increased traffic at the plant site;
- Biological resources in the project area;
- Air quality; and
- Perhaps other areas.

The list of impacts above is preliminary and may be expanded or condensed during the preparation of the DEIR. Mitigation measures will be identified for all significant impacts caused by the project.

Triggering Mechanism: The proposed Project may require conditional use permits (CUPs) or changes to existing CUPs and existing Reclamation Plans applicable to the quarry. Seeking new or amending existing Conditional Use Permits and Reclamation Plans triggers the California Environmental Quality Act (CEQA) process. CEQA requires the preparation of an EIR for a project that has the potential for significant impacts. In addition, the Proposed Project may require a right-of-way from the Bureau of Land Management or other approvals, which may trigger the need to comply with the National Environmental Policy Act (NEPA). NEPA requires the preparation of an EIS for a major federal action that will have significant impacts to the human environment. Consideration is being given to determine what type of NEPA documentation the project will require.

Public Involvement: The NEPA and CEQA processes encourage public comments and questions. Public participation shall occur throughout the planning process.

Written comments should be addressed to the points of contact provided in the next section. Due to the time limits mandated by state and federal law, your written comments must be sent at the earliest possible date, but <u>no later than 30 days</u> after receipt of this Notice of Preparation.

Oral and/or written comments may also be presented at one public scoping meeting. The public scoping meeting will be held at the following time and location: January 9, 2002, from 7-10 pm, at the Imperial County Board of Supervisors' Chambers, 939 Main Street, Suite B-1, El Centro, CA. For information on public involvement regarding this project please contact the points of contact provided below.

Points of Contact: The following individuals are involved with the preparation of the EIR for this project and may be contacted:

Imperial County Planning/Building Department
939 Main Street, Suite B-1 (Attn. Jurg Heuberger, Planning Director)
El Centro, CA 92243
760-482-4236
jurgheuberger@imperialcounty.net

To: Imperial County Planning/Building Department
(Agency)
939 Main Street Suite B-1
(Address)
El Centro, CA 92243

Subject: **Notice of Preparation of a Draft Environmental Impact Report**

Lead Agency:

Agency Name Imperial County Planning/Building Department

Street Address 939 Main Street Suite B-1

City/State/Zip El Centro CA 92243

Contact JURG HEUBERGER, AICP, Planning Director

Consulting Firm (If applicable):

Firm Name

Street Address

City/State/Zip

Contact

Imperial County Planning/Building Department will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. We need to know the views of your agency as to the scope and content of the Environmental Information, which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study (☐ is ☒ is not) attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later than 30 days*** after receipt of this notice.

Please send your response to Imperial County Planning/Building Department at the address shown above. We will need the name for a contact person in your agency.

Project Title: United States Gypsum Company (USG) Expansion/Modernization Project (DEIR)

Project Location: El Centro (City (nearest)) Imperial (County)

Project Description: (brief)

NOTICE OF PREPARATION OF A JOINT ENVIRONMENTAL IMPACT REPORT.

Date 12-20-2001

Signature

Title AICP, PLANNING DIRECTOR

Telephone 1 (760) 482-4236 EXTENSION 4310

Reference: California Administrative Code, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375

JH/rs/USGnotofprep.CEQA

DISTRIBUTION LIST
2001 VERSION

LOCAL AGENCIES

- [x] **APCD / AG. COMMISSIONER**
  150 S. 9th Street
  El Centro CA 92243

- [x] **ASSESSORS**
  940 Main Street
  El Centro CA 92243

- [ ] **BOARD OF SUPERVISORS**
  940 Main Street
  El Centro CA 92243

- [ ] **COUNTY COUNSEL**
  940 Main Street
  El Centro CA 92243

- [x] **EHS**
  939 Main Street
  El Centro CA 92243

- [x] **EL CENTRO REG. MEDICAL CENTER**
  1415 Ross Avenue
  El Centro CA 92243

- [x] **FIRE/OES**
  2514 La Brucherie Road
  Imperial CA 92251

- [x] **FISH & GAME COMMISSION**
  1002 State Street
  El Centro CA 92243

- [ ] **I.C. PROPERTY SERVICE DEPT.**
  1002 State Street
  El Centro CA 92243

- [x] **IID – WATER/POWER/ WATER RESOURCES**
  P.O. Box 937
  Imperial CA 92251

- [x] **PUBLIC WORKS DEPARTMENT**
  155 South Eleventh Street
  El Centro CA 92243

- [ ] **HAROLD CARTER, SHERIFF IMPERIAL COUNTY**
  328 Applestill Road
  El Centro CA 92243

- [ ] **I.V. BOARD OF REALTORS**
  1850 W. Main Street
  El Centro CA 92243

- [ ] **I.V. PIONEER ASSOCIATION**
  P.O. Box 224
  Imperial CA 92251

- [ ] **I.V. VEGETABLE GROWERS ASSOCIATION**
  P.O. Box 358
  El Centro CA 92244

- [ ] **I.V. PRESS**
  P.O. Box 791
  El Centro CA 92244

- [ ] **NILAND CHAMBER OF COMMERCE**
  8031 Highway 111
  Niland CA 92257

CITIES

- [x] **CITY OF BRAWLEY**
  400 Main Street
  Brawley CA 92227

- [x] **CITY OF CALEXICO**
  408 Heber Avenue
  Calexico CA 92231

- [x] **CITY OF CALIPATRIA**
  P.O. Box 167
  Calipatria CA 92233

- [x] **CITY OF EL CENTRO**
  1275 Main Street
  El Centro CA 92243

- [x] **CITY OF HOLTVILLE**
  121 West Fifth Street
  Holtville CA 92250

- [x] **CITY OF IMPERIAL**
  420 South Imperial Avenue
  Imperial CA 92251

- [x] **CITY OF WESTMORLAND**
  355 South Center Street
  Westmorland CA 92281

SCHOOL DISTRICTS

- **BRAWLEY ELEMENTARY SCHOOL DISTRICT**
  261 'D' Street
  Brawley CA 92227

- **BRAWLEY UNION HIGH SCHOOL DISTRICT**
  480 North Imperial Avenue
  Brawley CA 92227

- **CALEXICO HIGH SCHOOL**
  1030 Encinitas Avenue
  Calexico CA 92231

- **CALEXICO UNIFIED SCHOOL DISTRICT**
  P.O. Box 792
  Calexico CA 92231

- **CALIPATRIA UNIFIED SCHOOL DISTRICT**
  601 West Main Street
  Calipatria CA 92233

- **COACHELLA SCHOOL DISTRICT**
  P.O. Box 847
  87225 Church Street
  Thermal CA 92274

- **COACHELLA VALLEY UNIFIED SCHOOL DISTRICT**
  P.O. Box 847
  Thermal CA 92274

- **EL CENTRO ELEMENTARY SCHOOL DISTRICT**
  1256 Broadway
  El Centro CA 92243

- **CENTRAL UNION HIGH SCHOOL DISTRICT**
  1001 Brighton Avenue
  El Centro CA 92243

- **HEBER UNION ELEMENTARY SCHOOL DISTRICT**
  1052 Heber Avenue
  Heber CA 92249

- **HOLTVILLE UNIFIED SCHOOL DISTRICT**
  621 East Sixth Street
  Holtville CA 92250

- **IMPERIAL COUNTY OFFICE OF EDUCATION**
  1398 Sperber Road
  El Centro CA 92243

- **IMPERIAL UNIFIED SCHOOL DISTRICT**
  219 North "E" Street
  Imperial CA 92251

- **McCABE UNION ELEMENTARY DISTRICT**
  701 West McCabe Road
  El Centro CA 92243

- **MEADOWS UNION SCHOOL DISTRICT**
  2059 Bowker Road
  El Centro CA 92243

- **MAGNOLIA UNION ELEMENTARY SCHOOL DISTRICT**
  4502 Casey Road
  Brawley CA 92227

- **MULBERRY ELEMENTARY SCHOOL DISTRICT**
  1391 East Rutherford Road
  Brawley CA 92227

- **NILAND ELEMENTARY SCHOOL DISTRICT**
  P.O. Box 1005
  9 East Fourth Street
  Niland CA 92257

- **SAN PASCUAL VALLEY UNIFIED SCHOOL DISTRICT**
  Rt. 1, 676 Base Line Road
  Winterhaven CA 92283

- **SEELEY UNION ELEMENTARY SCHOOL DISTRICT**
  P.O. Box 868
  1812 West Rio Vista Street
  Seeley CA 92273

- **WESTMORLAND UNION ELEMENTARY SCHOOL DISTRICT**
  200 South "C" Street
  Westmorland CA 92281

SPECIAL DISTRICTS

- **BARD WATER DISTRICT**
  1473 Ross Road
  Winterhaven CA 92283

- ☐ **BARD RESOURCES CONSERVATION DISTRICT**
  P. O. Box 776
  Bard CA 92222

- ☐ **BOMBAY BEACH COMMUNITY SERVICE DISTRICT**
  HC01 Box 134
  Niland CA 92257

- ☐ **CENTRAL VALLEY CEMETARY DISTRICT**
  201 Gillette Road
  El Centro CA 92243

- ☐ **COACHELLA VALLEY WATER DISTRICT**
  P.O. Box 1058
  Coachella CA 92236

- ☐ **NILAND SANITARY DISTRICT**
  P.O. Box 40
  Niland CA 92257

- ☐ **NILAND COUNTY SERVICE AREA #1**
  C/O Department of Public Works
  155 South Eleventh Street
  El Centro CA 92243

- ☐ **NILAND FIRE DEPARTMENT**
  P.O. Box 40
  Niland CA 92257

- ☐ **SALTON COMMUNITY SERVICE DISTRICT**
  P.O. Box 5268
  Salton City CA 92275

- ☒ **SEELEY COUNTY WATER DISTRICT**
  P O Box 161
  Seeley CA 92273

- ☐ **WINTERHAVEN COUNTY WATER DISTRICT**
  494 2nd Avenue
  Winterhaven CA 92283

- ☐ **WINTERHAVEN FIRE DISTRICT**
  P.O. Box 906
  Winterhaven CA 92283

- ☐ **HEBER PUBLIC UTILITY DISTRICT**
  P.O. Box H
  Heber CA 92249

- ☐ **PALO VERDE FIRE DEPT.**
  60 Main Street
  Palo Verde CA 92266

- ☐ **PALO VERDE COUNTY WATER DISTRICT**
  1060 Desert View
  Winterhaven CA 92283

- ☐ **PALO VERDE CONSERVATION DISTRICT**
  200 E. Murphy Street RM 102
  Blythe CA 92226

- ☐ **PALO VERDE IRRIGATION DISTRICT**
  180 W 14th Avenue
  Blythe CA 92225

- ☐ **PIONEER'S MEMORIAL HOSPITAL DISTRICT**
  207 West Legion Road
  Brawley CA 92227

- ☐ **RIVERVIEW CEMETARY DISTRICT**
  P.O. Box 597
  Brawley CA 92227

- ☐ **HOLTVILLE FIRE DEPARTMENT**
  121 West Fifth Street
  Holtville CA 92250

- ☐ **HEFFERMAN MEMORIAL HOSPITAL DISTRICT**
  450 Birch Avenue
  Calexico CA 92231

- ☒ **OCOTILLO FIRE PROTECTION DISTRICT**
  P.O. Box 209
  Ocotillo CA 92259

LOCAL GROUP

- ☒ **COYOTE VALLEY MUTUAL WATER CO.**
  P.O. Box 126
  Ocotillo CA 92259

- ☐ **FARM BUREAU**
  1000 Broadway
  El Centro CA 92243

- ☐ **IVC MUSEUM**
  P.O. Box 430
  Ocotillo CA 92259-0430

- ☒ **OCOTILLO CLUB**
  P.O. Box 56
  Ocotillo CA 92259

OCOTILLO COMMUNITY COUNCIL
P.O. Box 205
Ocotillo CA 92259

OCOTILLO WATER COMPANY
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Ocotillo CA 92259

SIERRA CLUB
P.O. Box 444
Ocotillo CA 92259

STATE AGENCIES

AIR RESOURCES BOARD
DIRECTOR
2020 'L' Street
Sacramento CA 95815

CHP
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DIRECTOR
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San Diego CA 92138-5406

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CONTROL BOARD
73720 Fred Warning Drive, Suite 100
Palm Desert CA 92260-2564

CA WASTE MANAGEMENT BOARD
8800 Cal Center Drive
Sacramento CA 95826

GABBY GATCHELL
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921 Tenth Street, Room 601
Sacramento CA 95814

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801 'K' Street
Sacramento CA 95814-3531

OFFICE OF MINE RECLAMATION
MS 09-06
801 'K' Street
Sacramento CA 95814-3529

STATE MINING AND GEOLOGY BOARD
MS 09-05
801 'K' Street
Sacramento CA 95814

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Oakland CA 94612-3550

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MANAGEMENT DISTRICT
21865 East Copley Drive
Diamond Bar CA 91765-4182

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- **AEROSPACE**
  Planner/Evaluator
  AWP-530m WWPC
  P.O. Box 92007
  Los Angeles CA 90009

- [x] **BLM**
  1661 South Fourth Way
  El Centro CA 92243

- **BLM**
  Yuma District Office
  Yuma Resource Area
  2555 E. Gila Road.,
  Yuma AZ 85365

- **BLM**
  State Office
  2800 Cottage Way
  Sacramento CA 95825

- **BLM**
  District Office
  6221 Box Springs Blvd
  Riverside CA 92507

- **BLM**
  Palm Springs Resources Area
  63500 Granite Avenue
  P.O. Box 2000
  North Palm Springs CA 92258

- **BUREAU OF RECLAMATION YUMA PROJECTS OFFICE**
  7301 Calle Agua Salada
  P.O. Box D
  Yuma AZ 85366

- **BORDER PATROL AIR OPERATIONS**
  1111 North Imperial Avenue
  El Centro CA 92243

- **BUREAU OF MINES**
  360 Third Avenue
  Spokane WA 99202

- **BUREAU OF RECLAMATION LOWER COLORADO REGIONAL OFFICE**
  P.O. Box 61470
  Boulder City NV 89006-1470

- **DEPT. OF THE ARMY**
  LOS ANGELES DISTRICT
  CORPS OF ENGINEERS
  P.O. Box 2911
  Los Angeles CA 90053

- **MARINE CORPS AIR STATION- YUMA**
  Commanding Officer
  Yuma AZ 85369-5001

- **MARCH AIR FORCE BASE**
  22 OSS DOB
  Attention: Lt Col Bob Martin
  March Air Force Base, Ca 92518

- **DEFENSE MAPPING AGENCY AEROSPACE CENTER**
  3200 South Second Street
  St. Louis MO 63118-3399

- **OFFICE FEDERAL ACTIVITIES- REGION 9**
  75 Hawthorne Street EP
  San Francisco CA 94105

- **REGIONAL ADMINISTRATOR U.S. GENERAL SERVICES ADMINISTRATION**
  525 Market Street
  Region 9
  San Francisco CA 94105

- **SOIL CONSERVATION SERVICE**
  525 West Evan Hewes Highway
  El Centro CA 92243

- **U.S. CUSTOMS OFFICE MANAGER**
  200 First Street
  Calexico CA 92231

- **U.S. FISH & WILDLIFE SERVICES**
  P.O. Box 120
  Calipatria CA 92233

- **U.S. FISH & WILDLIFE SERVICES ENHANCEMENT FIELD OFFICE**
  Mr. Pete Sorensen, Supervisor
  2730 Loker Avenue, West
  Carlsbad CA 92008

- **U.S. BORDER PATROL MANAGER**
  1111 North Imperial Avenue
  El Centro CA 92243

- **BIA FORT YUMA AGENCY**
  San Pascual School Road &
  Picacho Road
  Winterhaven CA 92283

- **BUREAU OF INDIAN AFFAIRS SOUTHERN CALIFORNIA AGENCY**
  3600 Lime Street, Suite 722
  Riverside CA 92501

- [x] **COMMANDING OFFICER NAVAL AIR FACILITY**
  El Centro CA 92243

- COMMANDER, NAVAL AIR FORCE
  U.S. Pacific Fleet
  NAS, North Island
  P.O. Box 357051
  San Diego CA 92135-7051

- QUECHAN INDIAN TRIBE
  Ft. Yuma Indian Reservation
  P.O. Box 11352
  Yuma AZ 85366-9352

- COLORADO RIVER BOARD
  EXECUTIVE DIRECTOR
  770 Fairmont, Suite 100
  Glendale CA 92103-1035

OTHER

- CA NATIVE PLANT SOCIETY
  El Cajon Chapter
  2310 Calle Poco
  El Cajon CA 92021

- CONTINENTAL TELEPHONE
  OF CALIFORNIA
  185 South Third
  Blythe CA 92225

- GENERAL TELEPHONE
  8290 Bliss Avenue
  Indio CA 92201

- PACIFIC BELL
  5601 Grossmont Center, Ste 207
  La Mesa CA 92041

- TORREZ-MARTINEZ INDIAN
  TRIBE
  66-725 Martinez Road
  Thermal CA 92274

- PHIL HAMPTON
  THE DESERT SUN
  750 West Gene Autry
  Palm Springs CA 92263

- SO. CALIFORNIA WATER CO.
  MICHAEL NISENBOYM
  P.O. Box 16968
  Big Bear Lake CA 92315

- X SAN DIEGO COUNTY
  DEPARTMENT OF PLANNING
  5201 Ruffin Road
  San Diego CA 92123

- SOUTHERN CALIFORNIA EDISON
  John Watt
  26100 Menifee Road
  Romoland CA 92585

- SOUTHERN CALIFORNIA GAS CO.
  MANAGER
  1111 West Main Street
  El Centro CA 92243

- X SOUTHERN PACIFIC RAILROAD
  REAL ESTATE
  1 Market Plaza, 9th Floor
  San Francisco CA 94104

- YUMA COUNTY, STATE OF
  ARIZONA DEV. SERVICES DEPT.
  2703 South Avenue B
  Yuma AZ 85364

- DIVISION OF OIL, GAS AND
  GEOTHERMAL RESOURCES
  Tim Boardman
  1699 West Main Street, Suite E
  El Centro CA 92243

LIBRARIES

- X BRAWLEY PUBLIC LIBRARY
  400 Main Street
  Brawley CA 92227

- CITY LIBRARY
  950 Encinas Avenue
  Calexico CA 92231

- COACHELLA PUBLIC LIBRARY
  City Hall
  Coachella CA 92236

- COACHELLA VALLEY REGIONAL
  LIBRARY
  200 Civic Center
  Indio CA 92201

- X EL CENTRO PUBLIC LIBRARY
  539 State Street
  El Centro CA 92243

- HOLTVILLE LIBRARY
  101 East Sixth Street
  Holtville CA 92250

- IMPERIAL PUBLIC LIBRARY
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  Imperial CA 92251

- I.C. LIBRARY
  1331 Clark Road
  El Centro CA 92243

- INDIAN HILL LIBRARY
  Winterhaven CA 92283

- IVC LIBRARY
  380 E. Aten Road
  Imperial CA 92251

- MEYER MEMORIAL LIBRARY
  225 West Main Street
  Calipatria CA 92233

- PALO VERDE VALLEY DISTRICT LIBRARY
  125 West Chanslor Way
  Blythe CA 92225

- PALM SPRINGS LIBRARY
  300 South Sunrise Way
  Palm Springs CA 92262

- RIVERSIDE CENTRAL LIBRARY
  DOCUMENTS SECTION
  3581 Seventh Street
  Riverside CA 92501

- SAN BERNARDINO PUBLIC LIBRARY
  555 West Sixth Street
  San Bernardino CA 92410

- SAN DIEGO STATE UNIVERSITY
  720 Heber Avenue
  Calexico CA 92231

PESTICIDE OPERATORS

- AG FLITE INC. – J. WAGNER
  P.O. Box 1315
  Brawley CA 92227

- AG PRO SPRAYERS, INC.
  P.O. Box 754
  Holtville CA 92250

- BENSON, JOHN R.
  P.O. BOX 239
  BRAWLEY CA 92227

- BINGGELI, PHILLIP APPLICATORS
  1404 Meloland Road
  Holtville CA 92250

- BROMA APPLICATORS
  635 Palm Avenue
  Holtville CA 92250

- CHAPARRAL APPLICATORS
  110 "I" Street
  Brawley CA 92227

- CUSTOM AG
  620 Sandalwood Dr
  El Centro CA 92243

- D.M.S. AG SERVICE
  P.O. Box 754
  Holtville CA 92250

- DUNE COMPANY OF IMPERIAL VALLEY
  P.O. Box 967
  Imperial CA 92251

- FARM AIR SERVICE, INC.
  P.O. Box 1737
  Calipatria CA 92233

- FRONTIER AG SERVICE
  P.O. BOX 1768
  Calexico CA 92232

- LIVINGSTON, W.R.
  215 W. "G" Street
  Brawley CA 92227

- M.S.A. EXTERMINATORS
  P.O. Box 877
  Winterhaven CA 92283

- MAR AVIATION
  P.O. Box 1730
  Brawley CA 92227

- MEISTER FARMING CO., INC.
  1471 Brockman Road
  El Centro CA 92243

- MOST NATURAL LANDSCAPING
  371 East Ross Road #23
  El Centro CA 92243

- OMLIN FARMS
  P.O. Box 116
  2297 East Highway 98
  Holtville CA 92250

- ROSS FLYING SERVICE
  P.O. Box 995
  Imperial CA 92251

- SEASIDE CUSTOM HARVESTING
  P.O. Box 1547
  662 Willard Avenue
  Brawley CA 92277

- STOKER COMPANY
  P.O. Box 907
  Imperial CA 92251

- ☐ <u>STREETER FLYING SERVICE</u>
  299 Lyerly Rd
  Brawley CA 92227

- ☐ <u>VAL-AIR</u>
  P.O. Box 1267
  Brawley CA 92227

- ☐ <u>VALLEY AG SERVICE</u>
  P.O. Box 1565
  Brawley CA 92227

- ☐ <u>VISCO FLYING CO.</u>
  P.O. Box 68
  Imperial CA 92251

- ☐ <u>WESTERN FARM SERVICE (Imperial)</u>
  P.O. Box 698
  Imperial CA 92251

- ☐ <u>WESTERN FARM SERVICE (Heber)</u>
  89 E. Main Street
  Heber CA 92249

- ☐ <u>WESTERN FARM SERVICE (Holtville)</u>
  (Formerly Brady, Tom & Son)
  635 Palm Avenue
  Holtville, CA 92250

- ☐ <u>IMPERIAL COUNTY APPLICATORS</u>
  C/o Frontier Agriculture
  Byron Nelson
  P.O. Box 1768
  Calexico, CA 92231

Rs/F:WORD/DistList01 10/22/01

Notice for County Scoping Meeting

NOTICE OF PREPARATION OF A JOINT ENVIRONMENTAL IMPACT REPORT

TO: Responsible and Trustee Agencies and Interested members of the public

FROM: Imperial County Planning/Building Department
939 Main Street, Suite B-1 (Attn. Jurg Heuberger, Planning Director) El Centro, CA 92243

SUBJECT: NOTICE OF PREPARATION- United States Gypsum Company (USG) Expansion/Modernization Project (/DEIR)

DATE: December 20, 2001

United States Gypsum Company (USG) Expansion/Modernization Project (DEIR)

Agency: Imperial County will be the lead agency and will prepare, with assistance of a third party consultant, a Draft Environmental Impact Report (EIR) on the proposed USG Expansion/Modernization Project.

Action: Notice of Preparation to prepare an Environmental Impact Report (EIR) for the proposed USG Expansion/Modernization Project.

Summary: The action to be evaluated by this EIR is the proposed expansion and modernization of the United State Gypsum Company's Plaster City wallboard manufacturing operations and its Fish Creek Quarry operations (Proposed Project). . The wallboard manufacturing facilities are located in Plaster City approximately eighteen (18) miles west of El Centro, just North of Interstate 8. The Fish Creek Quarry operations are located on Split Mountain Road, which is approximately 26 miles north by northwest of Plaster City. Water for the facility is delivered via pipeline from the Ocotillo-Coyote Wells Groundwater Basin. All of USG's facilities are located in Imperial County, California.

Project Background: The Plaster City plant has been in operation for over 75 years. Generally, the proposed project consists of construction of new buildings, a doubling in wallboard production by removing one operating production wallboard line and installing a new, state-of-the-art high speed line and increased mining of gypsum from 1.1 million tons per year (mty) to approximately 1.9 mty on land reserves owned and mined by USG. The Proposed Project also consists of expanding existing and planned quarry areas and creating a new overburden storage site. To accommodate the expanded operations water usage will increase. The project will also include modernizing the existing warehouses, storage structures, rail loading facility and upgrading electrical transmission lines (by Imperial Irrigation District), maintaining the 26-mile narrow gauge rail line which runs between the Plaster City plant and the quarry, replacing the 26-mile existing pipeline that runs between Ocotillo and the plant and relocating a short portion of the interstate rail line that runs through the Plaster City Plant. Accumulated off-specification materials are intended to be recycled.

The EIR will be prepared in accordance with the decision of the California Court of Appeal, wherein the Court set aside the County's previous decision to adopt a Negative Declaration for portions of the project described above. Although certain aspects of the project have already been implemented pursuant to the County's previous actions, for purposes of this EIR the "baseline" for evaluating the potential impacts of the project on the environment shall be the physical conditions that existed prior to project implementation.

Alternatives: This EIR will evaluate alternatives to the Proposed Project. Development of potential alternatives will be made in conjunction with the local community, Imperial County, and state and federal agencies involved in the process. As required by CEQA, the County will also analyze the "no project" and "no action" alternatives as a baseline for gauging the impacts of the project.

Anticipated Environmental Impacts: The project has potential for significant impactsin the following areas:
* Water quality and water usage issues at Ocotillo, the plant and the quarry;
* Increased traffic at the plant site;
* Biological resources in the project area;
* Air quality; and
* Perhaps other areas.

The list of impacts above is preliminary and may be expanded or condensed during the preparation of the DEIR. Mitigation measures will be identified for all significant impacts caused by the project.

Triggering Mechanism: The proposed Project may require conditional use permits (CUPs) or changes to existing CUPs and existing Reclamation Plans applicable to the quarry. Seeking new or amending existing Conditional Use Permits and Reclamation Plans triggers the California Environmental Quality Act (CEQA) process. CEQA requires the preparation of an EIR for a project that has the potential for significant impacts. In addition, the Proposed Project may require a right-of-way from the Bureau of Land Management or other approvals, which may trigger the need to comply with the National Environmental Policy Act (NEPA). NEPA requires the preparation of an EIS for a major federal action that will have significant impacts to the human environment. Consideration is being given to determine what type of NEPA documentation the project will require.

Public Involvement: The NEPA and CEQA processes encourage public comments and questions. Public participation shall occur throughout the planning process.

Written comments should be addressed to the points of contact provided in the next section. Due to the time limits mandated by state and federal law, your written comments must be sent at the earliest possible date, but no later than 30 days after receipt of this Notice of Preparation.

Oral and/or written comments may also be presented at one public scoping meeting. The public scoping meeting will be held at the following time and location: January 9, 2002, from 7-10 pm, at the Imperial County Board of Supervisors' Chambers, 939 Main Street, Suite B-1, El Centro, CA. For information on public involvement regarding this project please contact the points of contact provided below.

Points of Contact: The following individuals are involved with the preparation of the EIR for this project and may be contacted:

Imperial County Planning/Building Department
939 Main Street, Suite B-1 (Attn. Jurg Heuberger, Planning Director) El Centro, CA 92243, 760-482-4236
jurgheuberger@imperialcounty.net

AVISO DE PREPARACION DEL REPORTE COLECTIVO DE IMPACTO AMBIENTAL

PARA: ADMINISTRADORES DE EMPRESAS Y TODA PERSONA INTERESADA DEL PÚBLICO.

DE PARTE DE: IMPERIAL COUNTY PLANNING/BUILDING DEPT.
939 MAIN STREET B-1(ATTN. JURG HEUBERGER, DIRECTOR)
EL CENTRO, CALIFORNIA 92243

ASUNTO: AVISO DE PREPARACION - UNITED STATES GYPSUM COMPANY PROYECTO DE EXPANSIÓN/MODERNIZACIÓN

FECHA: 20 de Diciembre del 2001

PROYECTO DE MODERNIZACIÓN Y EXPANSIÓN DE LA COMPANIA UNITED STATES GYPSUM COMPANY.

AGENCIA: El Condado de Imperial sera la agencia primera y preparara con la ayuda y consulta de tercera parte, Reporte Redatado De Impacto Ambiental sobre el proyecto propuesto de modernización y expansión de la compania USG.

ACCION: Aviso de Preparación para preparar el Reporte de Impacto Ambiental para el proyecto de modernización y expansión de la compania USG.

SUMARIO: La acción que sera evaluada por este reporte de Impacto Ambiental es la expansión y modernización propuesta de la compania United States Gypsum Company de Plaster City fabricante de tablero de fibra prensada y Fish Creek Quarry (Proyecto Propuesto) Los sitios de fabricación de tabla prensada estan ubicados en Plaster City aproximadamente 18 millas al oeste de El Centro, norte del autopista interestatal 8. El sitio de Fish Creek Quarry esta ubicado en Split Mountain Road, aproximadamente 26 millas al norte por norteoeste de Plaster City. Agua para estos lugares se entrega por tuberia de agua subteranea de Ocotillo- Coyote Wells. Todas estas instalaciones de la compania USG estan ubicadas en el condado de Imperial, California.

INFORMACIÓN BASICA DEL PROYECTO: Tiene 75 años en operación la fábrica de Plaster City. El proyecto propuesto consiste de construir nuevos edificios y la fabricación en doble de tabla prensada al quitar una linea de produccion de tabla prensada y instalar lineas de nueva tecnologia moderna con mas velocidad y aumentar la mineria de yeso de 1.1 millon de toneladas por ano a aproximadamente 1.9 millones de toneladas por ano de terreno en reserva, minado y propietario USG. El proyecto propuesto tambien consiste de la expansión en la area de pedrera y producir sitio nuevo para el almacenaje de sobrepiedra y esto aumentara el uso de agua. El proyecto tambien va incluir modernizar los almacenes existentes, construcción de almacen, carril de descarga y mejorar la calidad de transmisión de lineas electricas (por Imperial Irrigation District), conservando las 26 millas de carril de trocha angosta que corre de la fábrica de Plaster City y la Pedrera y reponer 26 millas de tuberia existente que corre de Ocotillo a la fábrica de Plaster City y trasladar una porción pequeña del carril interestatal que pasa por Plaster City Plant. Acumulación de material defectoso sera recirculado.
El Reporte de Impacto Ambiental sera preparado de acuerdo con la desicion del Tribunal de Apelación de California donde el Tribunal anulo la decision anterior del condado para adaptar Declaración Negativa para porciones del proyecto mencionado anteriorment. Aunque ciertos aspectos del proyecto se han puesto en practica, de acuerdo con la acción previa del condado para el proposito del Reporte de Impacto Ambiental, la linea de referencia para evaluar el impacto posible del proyecto al ambiente, seran las condiciónes físicas que existan antes de la implementación del proyecto

ALTERNATIVAS: Este Reporte de Impacto Ambiental evaluara alternativas al Proyecto Propuesto. Desarrollo a la possibilidad de alternativas seran hechas conjuntamente con el público municipal, El Condadeo de Imperial y agencias estatales y federales afectadas por el proceso. Como requisito de California Environmental Quality Act, el condado analizara las alternativas de "No Proyecto" y "No Accion" como la base para medir el impacto del proyecto.

IMPACTO AMBIENTAL ANTICIPADO: El proyecto tiene potenicia para impacto significante en la sigientes areas:

Los asuntos de la calidad y el uso de agua en Ocotillo, la fabrica y la pedrera;

Aumento de transito en el sitio de la fabrica

Recursos biologicos en la area del poyecto

La calidad del aire y

Tal vez otras areas

La lista de impactos mencionados anteriormente es solamente preliminar y puedan extenderse o condensarse durante la preparación del Reporte de Impacto Ambiental. Todos los impactos significantes seran identificados por medio de mitigación.

ACCIONAR MECANISMO: El proyecto propuesto pueda requirir permisos de uso condiciónal o cambios a los permisos existentes de uso condiciónal y plan de reclamación existente que le aplique a la pedrera. Solicitar nuevos o amendar permisos de uso condiciónal existente y plan de reclamación acciónara el proceso de la acta California Environmental Quality Act. Esta acta CEQA requiere la preparación del Reporte de Impacto Ambiental para proyecto que tiene la potencia de impacto significante. Ademas el proyecto propuesto pueda requerir derecho de paso a la agencia de Bureau of Land Management que pueda acciónar la necesidad de cumplir con la acta National Environmental Policy Act. Esta Acta requiere la preparacion del Reporte de Impacto Ambiental para acción federal mayor que tendra impacto significante al ambiente humano. Se le dara consideración para determinar que tipo de documentación requiere NEPA para el proyecto.

PARTICIPACION DEL PUEBLO: El proceso de NEPA y de CEQA invita comentarios y preguntas del público. Esta participacion continuara durante todo el proceso de planificación.
Comentarios escritos deben de ser direjidos al Imperial County Planning/Building Department. Debido al tiempo limitado bajo mandato de ley Federal y Estatal, sus comentarios escritos deben ser enviados lo mas pronto posible, pero no mas tarde de 30 dias despuez de este Aviso De Preparación.
Comentario oral o escrito puede ser presentado en la junta pública. La junta tendra lugar el 9 de enero, 2002, de las 7-10pm, en la camara de Imperial County Board of Supervisors, 939 Main Street, Suite B-1, El Centro, California. Para mas informacion sobre este proyecto favor de comunicarse con la agencia mencionada abajo.

La siguiente agencia esta participando en la preparación del Reporte de Impacto Ambiental para este proyecto y pueden comunicarse con ellos:

IMPERIAL COUNTY PLANNING/BUILDING DEPARTMENT
939 Main Street, suite B-1 (Attn. Jurg Heuberger, Planning Director)
El Centro, California 92243
760-482-4236

Appendix A2 Federal Notifications

Notice of Intent

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
EL CENTRO FIELD OFFICE
(CACA-44014)

NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT (EIS) ON THE PROPOSED EXPANSION/MODERNIZATION OF AN EXISTING WALLBOARD MANUFACTURING FACILITY AND ASSOCIATED QUARRY OPERATION

SUMMARY: United States Gypsum (USG) has proposed the expansion and modernization of USG's Plaster City wallboard manufacturing operations and Fish Creek Quarry operations located in Imperial County, California. Although USG's facilities are primarily on private land, several appurtenances cross public land. Using the U.S. government survey method, the areas within which the existing and proposed facilities are located are generally described as follows: SBBM, T.16S., R.11E. (Plaster City wallboard plant and portion of Interstate rail line); T.13S., R.9E. (Fish Creek quarry); T.13S., R.9E.; T.13S., R.10E.; T.14S., R.10E.; T.15E., R.10E., T.15S., R.11E.; T.16S., R.11E. (narrow gauge rail line between quarry and plant); T.16S., R.10E.; T.16S., R.11E. (water pipeline between Ocotillo and plant).

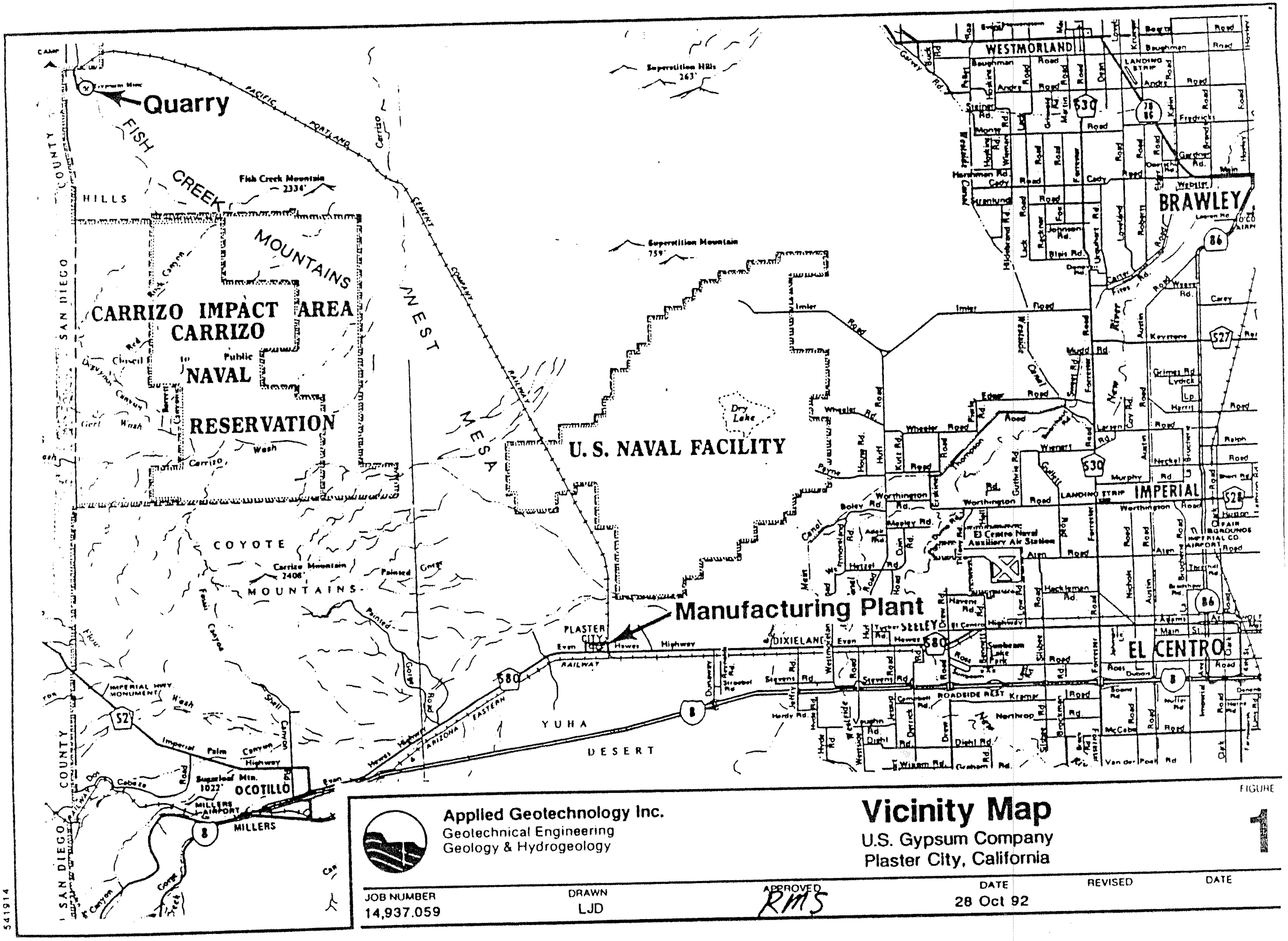
Pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969, the BLM will direct the preparation of an environmental impact statement (EIS) by a third-party contractor on the impacts of this proposed project. Interested members of the public are encouraged to identify significant issues or concerns related to the proposed action to determine the scope of the issues (including alternatives) that need to be analyzed and to eliminate from detailed study those issues that are not significant.

DATES: Oral and/or written comments may be presented at a public scoping meeting to be held at 7:00 p.m. on Wednesday, May 22, 2002, at the Imperial County Board of Supervisors' Chambers, 939 Main Street, Suite B-1, El Centro, CA, (760) 482-4236. Comments recommending that the EIS address specific environmental issues should include supporting documentation. Written comments must be received by the BLM's El Centro Field Office no later than June 10, 2002.

Comments, including names and street addresses of respondents, will be available for public review at the BLM's El Centro Field Office during regular business hours and may be published as part of the EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

ADDRESS: Written comments should be addressed to Greg Thomsen, Field Manager, Bureau of Land Management, El Centro Field Office, 1661 South 4th Street, El Centro, CA 92243.

POINT OF CONTACT: Linda Self, Realty Specialist, at above address or (760) 337-4426.



Applied Geotechnology Inc.
Geotechnical Engineering
Geology & Hydrogeology

Vicinity Map
U.S. Gypsum Company
Plaster City, California

FIGURE 1

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
14,937.059	LJD	RMS	28 Oct 92		

Notice for Federal Scoping Meeting

(OMB) for approval under the provisions of the Paperwork Reduction (44 U.S.C. Chapter 3501 *et seq.*). On August 21, 2001, the BLM published a notice in the **Federal Register** (66 FR 43899) requesting comments on the collection. The comment period ended October 22, 2001. No comments were received. You may obtain copies of the proposed collection of information and related explanatory material by contacting the BLM Information Clearance Officer at the telephone number listed below.

OMB is required to respond to this request within 60 days but may respond after 30 days. For maximum consideration, your comments and suggestions on the requirement should be made within 30 days directly to the Office of Management and Budget, Interior Department Desk Officer (1004–0185), Office of Information and Regulatory Affairs, Washington, D.C. 20503. Please provide a copy of your comments to the Bureau Information Collection Clearance Officer (WO–630) 1849 C St., NW., Mail Stop 401 LS, Washington, DC. 20240.

Nature of Comments: We specifically request your comments on the following:

1. Whether the collection of information is necessary for the proper functioning of the Bureau of Land Management, including whether the information will have practical utility;

2. The accuracy of our estimates of the information collection burden, including the validity of the methodology and assumptions we use;

3. Ways to enhance the quality, utility, and clarity of the information collected; and

4. How to minimize the information collection burden on those who are to respond, including the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Title: Onshore Oil and Gas Drainage Protection, 43 CFR 3100 and 3162.

OMB Approval Number: 1004–0185.

Abstract: Federal and Indian (except Osage) oil and gas lessees and operating rights owners must monitor drilling activities of offending wells that may result in drainage situations of Federal oil and gas mineral resources. Respondents are oil and gas companies, lessees, operators, operating rights owners, and individuals.

Form Number: None.

Frequency: On occasion; nonrecurring.

Description of Respondets: Jessees and operating rights owners.

Estimated Completion Time: For ease of reference, this table summarizes the burden items in this information collection request:

Type of analysis	Number of analyses and reporting per respondent	Hours
Preliminary	1,000@ 2 hours	2,000
Detailed	100@ 24 hours	2,400
Additional	10@ 20 hours	200
Total	1,110	4,600

Annual Responses: 1,110.

Annual Burden Hours: 4,600.

Bureau Clearance Officer: Michael H. Schwartz (202) 452–5033.

Dated: April 5, 2002.

Michael H. Schwartz,

Bureau of Land Management, Information Collection Clearance Officer.

[FR Doc. 02–10689 Filed 4–30–02; 8:45 am]

BILLING CODE 4310–84–M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CACA–44014]

Notice of Intent To Prepare an Environmental Impact Statement (EIS) on the Proposed Expansion/ Modernization of an Existing Wallboard Manufacturing Facility and Associated Quarry Operation

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of intent.

SUMMARY: United States Gypsum (USG) has proposed the expansion and modernization of USG's Plaster City wallboard manufacturing operations and Fish Creek Quarry operations located in Imperial County, California. Although USG's facilities are primarily on private land, several appurtenances cross public land. Using the U.S. government survey method, the areas within which the existing and proposed facilities are located are generally described as follows: SBBM, T.16S., R.11E. (Plaster City wallboard plant and portion of Interstate rail line; T.13S., R.9E. (Fish Creek quarry); T.13S., R.9E.; T.13S., R.10E.; T.14S., R.10E.; T.15E., R.10E., T.15S., R.11E.; T.16S., R.11E. (narrow gauge rail line between quarry and plant); T.16S., R.10E.; T.16S, R.11E. (water pipeline between Ocotillo and plant).

Pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969, the BLM will direct the preparation of an environmental impact statement (EIS) by a third-party contractor on the impacts of this proposed project. Interested members of the public are encouraged to identify significant issues or concerns related to the proposed action to determine the scope of the issues (including alternatives) that need to be analyzed and to eliminate from detailed study those issues that are not significant. One public scoping meeting will be held. The location and time of the meeting will be announced in local newspapers or may be obtained by contacting Nicole Riven at 760–337–4426 or e-mail *nriven@ca.blm.gov*. Comments recommending that the EIS address specific environmental issues should include supporting documentation. Written comments must be received at the El Centro Field Office no later than June 10, 2002. Comments, including names and street addresses of respondents, will be available for public review at the El Centro Field Office during regular business hours and may be published as part of the EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

ADDRESSES: Written comments should be addressed to Greg Thomsen, Field Manager, Bureau of Land Management, El Centro Field Office, 1661 South 4th Street, El Centro, CA 92243.

FOR FURTHER INFORMATION CONTACT: Linda Self (760) 337–4426.

SUPPLEMENTARY INFORMATION: USG's Plaster City wallboard plant has been in operation for over 55 years and is located adjacent to Evan Hewes Highway in Plaster City approximately 18 miles west of El Centro and 2 miles north of Interstate 8. The Fish Creek Quarry operations are located on Split Mountain Road approximately 26 miles north by northwest of Plaster City. The quarry operations are located within designated critical habitat for the Peninsular bighorn sheep (*Ovis canadensis*). Water for the facility is delivered via pipeline from the Ocotillo-Coyote Wells Groundwater Basin. Generally, the overall expansion/ modernization project consists of construction of new buildings, a

Appendix A3 Scoping Materials

Scoping Meeting Minutes

COPY

PUBLIC SCOPING MEETING
U.S. GYPSUM COMPANY
EXPANSION/MODERNIZATION PROJECT
ENVIRONMENTAL IMPACT REPORT

IMPERIAL COUNTY BOARD OF SUPERVISORS CHAMBERS

JANUARY 9, 2002

7:00 P.M.

Jurg Heuberger: Evening ladies and gentlemen. I would like to get the meeting started. And let me first of all welcome everybody to tonight's meeting on the Public Scoping meeting for the U.S. Gypsum Company EIR that we're going to present the information on tonight and take some public comment.

Before I go too far, let me introduce Ms. Nunez. We have a lady here that will do English/Spanish, Spanish/English translations. So if anyone does need translation, she has equipment and the ability to translate, and I would like here to put that on the record in Spanish so that, obviously, if somebody's here that doesn't speak English, wouldn't have understood a word I said.

(Ms. Nunez translates for the record)

Jurg: So, with that if there was somebody or is somebody and we'll probably announce it again sometime here, if we see people coming in that might need translation. Let me just make a couple of other comments. There are some sign-in sheets at the back table as you came in the room. If you did not sign that sign-in sheet, we would ask that you do so. And since Mr. Jones is standing back there, I will have him bring the clipboard forward if there is anybody that hasn't signed in, if would raise your hand and he will bring the clipboard up. Okay, there's a couple of people. I appreciate it, Tim. So if we could get everybody to sign in, and there's several purposes for that and I will let Mr. Brown go into some of them, but let's get that done.

There's also another sheet in the back, which is a double-sided copy. Basically, it allows you to make written statements that you can submit to us, and I believe you can fold it and mail it to us as well, if you decide not to submit it tonight you can mail it in to us.

Sometimes people are reluctant to come up and speak, so this affords you an opportunity to write down and submit it to us either tonight or some other time in the very near future, and again if you have any questions.

Next, if you do speak we would ask that you come to the microphone; one of the two microphones in the front of the room here, so that we can get your statements, your comments on tape. The meeting is being tape recorded so in order for the microphones to pick up what it is you have to say, you do need to come to the microphone. We would also ask at that time that you state your name, spell your name and give us your address please, so that we have the information hopefully in the event if we needed to transcribe the tapes, we would have the information clearly.

With that I am going to introduce a couple of people here and then they are going to run this show. To my immediate right Dave Brown, and to the further right is Bruce Steubing. These two gentlemen represent Resource Design. They are the consultants hired by the County Planning Department to prepare the Environmental document, documentation rather, for this project. And since they are getting paid to do this, I am going to let them run the meeting and do all of the work for their meeting. We will also then have some people from United States Gypsum Company make a presentation and again, I would ask that if you do have something to say, you don't have to raise your hand or whatever, just please stand up, come to the microphone and state your comments.

So, with that, I'm gonna turn it over to Dave.

David Brown: Great, thank you. Just to complete that thought then on the other people that are being here. If John and Bill would stand. U.S. Gypsum represented this evening by John Bowman, in the dapper suit, and Bill Castrey. They are gonna give us a introduction a little bit later to the project itself. What we're going to do is follow this agenda that everyone should have picked up at the door and talk for a few minutes about the purpose of the meeting, why we're here, what we hope to accomplish and walk through the format of the meeting tonight, which is basically that we're going to talk a little about the process, talk a little about the project that's being considered and then give us some opportunity for public comment.

If I could ask a couple of questions for starters, it is helpful for us to know. How many people that are here have participated in an EIR process previously, familiar with that EIR's are all about? About half the crowd; that's good. And how many people have attended a public scoping meeting? Same folks. Okay, good. Then we have a level of expectation on our performance, I suppose.

The third thing I would like to know, and this helps in publishing for these is that we published for this meeting in a couple three places. How many people found out about it through at some posting around the County? Anybody see anything that was posted? How many people had a direct mail that they found out about this? One? And newspapers. How many people saw it in the newspaper? Okay, there's something I've missed. Word of mouth? And the rest of you? Somebody tell me. What did I miss? I'm missing a lot of how people found out. No comment. Okay, well, that tells us that none of those sources are anymore successful than any others, and we need to continue to them all, which we will do.

The purpose of this meeting is to obtain public input on environmental issues that are going to be addressed in this EIR that we will be preparing. We are Resource Design Technology. We are the environmental and planning consultant that has been hired for this particular project to assist the County in its responsibilities in carrying out the CEQA process.

CEQA is a public disclosure process. It is also a process of evaluating and mitigating the impacts of projects to the degree feasible. And our goal in working this process here tonight is to address or to receive those public concerns as early as possible in the process. The public scoping process is something that is not commonly completed, in the past, under CEQA, it's mostly been completed as a required element of NEPA. There have been some regulatory changes or statutory changes in CEQA within the last year or so that now are a little bit more strongly suggest public scoping and in fact require it for projects of regional significance. Regardless of that the County's determined that scoping for this project would be helpful.

We are just in the beginning evaluation of this project. We have been on board for about a month, and this is the first public meeting, this is the first input we have had on the scope of the EIR to be prepared and for those of you that are familiar, our role here tonight is data gathers and note takers, not necessarily presenters and certainly not forecasting any conclusions as to what these environmental analyses are going to tell us. That is left to all of the analyses yet to be completed.

The purpose of the environmental review process is to analyze the projects potential environmental impacts and to develop recommendations for the County decision makers that would avoid or reduce negative environmental consequences. And this process is triggered when applications are filed requiring a discretionary approval by the County decision makers. It's important to note that an EIR is not a decision document. The EIR does not recommend approval or denial of a project. It is, instead, a disclosure document, as I mentioned, that is intended to fairly and impartially discuss the impacts of the project and the methods by which, if the decision makers choose to approve that project, they can reduce or avoid the environmental impacts.

This meeting is going to be taped so that we can make sure we get all those comments. Later we will take notes to the degree that we can keep up with you up here. We do appreciate written comments as Jurg mentioned, even if you are not prepared to necessarily provide us with a written statement this evening. If you have the opportunity to just write down your comments and either give it to us at the end of this meeting, I'll try to remember to collect those, if not, you'll notice that the fold-over page is conveniently address, but you'll have to provide the stamp.

At this time, I think it would be a good idea to let US Gypsum give us an overview of the project that we're considering.

John Bowman: Can everyone hear me okay if I don't use the microphone?

Voice in Audience: You're required to use it.

Jurg: You're required to use it, John. Just bend it back.

John: I realize I am standing backwards at the podium, but I thought it would be more appropriate if we address our comments to the audience.

I'm John Bowman. I'm legal counsel for U.S. Gypsum. In just a few moments I'm going to turn the program over to Bill Castrey, to my left, who is the Plant Manager for Plaster City facility, and Bill is really going to give you an overview of the project that this EIR is going to be evaluating. But before I do that, I thought I'd offer some sort of introductory comments, really by way of providing some additional background to help everyone have some context for what we are presenting tonight.

One of the things that you'll learn is that the expansion and modernization of the Plaster City wallboard facility is a major component of the project that this EIR will be evaluating. That particular component, of course, as a lot of you know has already been constructed. Some of you may be wondering why is it that the County is preparing an EIR for a project that has already been completed and what exactly does that mean? I'm going to try to provide at least a partial answer to that question. And to do that, I need to provide you some additional, through a procedural history behind this case, and that really starts in 1998.

In 1998, U.S. Gypsum submitted to the County a project description and environmental forms for the Plant expansion. The County, in late 1998, approved a Negative Declaration for that project. Now a Negative Declaration is a formal statement by the County that it has determined that the potential impacts to the project are less than significant and, therefore, no Environmental Impact Report is required. That particular determination was subsequently challenged in Court; a lawsuit was filed in early 1999. The Imperial County Superior Court, in about mid 1999, issued its judgment upholding the County's determination approving that Negative Declaration.

Now at that point and time, United States Gypsum was basically under no legal prohibition from proceeding with the project and in light of the Superior Court's decision, U.S. Gypsum made the business decision to proceed with construction of the Plant expansion. Meanwhile, the Petitioner in that case did file an appeal to the California Court of Appeal. Ultimately, in late 2000, the California Court of Appeal issued its decision, which reversed the Superior Court. The Court of Appeals specifically held that there was evidence in the record which indicated, or that would support a fair argument, that the project may have potential impacts in two areas – one groundwater and two traffic. And on that basis, ordered the County to prepare an EIR for the project.

Now meanwhile, as I indicated, U.S. Gypsum had proceeded with construction of the expanded wallboard facility. That construction was completed by the time the Court of Appeal had issued its decision. We are now, of course, in compliance with the Court of Appeals decision, proceeding with that EIR that required EIR, which is Bill will explain, include some additional components that were not included in the previous project description, in the interest of describing the project as broadly as possible as CEQA mandates.

One last comment I wanted to make before turning it over to Bill and this sort of gets to the question of what does it mean when you do an EIR for a project that has already been built? The important fact or the important point I wanted to make there is that ordinarily, an EIR is going to evaluate the potential impacts of a project as compared to the physical conditions that exist in the vicinity of the project, time and environmental review process has commenced. In an EIR, that's when the Notice of Preparation is issued. In this case, however, because of the Court of Appeals decision, and the fact that the environmental review process really started back in 1998, the baseline for, if you will, evaluating the potential impacts of this project will be the physical conditions that existed in 1998. In other words, prior to the time the Plant was expanded. So the EIR will look at this, even though the Plant expansion has been completed. We'll look at that and compare it to the conditions that existed prior to that construction.

So, with those introductory remarks, at this time I think I'll just turn it over to Bill, who will walk you through the project in a little more detail.

Bill Castrey: Thanks, John. I appreciate that. Good evening, everybody. Before I start I do have a PowerPoint presentation here and I know some of you are sitting over here sort of to the side of the screen. If people would like to move so that you can get a better view of the screen, go ahead and do that now.

(People move to the far side to see the screen)

Bill: I would like to introduce myself. I am Bill Castrey. I work for the United States Gypsum Company. I've been the Plant Manager at Plaster City for the past three (3) years. I've worked with the company for almost 22 years and actually started with the company at Plaster City back in 1980 and so I have been around this facility for quite a while.

I want to give a little historical perspective, sort of an overview of what I hope to cover – a little bit of Plant history, what the existing operations were before the expansion and then some of the different locations that the expansion has occurred.

The brief history here is the Plant really started as a result of gypsum being discovered in 1920 out in the Fish Creek Mountains. As a process of that determined to make a gypsum plant at the Plaster City location, which was really the closest location to railroad and to main highways and in the process of being able to do that, they built a narrow gauge railroad, an industrial railroad that we still use today from the Fish Creek Mountains 26 miles to the Plant location. That was previously owned by Pacific-Portland

Cement Company. United States Gypsum took ownership and began operating the Plant in 1946. Soon after that purchase, we built gypsum board machine, which we referred to as the No. 1 board machine. It essentially made our standard products ½" and 5/8 products. In 1956, there was a need for more specially type products, the WR products, some of our narrow products, and so a smaller, slower machine was made that handled those kind of products back in 1956.

And since then, there's been some expansions on our No. 1 machine to increase capacities over the years, and just incremental increases. However, as we came into this project, there was a need to really modernize and expand the facilities for several reasons. One, the market demand in California and the markets that we serve, which are specifically the L.A. market, the San Diego market, the Phoenix, AZ market and also the Las Vegas market, as well as, some products going into the Mexico to Mexicali and into the Baja region. And so the demand has increased and so there is a need to meet that demand. We also with that slower, smaller specialty machine, costs continued to rise and with the increase in our competition and the need to be competitive in the market, there was a need to improve our infrastructure so that we can make lower cost product, and so those are some of the reasons why we felt we needed to do that.

We have since installed a new state-of-the-art line. It is probably the most technically advanced operation in the world with a lot of USG technology and know-how put into it. As soon as we had the machine up and running, we shut down the old No. 2 machine, which was the slow, high cost machine, and that has been almost completely removed at this time. So there's no way that will ever operate again. And we have gone from an operation that was employing roughly 325 employees, and at this time when we are not at full capacity. But at the level of operation we are at now, we have 410 employees.

This new line can produce 800,000,000 sq ft./yr at its full capacity and at its full efficiency, which we're not at to yet. And when you look at the first 10 years of operation of this expansion, it is estimated that it will increase to the local economy of about $424,000,000.00.

Some of the changes that were needed for the expansion is the new production facility, which will be referred to as the No. 3 board machine, an expanded warehouse in order to handle the additional capacity, and then we covered. Previously we had a rock storage area that was uncovered, and now we have a covered rock storage area that is used for emergency needs if we have problems with our railroad or at the Quarry.

There was a relocation of a switch for the San Diego-Imperial Valley Railroad that was moved as part of this and the UP Railroad. Their easement was changed and moved further out to allow room for the new expansion. The facility is designed to recover all waste product that is produced at the Plant, as well as, some of the existing waste that has been there, roughly 50 years. And that is in process also. And, so there's essentially no waste going out of the Plant other than normal paper and office type waste that goes out of the Plant. All board is reclaimed at the Plant.

In order to meet the needs of this additional capacity at the Plant, we have to increase the rock production at the Quarry. Part of that was a new crusher that has been installed, and it's in the process of getting up to speed and has started production out there. We also have the need to update the Reclamation Plan. Currently, there's two separate Reclamation Plans that still cover the Quarry for two years, but we made the decision to put those two Reclamation Plans and do an overall Reclamation Plan for the Quarry and as part of that, as I explained, we've expanded the rock storage also at the Quarry to put it under roof and the rail loading also to us allow quicker in efficient loading of our rail facility.

There's also a need for new well water for dust suppression to keep that down at the Quarry. Current well production is not enough to keep up with what our needs our to maintain our dust suppression.

Other things that were not part of the original part of the project that have come to light and need to, replace the 50-year-old water line that comes from Ocotillo from the water wells. We continue to have leaks out in the desert, and that is not very efficient use of the water and we continue to have to fix that line. So, we feel a need to replace that. And then we see us using water somewhere between 700 and 800 acre feet maximum need when we are at full capacity at our optimum efficiency levels.

So just to summarize again, the reason we did this is we needed to increase our market and because of the demand of the market we needed to do this. We need to remain competitive, we need to remain cost effective and that's why it was decided as a corporation to expand the operations. The new facility will enable us to continue our long tradition of strong, stable employment in the Valley.

That's all I have at this time. Thank you.

Dave: As I mentioned earlier, the purpose of the environmental review process is both public disclosure and inform the decision makers of the environmental consequences of the action. The steps in that process are first determined what the relevant issues are to be evaluated. We have some guidance on that already for this project from the previous environmental work that was done as well as the Court decision that John Bowman mentioned.

We then go into Draft EIR preparation. That includes evaluating the existing conditions, analyzing the environmental effects of the project to those conditions, determining what mitigation measures could reduce or avoid the effects to the degree feasible and analyze alternatives. Following that the Draft is issued for public and agency review, comment, typically for a 45-day period. Comments come in, agency reviews come back and we consider those comments and determine the need for revisions to the document, additions to the document and complete a Final EIR based on one of several methods that may include either revisions to the draft, re-issuance of the Draft or responses to comments that have been received…or both. At that point the Final EIR can proceed to the decision makers for their review and certification of the document and its ultimate consideration at the point they believe it discloses the environmental effects. And then following the decision on the EIR, the County makes its decision on the project, which is again, independent of whatever we tell them in the EIR. The County's decisions are based on other things in addition to environmental consequences.

The environmental issues that are being considered, we're going to prepare a full EIR that's going to consider the range of issues under CEQA. These will include the hydrology, air quality, transportation issues, biology and geology out at the mine site, paleontology, public health and safety, acoustics or noise, recreation, scenic values that may change, cultural resources, hazardous materials and land use for starters. What we're looking for this evening is any additional input, not only on additional issues, but specifics within any of those categories that you feel we need to focus on in preparation of the Draft EIR.

At this point it has not been determined by the Bureau of Land Management the timing, need and type of environmental document that might need to be completed under NEPA. The Applicant is still in a phase of preparing the documentation necessary for BLM to make that decision. In the event that the BLM determines that an EIS is necessary, it is likely that we would complete that as a joint document in this process. So this would turn into an EIS/EIR and if that were the case, we would undoubtedly hold an additional public scoping meeting under federal procedures later.

Preliminary schedule for this process, the way it's being planned so far is we're going to go into a period of Draft EIR preparation over the next three to six months, so we would complete that sometime, perhaps, midyear and it could be distributed in July. It would be out for that 45-day period in July and August for public review and comment and we would go into a Final EIR preparation in September for possible County decisions on the project at the end of the year.

At this point, I would like to open the meeting up to public comment. If you would recall what Jurg asked us to do to step up to the microphone, clearly state and spell your name and address so we can get that for the record, as well as remember, if you would, if you haven't already signed in, make sure you do that at the end of the meeting too. We don't need to formally call on anybody in particular. If you're just comfortable coming and speaking in the microphone at your own pace, it works for us.

Jurg: Dave, let me have Ms. Nunez one more time put on the record in Spanish, that if there is anyone that wishes to have this meeting or the balance of the meeting translated, that she is available to do that, so that in the event that miss somebody walking in.

(Ms. Nunez translates for the record)

Jurg: Thank you, Ms. Nunez.

Dave: Anyone at all? Anyone want to help us out with some comments about the scope of the environmental evaluations?

Randy Rister: My name is Randy Rister (spells his last name out). I live at 117 N. 'G' Street, Imperial. I am here tonight representing Imperial County Fish and Game Commission and the Imperial County Parks and Recreation Department. Now, you did indicate that there was several issues that you were going to address in development of the EIR/EIS and you indicated recreation is one. But another one that you may want to consider or you may have to consider is the wildlife issues. I've seen from some of your prior proposed expansions, especially of the Quarry, that you may now be within the boundary of the designated critical habitat for the Peninsula Bighorn Sheep and you may want to do a full assessment and address those issues. Also there's going to be, if there hasn't already been, a most probable future listing of the flat-tail horned lizard, as either a threatened or endangered species. In some of your operations, may overlap into that critical habitat designation also. So, I didn't hear you say that was going to be an item in the EIR/EIS, but you certainly probably have to address wildlife issues.

Dave: Thank you very much. I did not make that clear. It is mentioned in your handout, which gives a small summary of the project as well as some of the others, but absolutely, thank you.

Harriett Allen: Thank you Mr. Heuberger, Mr. Brown and the people on the podium. I am Harriett Allen. I reside in Spring Valley at 3750 El Canto Drive. And I speak for a 47 year old national, desert-oriented membership organization called the Desert Protective Council; it's been around a while. We've appeared before you on this and other projects in Imperial County.

I appreciate Randy Rister's comments because they were uppermost in my mind. There are many problems with what you have put before the public. The maps are non-existent. There are no overlays of the two endangered species that he mentioned. There are no overlays of the BLM areas of critical environmental concern. There are no overlays of the BLM's open areas. There are no overlays of the proximity to Anza-Borrego State Park and their wilderness areas as well as the federal wilderness areas.

About a year ago, probably two years ago, I inquired of this Department why the Anza-Borrego Desert Park and the Ocotillo off highway division of that Department had not made any comments. The reply was interesting. The Quarry, which is adjacent to the Fish Creek wilderness and the Fish Creek area, is more than 300 feet from the Quarry. That 300 feet applies to residential proximities. And it was completely irrelevant to this situation. CEQA is very specific in a couple of sections that require the Applicant to address adjacent jurisdictions, not just properties. I see nothing in here on comments from the Air Quality Resource Board. I see no statement on cultural resources. I see no statement on the endangered species. The document before the public, which is these two or three pieces of paper, is completely in adequate, incomplete and internally conflicting, all of which are serious charges under CEQA.

It appears that decisions have been made without full public comment, without full public opportunities, that you as a County and the Court decided to go ahead. It is incredible. Truly incredible, but it has happened in this County before as you are well aware. CEQA asks for adequate maps. There wasn't even a suggestion of a map on the screen. There's nothing in the room. An adequate scoping section has maps pinned all over the walls. People can go and look and ask questions. There's nothing in this room. Nothing in your documents. CEQA also requires engineering reports that must be available to the public. CEQA also requires that the public have access to these documents, and that has not been a customary practice.

You've talked about not stating that the document would say which alternative was best. However documents have, in past experiences in this County, have indicated "preferred alternatives". The fact that this County has so many connections with its adjacent agencies is very important. Borrego Springs Sun Newspaper has had articles about Gypsum, about the management, about the Quarry. Borrego Springs is concerned about what you're doing here, what you're doing to Fish Creek, what this County is doing to the hundreds of visitors, even thousands of visitors that go to Fish Creek; not to see a quarry.

We know that gypsum is a major factor in the building industry. We know that this particular quarry and manufacturing plant are some of the best in the world. But you have neighbors and CEQA requires compatibility and I would certainly ask this Department to take the time and thought necessary to become good neighbors. The Bureau of Land Management surrounds you and yet what do you do? You run your railroad through their property. I've been down along that railroad personally. I know what you're doing. I wonder how you can meet CEQA's directives on agricultural people because you have agriculture to the east of your railroad, you have old planes stored there; mothballed. What are you doing to those people? I think it's very important for you to take plenty of time and do a good job. If you did the good job in the first place and did not try to shortcut, you wouldn't be in Court. We're not saying that we're going to Court again. There's no threat at all in my comment. My comments are for observation purposes. I came here to learn. I've learned nothing tonight. It's the same old routine.

Thank you for the opportunity to comment.

Dave: Thank you.

Edie Harmon: I would be happy to wait until last if there is anyone else that wants to comment. Edie Harmon, Post Office Box 444, Ocotillo and I am representing the Sierra Club, San Diego Chapter. And I do find it highly ironic that I was the only one in this room that was notified by mail and when I called the attorney for the Sierra Club that handled the lawsuit, that attorney was not notified. In fact, I was specifically asked to make the request that the comment period be extended to a minimum of February 2nd because she was not notified until January 3rd, and I think it's the County's responsibility to notify the attorney, not my responsibility. And I would add that with respect to previous discussion of the lawsuit, and I did not mean to bring this up at first. The reason the Appellate Court did not go into discussion of operations at the Quarry and the decision was because in 1998, the County "piece-mealed" discussion of U.S. Gypsum's proposed expansion. There was vehement opposition to expansion of the Quarry op, I mean of the factory operations based on groundwater, extensive comments were put on. The County, after the decision on, had separated it, so after it did its Negative Declaration on the factory expansion, it then scheduled a meeting for the Environmental Evaluation Committee to discuss the expansion of operations at the Quarry. I ended up staying up all night in San Diego preparing comments, driving over the mountains in heavy wind, only to find when I arrived at the hearing that morning, it was canceled after I walked in the room and my comments were not accepted. That is the only reason that the District Court did not consider it, because it was after the fact. After, in fact even after the lawsuit, the original lawsuit had been filed. So, in addition to the comments that I'm going to make tonight, I'm incorporating by reference all of the written comments and concerns that the Sierra Club submitted both with regard to the factory expansion, issues on groundwater and the expansion of the Quarry operations, and I can resubmit those if you want. It's very extensive; it's hundreds of pages of comments, for your information. And because of the information that was presented tonight, I'm not going to submit written comments tonight, although I did have comments prepared, but I want to add to them so that will happen.

But anyway, it's really important that this project has been "piece-mealed" from the beginning. And that is an inappropriate way to handle a project because prior to discussing the expansion of the factory, the County in that year of July had a meeting where selected members of County and government entities met with U.S. Gypsum and they talked about the project. This information came out afterwards. When I went to the hearing on the factory expansion, the file that I was permitted to look at was maybe ½" thick. When the lawsuit was filed, suddenly there were boxes of documents, but prior to the public hearing, I was not afforded an opportunity nor I assume was any other member of the public to look at the full record of material that was being concerred by the County or was available in County files. And I think that goes back to what Mrs. Allen was saying that information should be disclosed, and when the County is open and honest and the information is disclosed up front, it can get more meaningful comments and participation from the public.

And the County, with the respect to groundwater, the County certainly knows that was a major issue with respect to U.S. Gypsum's usage of groundwater from the USEPA designated Ocotillo/Coyote Wells sole source groundwater aquifer because the County had been in litigation with property owners in the Ocotillo basin, who had been exporting potable groundwater from that basin before. So, the County has spend considerable effort to stop the export of much smaller quantities of groundwater from a well in Ocotillo and another well in Yuha. The groundwater that amounted to perhaps 200 to 250 acre feet per year, which is a fraction of what U.S. Gypsum was using at the time and certainly a fraction of what U.S. Gypsum proposes to use.

And it is my understanding, although I was not present at the Appellate Court oral arguments, that the Appellate Court for the 4th Appellate District in San Diego, having been familiar with some of the County's litigation to stop the export of groundwater from that basin, made mention that fact during the oral discussion at hearing. And I mention that because that particular fact is not included in the Court's decision. But that it was apparently a portion of the discussion during oral argument, and if I am correct, the issue was raised by one of the justices. And I can't quite remember how many times litigation related to export of potable groundwater from that sole source aquifer was before the Appellate Court in San Diego. I certainly attended hearings before the Appellate Court and did research on prior cases that were over there, so that the groundwater usage proposed by U.S. Gypsum for its factory operations is certainly a very major consideration.

And all discussion of groundwater use from that sole EPA designated sole source aquifer and that decision was made in 1996 should reflect the boundaries that the U.S. EPA chose, which is the eastern boundary of the basin being the Elseanor Fault because that fault separates high-quality potable groundwater, which is the sole source of the supply for all domestic residential, commercial uses within the basin, from highly saline water that's on the east side and underlies, I'm presuming that the water underlying the Plaster City factory is saline and the biggest exporter from that groundwater basin has always been U.S. Gypsum. The use may be within Imperial County, but from a hydrological perspective, it is an export from that basin and certainly that is a consideration of hydrologists and it is a consideration of the Courts.

Let me go back...I'll cover some of the things that were in the comments that I had originally intended to put in, but I'll be adding more detail. I would also recommend that because the project description in the Notice of Preparation was both incomplete and inadequate and did not correctly identify all the relevant entities which would be impacted and which would be, and correctly indicate the distances of both the Quarry and the factory from these, the...it may be that as in the past, both state, federal and local entities, governmental jurisdictions which should have been notified were not, and probably should be. Also, I have the feeling that the domestic users in the Ocotillo/Coyote Wells groundwater basin, certainly those that are within the Cone of Depression that's been defined by U.S. Geological Survey studies and their on-going monitoring program, those residents and occupants deserve a letter to let them know. They were tremendously concerned about impacts and continuing declining groundwater levels and deterioration of groundwater quality in some of the wells, and if export pumpage increases considerably, the impacts are likely to be far more significant and those property owners deserve to know what's coming. They deserve written notice. Therefore, I would recommend that you start your Notice of Preparation process all over, appropriately notifying both the highly, probably, impacted property owners and the governmental entities. I think that there needs to be, also the project description did not include an Assessor's Parcel Number or any Township, Range and Sections so that those people that didn't know specifically where boundaries were, we're not able to check on critical habitat maps or any other locations to determine precisely where this project was located. And it's not, you're not asking for governmental entities, which may be located in different parts of the State of

California, you can't expect them to come down to the Planning Department and rummage through files themselves and get that information. It should be included in the Notice of Preparation. The communities of Ocotillo, Seeley and El Centro are definitely impacted. There was not mention in the project description of the reference of the factory location, with respect to Seeley or the even closer Centinela State Prison. One is a population, it's a voluntary population. The other has a fairly large involuntary population, which may be impacted if there's air quality issues.

There needs to be a map, not only showing the location but also using the U.S. EPA groundwater sole source aquifer boundary designation. There needs to map which shows all of the BLM special land use designations, with also special emphasize on the location of Imperial Irrigation District's Westside Main Canal, which is the closest source of Colorado River water which is the most viable option for water resources long-term viable, uncontested water resources for operations at the factory. And I think representatives from BLM can, correct me if I'm wrong, but it is my understanding that by an act of Congress, the boundary for the Imperial Irrigation District was extended from the Westside Main Canal to a point to the west of Plaster City so that Colorado River water could be used for the then proposed Texas Industries Cement Plant, which would have been to the west of Plaster City. That right-of-way from the Westside Main Canal, I believe, goes on the south side of old Highway 80? It's either the south or the north side, but it's right on—I think it's on the south side of old Highway 80, and—Anyway, it took special legislation from Congress to be able to deal with issues of providing the increased water used for another factory and the original request was only for, I think it was either for 200 or 250 acre feet of groundwater, but there was such opposition to using an additional 200 or 250 acre feet of groundwater from the Ocotillo/Coyote Wells groundwater basin that the County and BLM worked to get legislation from Congress so that there would be no need to have that factory rely on groundwater and instead they would be able to use Colorado River water. And that's certainly one of the alternatives in this project, regardless what the Company may already have done. One seriously has to take a look at the water resources and alternatives to the Company's proposals. A map needs to include the BLM Fish Creek Mountain Wilderness Area, which is right along the railroad line. It also needs to show where the Coyote Mountain Wilderness Area is. It needs to depict the boundaries of the West Mesa area of critical environmental concern and the West Mesa Flat-Tail Horned

Lizard management area that was approved by the 1997 Conservation Agreement, which was signed my multiple agencies. And if the Fish and Wildlife Service, as a result of the comment period that ends April 25, 2002, makes a determination to list the Flat-Tail Horned Lizard as a threatened or endangered species, it's highly probable that the boundaries of the current Flat-Tail Horned Lizard management area for the West Mesa would be the boundaries of designated critical habitat for that species. It also needs to—the map needs to depict the boundaries for the designation of critical habitat for the Peninsula Bighorn Sheep and as previous commenters noted, without giving an actual location, Township, Range and Section for the Quarry, it's not possible to determine precisely where that is in relation to the Federal Register published notice giving the maps and section locations for critical habitat.

It's also important to indicate that the U.S. Navy has a live bombing target area No. 103 that is shown on BLM maps and the Plaster City open area, which is an important off-highway vehicle recreation area, according to the AAA map and BLM maps, pretty much surrounds the factory site to the north, east and west of the factory. My reading and by comparing information in the Notice of Preparation with the information I was able to gleam from AAA maps and BLM maps, the mileages and locations of the project site under discussion are incorrect. And so, if somebody was not really familiar with the area and didn't have maps to look at, one might not reach the appropriate conclusions about potential impacts or concerns to either a federal or state agency or a regulatory agency that had oversight in some way. And if the attorney who handled the lawsuit, where the Appellate Court decision came out was not notified, I wonder how many other state or federal agencies were notified and whether people in the nearby communities the State Prison and the affected private property owners who live in the Ocotillo/No Mirage groundwater basin were notified. So, I would again recommend that you start the Notice of Preparation announcement all over, properly notifying the people that are concerned. I know I made calls to let people know, and when I talked to people I was told they had not been notified. People who had participated and had been interested and involved in this project before certainly should have been on a mailing list for written notification.

And I think, based on knowing where the relationship of public lands are, the rights-of-way for the railroads, the fact that they existing waterlines and proposed pipeline for connecting from the Westside Main Canal to the factory site for an alternative source of water, since those aspects of the project definitely impact federal lands for which BLM has management authority and in many cases, impact wildlife over which BLM also has authority and for which BLM is responsible right now for conducting research under the Conservation Agreement. I would strongly encourage BLM to get involved and participate as a participating agency in the NEPA process because there both direct on and off site impacts on public lands and the resources that BLM has mandated under the California Desert District Conservation Area Plan to manage, and BLM has a lot of specific management plans that deal with this part of the desert that have been adopted over the years. And in fact, when we talk about wildlife, there's another aspect of wildlife that Randy didn't mention, and that is the fact that you've got also designated critical habitat for the Desert Pup Fish in the San Sebastian Marsh/ San Felipe Creek area. And if you have air pollution from or fugitive dust, particulate matter from Quarry operations or impacts from groundwater usage and truck traffic up there, that may impact the resources to that designated critical habitat, that also has to be considered. And that would be an off-site impact but definitely impact BLM's management, wildlife management responsibilities in another federal area.

I think the EIR has to include the annual productivity levels or output levels from both the Quarry and the factory every year since operation. It is critically important that the amount of groundwater pumped both at the Quarry and exported from the Ocotillo basin for factory operations be recorded from the very beginning. And I would note that the Appellate Court made mention that the information in the Bookman-Edmonston Groundwater Study that was prepared for U.S. Gypsum was not adequate as a study on groundwater resources for this project because this was not a project specific study. It was talking about basin wide and those projections. There was a lot of mis-information in that document, a lot of inaccuracies and a lot of things that simply could not be explained by the computer modeling. I think if there's going to be a computer model on groundwater resources, it has to be able to come up with logical explanations that are accepted by hydrologists or the anomalies in the monitoring data. The U.S. Geological Survey has been monitoring groundwater resources on a joint program with Imperial County in the Ocotillo/Coyote Wells Groundwater Basin since 1975. Certainly every well that was ever monitored or measured should be re-measured to see what's happened. Recently, I don't know U.S. Gypsum, the last I knew, was not saying how much groundwater they were pumping and how much they've expanded. I don't know whether they have added flowmeters but they certainly should. The County has strict programs for domestic usage for even up to 1 acre foot. It makes no sense to the public or regulatory agencies elsewhere that the County is lenient and cannot come up with data and information for the biggest groundwater user in the basin. And a user, who by the way, is proposing to basically double the almost double the usage that it had, that it reported at the time the original proposal went in, in 1998.

There also need to be written limits on the maxim and guarantees on the maximum amount of groundwater that can be pumped. They need to be quarterly monitoring and reporting. I would refer you as you're looking to groundwater studies and groundwater issues, to take a look at the Ocotillo/No Mirage Community Area Plan, and in fact, it should be incorporated in its entirety as an appendix in the document. That plan repeatedly references specific concerns about groundwater usage and the efforts of the County and U.S. Gypsum to work with Imperial Irrigation District to find an alternative source of water, for use at the Plaster City factory. That plan was adopted by the Imperial County Board of Supervisors and in fact, it is a part of the County's General Plan.

In terms of doing groundwater studies and looking at alternatives for this EIR, as was said earlier, we have to go back to what was done even though actions were taken while there was litigation was going on. We have to go back to the starting point, and that was that U.S. Gypsum was using less than 400 acre feet of water per year.

Alternatives to consider are all the water for industrial output at the Plaster City factory to come from the Westside Main Canal? Colorado River water to be delivered by Imperial Irrigation District? I understand from a source in San Diego that there is new technology and I will be submitting the paperwork on that where the Colorado River/TDS can readily be lowered to around 200 ppm total dissolve solids. That is actual fact and considerably better quality water than is coming from the Ocotillo/Coyote Wells basin. That water could be treated, stored and treated at the factory site and whatever the costs, U.S. Gypsum will pass it on to its customers. It will not affect the company.

And I would add at this point that I know one of the issues that the Company's facing is its bankruptcy protection. I think that's something that needs to be discussed and revealed to the public. And that is one reason why the Appellate Court put a *Stay* on its decision was because of complaints about U.S. Gypsum undergoing bankruptcy and is my understanding that when those issues are resolved, the *Stay* on full implementation of the Appellate Court decision will be lifted, and the *Remittitur* from the Superior Court in Imperial County, I don't remember the exact language, but basically it voided the permits that had been issued. So, one of the questions is, if the permits were voided and are voided, what is the status of operation at the factory site? And what permits were issued and are subject to that decision instruction from the Superior Court in response to the Appellate Court? And how does that affect both the ongoing activities at the factory and the kinds of analysis that you're going to be doing and the status for the EIR?

A second alternative for water at the factory would be to have groundwater wells located on U.S. Gypsum's property at the factory site so that the groundwater, if the company chooses to use groundwater, it would not be exporting potable water from a very small sole source aquifer. And the Company's proposed pumpage from the sole source aquifer. The safe yield has been estimated variously at about 1,200 acre feet/year. If they want to use 800 acre feet/year. That is a very significant portion of the available water throughout the entire groundwater basin, and they seek to use from three very closely spaced wells. I was impressed as I rode back into Imperial County today to see just how close those three wells of U.S. Gypsum were. That is part of the problem of the Cone of Depression and the impacts on the water basin is that U.S. Gypsum has been pumping groundwater from a centralized location between the communities of Ocotillo and the community of No Mirage. So when you talk about the safe yield of an entire groundwater basin and yet you want to do all your pumping right in the middle of two residential communities, you're asking for maximum adverse impacts rather than taking water from distant locations away from where there's privately owned and developed property. Obviously, if they're going to have the wells at the factory site, they're going to have to treat the water.

Alternative C for water is all water in excessive 400 acre feet/year, which is the current usage or was the current usage from the Ocotillo Basin in 1998, should come from the Colorado River via the Westside Main Canal.

Alternative D, groundwater in excess of 400 acre feet/year could come from wells widely distant from where there's private property, that's been approved for residential subdivision and development within the Ocotillo basin.

Alternative E, groundwater in excess of 400 acre feet/ year could come from wells located at Plaster City factory site.

Alternative F, if all the water were to come from the Ocotillo basin and there's nothing in the County's plan that makes it seem like this is a reasonable solution or a reasonable alternative, nor is there anything based on hydrology reports, then the County needs to consider notifying the existing property owners, that it's unlikely that they will be able to develop their private property because of water availability and quality may decline so that it no longer meets the potability requirements for domestic usage. Notify the current property owners and residents that their continued current and future water use may be adversely impacted both in terms of water availability and water quality if water is exported at twice the current rate for industrial purposes at Plaster City. There would also to have to major revisions to the Ocotillo/No Mirage Community Area Plan because there are strict limitations on residential uses and the very highly technical groundwater studies that are required to use even 5 acre feet of water for overlying uses within the basin. To consider exporting large quantities and putting tighter restrictions on overlying users is inconsistent with what I know about California Groundwater Law, having done research for this County years ago.

There would have to be strict limitations on any future development in the No Mirage subdivision. This is an area where I think the lot sizes are one acre and two acres but to the best of my knowledge, everybody has their private domestic well. There is no community water supply hooking up people. If water quality and water quantity are adversely impacted, then there has to be a provision for the County and the project Applicant to replace existing wells with a community water system and bringing in a water supply from somewhere else. And to run a water supply hooking up that many individual private lots which now have individual wells needs to be done by somebody other than the property owners who have paid tens of thousands of dollars to put in their own domestic wells. And in parts of the No Mirage subdivision, the water table is only 30 feet below the surface. When the water is close to the surface, it means the potential for problems is greater. It also means the vegetation in the Mesquite Hammock, which is a special plant community on public lands, that vegetation has their roots into the water table. If the water table significantly declines, it may affect the Mesquite Hammocks and the habitat and forage that they provide for wildlife and birds.

If you're going to consider putting in a community water system, because the private supplies that exist now, then you would need to consider the whole issue of rights-of-way. Rights-of-way across the State highway, rights-of-way across public lands, rights-of-way on private lands. And again, that brings BLM into the picture. And that would be a considerable undertaking. But I think because the Cone of Depression and the draw down has been noted in documents that this County has funded and were first published by USGS in 1977, it includes in the maps. This is not new information, this is something that the County has been aware of all the time. And this is why there were limitations in the County's Ocotillo/No Mirage Community Area Plan about water use because there was an attempt I think, or I hope, there was an attempt on the part of the County to protect the residential communities that existed at that time and for which the County has approved residential subdivisions. And if the County, by approving a project that has clear potential to adversely affect the kinds of land uses which the County has already approved, I think the County has some liability issues that come in there because the County cannot plead ignorance.

There needs to be discussion of plans for compensation to property owners for damage and lost development potential. And interestingly, I was thinking about this even before I saw the headlines in the newspaper about litigation on lost development potential in the Lake Tahoe area. Granted the people in Lake Tahoe have a lot more money than the people in Ocotillo. And in that respect, many of these issues have an environmental justice component to it. Because to a large extent, ever since I have lived in Ocotillo, there have been a lot of low income elderly people there. It is not a community where people have the money and the resources to pack their bags and move somewhere else, especially if their property has lost its value because of impacts to water availability or water quality. Now all you have to do is drive through, and I did yesterday. I drove through, saw some of the back streets in Ocotillo that I've never seen before in the No Mirage area. It's an eye-opener. Take a look. Ocotillo doesn't look like the residential community in El Centro or San Diego, or Chicago or wherever folks may be from. People are working hard but they have very, very, very modest homes and very modest means. Years ago I worked doing food commodity distribution. Most everybody I knew in the community lined up to get U.S. government food surplus commodities because their income was so low. They qualified by virtue of their income to get government surplus foods, and I would say that that's a community that doesn't have the luxury of moving away if things get tough.

And I know the County has told me that they do not have a responsibility to notify people if the quality of water in their personal, private well is degraded and represents a public health hazard. But I think it is the responsibility of the County since the County permits wells, I think it's the responsibility of the County when the water quality is such that it does not meet the federal maximum contaminant level for potable drinking water, to let people know that it's fine to use the water for bathing and watering your trees and flushing your toilets but, it's not something you want to be drinking. And there are some wells that are already in that situation but it's not my responsibility as a resident or a member of the public to notify people when I get the data and I go out, if that were my well you couldn't pay me to drink a cup of that water, but I think that's something the County needs to deal with.

In addition to all the old wells needing to be sampled, any new wells since the USGS went around and did all the water levels and water quality sampling in the 1975 to 1976 period, need to be added to the database. Additional wells, Dr. David Huntley, whose a hydrologist on the faculty at San Diego State University for many years, served as a consulting groundwater geologist to Imperial County. And in fact, he was the County's consulting hydrologist during its litigation to terminate export of groundwater from that basin. He has made specific recommendations in the past in response to U.S. Gypsum's proposal to increase its groundwater consumption. I think those recommendations need to be taken very seriously, and along with his recommendation and from my discussions with people with people at USGS the need for additional monitoring wells between U.S. Gypsum's export wells and the Elseanor Fault.

There also needs to be, in addition to what Dr. Huntley had recommended in the past, there needs to be a monitoring well at the northeast end of No Mirage because the water table is fairly low there and that way you would detect problems to some of the residential users there. And when it comes to presenting data, U.S. Geological Survey has a way of presenting data based on Township, Range, Sections and then dividing it up so the data is presented by physical geographic location and you don't mention people by name because it does have real estate impacts if the water quality is bad or the water table is declining, that effects property values. So by doing it by numbers you're not revealing to the whole world which areas are the most problematic but property owners should be notified. All data that's gathered for groundwater studies should be analyzed by a third party independent consultant. And I would certainly recommend Dr. Huntley because he has done work on this groundwater basin in the past and is very knowledgeable about it. And there should be provisions for an independent third party study as part of the EIR process and there should be continued the annual monitoring. Currently, USGS monitors water level twice a year, but the number of wells is about 1/3 of what it originally was and it measures water quality once every two years in selected wells. I think the number of wells needs to be increased. There certainly needs to be monitoring on a regular basis of U.S. Gypsum's export wells for both water level and water quality because you have two issues with water quality in the basin. You can end up with the potential for saline intrusion degradation of water quality by migration of saline water from the east side of the Elseanor Fault or as in portions of the basin, you can bring up highly saline water from depth because the potable groundwater basin sits over a highly saline basin. And if one pumps too much or at too deep a level from the potable basin, there is the potential to bring up saline water from depth and contaminate not only the pumping well but the surrounding wells and down grading it. And that certainly was the case and that was the fear of Dr. Huntley with respect to the export well in Yuha, was that the, I believe, if my recollection is right, they were pumping from five feet above the base of the potable groundwater basin, which is if you're pumping a lot, and that was only 100 acre feet/year, but if you were pumping more from a well, you have the potential for bringing up saline water from below. So that's another reason why there is another reason why there is a concern of having a large quantity of pumpage from three closely spaced wells in a basin that has been documented over the past quarter century to have some serious problems.

You also need to have computer models, as I said, that can predict what's actually been measured. I mean if your computer models can't explain the measured data, then there's something wrong with the computer model and it needs to be tweaked again until the computer can come up with what's really happened, and it also means that many of the assumptions that went into predictions for computer model and understanding the groundwater basin were not exactly accurate.

Also, you need to consider the studies by Dr. Uzbecki at USGS who is measuring rainfall data and recharge. There's growing concern in the southwest that these small groundwater basins are getting no significant recharge at all and that we have the potential throughout the southwest and in some much large communities than in southwestern Imperial County that we're actually working on creating future ghost towns. And if that's the case, if there's approval of projects for which there's no long-term assured supply of water that, again, raises questions about the role of decision makers. And there are parts of California that people are very much worried about, where development is right now, out stripping the long-term availability of groundwater resources and no governmental entity seems to want to really say, there's limits to growth based on resource constraints and in some places, you just don't have the potential for solving the problem. It's not feasible to recharge the Ocotillo/Coyote Well groundwater basin with Colorado River water because that water is poor quality and the people that are there now have wells, there's no treatment of water in any of the wells in the Ocotillo basin. If there were recharge with poor quality Colorado River water, everybody would have to start treating their water or you would have to put in a community source for drinking water because the water in the wells would be contaminated, and USGS has agreed that recharging the Ocotillo/Coyote Wells groundwater basin with Colorado River water is not a beneficial use of water because it would degrade the quality of an existing sole source potable aquifer.

Harriett: Inaudible.

Edie: I want to add a couple more things Harriett. So, the water issues you also have to deal with at the Quarry. It's a separate groundwater basin and that will have impacts to wildlife, both on and off the potential for impacts depending on what the location of that groundwater basin is, what its discharge is to three species that are either threatened or endangered or about to be listed, so that's an important issue at the Quarry. There's also issues—noise, dust, vibration and light. The impacts of Quarry operations, particularly on the Big Horned Sheep, which is a large mammal and probably more sensitive to some of these impacts than others. Operations can impact behavior and therefore potentially reproductive success.

There needs to be considerable revisions and take a look at the Reclamation Plans, long-term, whether they're going to be sequenced, stepped, whether there's going to be revegetation, and how the waste at both the Quarry and the waste rock site issues of cover material where those are going to be used, how they're going to be used, whether there's going to be temporary revegetation at the Quarry, all the issues at the Quarry and on groundwater issues, there needs to be monitoring and the opportunity for oversight or review by a skeptical public and skeptical agencies. Monitoring needs to be on an unannounced basis so that those that are doing monitoring can check, and at the Quarry I think there probably need to be limitations on the hours of operations, particularly for certain types of operations—blasting and the use of heavy machinery. In light, if those represent issues that are of significance to wildlife.

And I would add that with respect the US EPA designation of the sole source aquifer, in reading through the Federal Register Notice and trying to understand the implications of that. If there are problems created within a sole source aquifer by export of water for industrial use, I raise the serious question of whether federal agencies would be able to buy wall board from the factory that was adversely impacting the sole source aquifer. And that might be something that's of economic consideration to U.S. Gypsum because the language of the Federal Register Notice does affect federal agencies, within terms of construction, but if there's an ongoing project that adversely impacts the sole source aquifer for which there is no alternative source of potable drinking water, that could have economic impacts and ramifications for federal purchase orders and use of materials.

So again, I would encourage you to take a look at your Notice of Preparation Notice and I think you might want to start...I would encourage you to start over and make sure that every state, federal and local entity and party who would reasonably be impacted or interested and concerned about the proposed impacts that you've identified already be give written notice and the opportunity to either speak up or to submit written comments and that you start or extend the comment period. I guess you could just extend the comment period, re-notice and set a new final date, but I do think that all the appropriate agencies and entities should receive written notice, not word of mouth and because many of the surrounding agencies are responsible agencies aren't going to be getting the local Imperial Valley Press. That's not the only reasonable way of getting the notice out. Thank you.

Dave: Thank you. One question on the comments that you'd previously submitted. By the way, thank you for that education. The lack of a sufficient NOP certainly didn't slow you down.

Edie: I've spent 24 years dealing with some of these issues.

Dave: The information that you referred to that had previously been submitted that you wanted to incorporate. Our preference would be as burdensome as that may be, is submit those again. We're starting a fresh process here. I realize there is a lot of history that has gone on.

Edie: Okay.

Dave: But if you wouldn't mind submitting those for our benefit, that would be helpful rather than simply rely County records, files and then have you tell us later that we might have missed something, which could happen.

Edie: I will be happy to that. And I think when you read the comments that I've submitted, you will understand what I mean by "piece mealing" the project and how frustrating that process was to the public when the Quarry issues were dealt with entirely separate than the factory and we were told that we had to respond that way, that we couldn't lump it together even though we saw things a single project.

Dave: Okay, thank you.

Jurg: Is there anyone else out there that wishes to make a comment at this time? If so, please come to the microphone, state your name and address.

Dave: Seeing none. We want to thank you all once again for participating. We realize this is a burden to get out and come to late night meetings. Once again, make sure at least you're all signed in. We'll start compiling that notification list. Again, we're starting a fresh process here. We want everything we can but compile and not miss anything along the way. And written comments, for now, I think there's a date on that form that if you can, having attended this meeting submit them by, we'd appreciate it as we get started on Draft EIR preparation.

Jurg: Yes, ma'am, you had a question?

Harriett: Yes, Please. Would you repeat the deadline for the comments, please?

Jurg: January 31st is what's on the form.

Dave: Thank you all very much.

Jurg: Good night.

tg/USG EIR Pub Mtg Transcript/word

Scoping Letters Received

To: Jurg Heuberger fax 760-353-8338
From: Edie Harmon

Re: US Gypsum Scoping Comments
Table of Contents for Exhibits submitted earlier today in 3 volumes.

Table of Contents is 9 pages.

Fax Cover + 9 pages.

A Heidler

Table of contents for SC/CBD/DPC Scoping Comments for US Gypsum expansion
Letters 100 and 106 submitted on 2/28/02 with exhibits

New exhibits submitted in 2002 (through 116)

2

Previous submissions included herein:

Attachments and Exhibits previously submitted to Imperial County re USG expansion 1993-2000:

(Continued on following page.)

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5 February 2002

sent via email to jurgheuberger@imperialcounty.net

Mr. Jurg Heuberger, Planning Director
Imperial County Planning/Building Department
939 Main St., Suite B-1
El Centro CA 92243

6

Re: Plaster City, Proposed Expansion and EIR

Dear Mr. Heuberger:

As a resident of Ocotillo, I am deeply concerned with the proposed Plaster City expansion. It is difficult as it is living here in Ocotillo and having to deal with the horrible road conditions caused by the Plaster City trucks driving on Evan Hewes instead of using I-8. Although we have read in the IV Press that they have contributed to the upkeep of the roads, it has not happened. The County finally came out at the end of 2001 and began resurfacing Evan Hewes... starting in Ocotillo. They stopped a little more than a mile up the highway and picked up the work on the east side of Plaster City. Our road is still horrible and Plaster City still benefits from its use.

As well, Ocotillians are not permitted to use our own water to so much as grow something that could aid with providing income to families while Plaster City continues to pump ridiculous amounts of water from our aquifer to be used in "machinery". The leaks and ruptures in their lines saturate the desert floor and at times have sent small flash floods through our washes. It is aggravating to see this occur and to see Plaster City waiting sometimes days to fix the leaks. It is a waste of our precious resource. Without this resource, we would be cut off from water and Ocotillo would die.

The Ocotillo General Plan, approved by the Board of Supervisors in 1994, states that Plaster City must find an alternate source of water. More than a year ago, one of U.S. Gypsum's employees advised that the piping had already been laid and all was ready for Plaster City to begin pumping from the east. They had not done so because it was more expensive to pump up hill than down (as is the case with Ocotillo). As long as no one in Ocotillo was making a fuss, they would continue to pump from Ocotillo.

If Plaster City wants to expand, I say "go for it". But in so-doing they should not be permitted to continue to abuse the residents of Ocotillo and our resources.

The following items must be taken into consideration:

1. Plaster City must abide by the Ocotillo General Plan and begin using the water from other sources and leave the Ocotillo aquifer alone.

2. Plaster City trucks must be restricted from driving on Evan Hewes west of Plaster City. They should use Dunaway Road when entering or exiting I-8. If this is not possible, U.S. Gypsum should maintain the road between Plaster City and Ocotillo and keep the road in good condition.

I urge you, Mr. Heuberger, to give this strong consideration.

Thank you for listening to my comments.

Regards,

Letrell Cuff

Letrell Cuff
Box 334
Ocotillo CA 92259

cc: Congressman Duncan Hunter
Governor Gray Davis
EPA
Imperial Valley Press

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STATE OF CALIFORNIA COPY RECEIVED 01 17 02 Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

2

FILE COPY

January 9, 2002

Jurg Heuberger
Imperial County Planning and Building Department
939 Main Street, Suite B-1
El Centro, CA 92243

RE: SCH# 2001121133 – United States Company Expansion/Modernization Project (DEIR)

Dear Mr. Heuberger:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess and mitigate project-related impacts on archaeological resources, the Commission recommends the following actions be required:

- ✓ Contact the appropriate Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check.
  - A list of appropriate Native American Contacts for consultation concerning the project site and to assist in the mitigation measures.
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5 (f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5 (e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Rob Wood

Rob Wood
Environmental Specialist III
(916) 653-4040

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CC: State Clearinghouse

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STATE OF CALIFORNIA

Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

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January 9, 2002

Jurg Heuberger
Imperial County Planning and Building Department
939 Main Street, Suite B-1
El Centro, CA 92243

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Sincerely,

Rob Wood

Rob Wood
Environmental Specialist III
(916) 653-4040

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SOUTHERN CALIFORNIA

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January 10, 2002

Mr. Jurg Hueberger
Planning Director
Imperial County
Planning / Building Department
939 Main Street, Suite B-1
El Centro, CA 92234

RE: **Comments on the Notice of Preparation a Draft Environmental Impact Report for the United States Gypsum Expansion / Modernization Project – SCAG No. I 20010697**

Dear Mr. Hueberger:

Thank you for submitting the **Notice of Preparation a Draft Environmental Impact Report for the United States Gypsum Expansion / Modernization Project** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG reviews the consistency of local plans, projects, and programs with regional plans. This activity is based on SCAG's responsibilities as a regional planning organization pursuant to state and federal laws and regulations. Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of regional goals and policies.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and **regional plans (Section 15125 [d])**. If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide and Regional Transportation Plan, which may be applicable to your project, are outlined in the attachment. **We expect the DEIR to specifically cite the appropriate SCAG policies and address the manner in which the Project is consistent with applicable core policies or supportive of applicable ancillary policies. Please use our policy numbers to refer to them in your DEIR. Also, we would encourage you to use a side-by-side comparison of SCAG policies with a discussion of the consistency or support of the policy with the Proposed Project.**

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact me at (213) 236-1867. Thank you.

Sincerely,

Jeffrey M. Smith

JEFFREY M. SMITH, AICP
Senior Planner
Intergovernmental Review

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JAN 14 2002

IMPERIAL COUNTY
PLANNING, BUILDING

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE UNITED STATES GYPSUM EXPANSION / MODERNIZATION PROJECT SCAG NO. I 20010697

PROJECT DESCRIPTION

The proposed Project considers expansion and modernization of an existing gypsum mining facility. The proposed Project is located in Imperial County.

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The **Growth Management Chapter (GMC)** of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the US Gypsum Expansion / Modernization Project.

3.03 *The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.*

The **Regional Transportation Plan (RTP)** also has goals, objectives, policies and actions pertinent to this proposed project. This RTP links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant goals, objectives, policies and actions of the RTP are the following:

Core Regional Transportation Plan Policies

4.02 *Transportation investments shall mitigate environmental impacts to an acceptable level.*

4.04 *Transportation Control Measures shall be a priority.*

4.16 *Maintaining and operating the existing transportation system will be a priority over expanding capacity.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL STANDARD OF LIVING

The Growth Management goals to develop urban forms that enable individuals to spend less income on housing cost, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals and does not infer regional interference with local land use powers.

3.05 *Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.*

3.10 *Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.*

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE THE REGIONAL QUALITY OF LIFE

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

3.18 *Encourage planned development in locations least likely to cause environmental impact.*

3.20 *Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*

3.21 *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

3.22 *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

3.23 *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project includes:

5.07 *Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.*

5.11 *Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.*

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The **Water Quality Chapter** core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

11.07 *Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.*

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG) is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. '134, 49 U.S.C. '5301 et seq., 23 C.F.R. '450, and 49 C.F.R. '613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080 and 65082 respectively.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. '7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining **Conformity** of Projects, Plans and Programs to the State Implementation Plan, pursuant to 42 U.S.C. '7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, Environmental Impacts Reports of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. '1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the Association of Bay Area Governments, the Sacramento Area Council of Governments, and the Association of Monterey Bay Area Governments) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.

Revised July 2001

DEPARTMENT OF CONSERVATION

STATE OF CALIFORNIA

CALIFORNIA CONSERVATION

OFFICE OF MINE RECLAMATION

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GRAY DAVIS
GOVERNOR

February 22, 2002

Jurg Heuberger, Planning Director
939 Main Street
El Centro, CA 92243

Dear Mr. Heuberger:

United States Gypsum Company (USG) Expansion/Modernization Project (DEIR) CA Mine ID# 91-13-0005

The Department of Conservation's Office of Mine Reclamation (OMR) has reviewed the Notice of Preparation for the United States Gypsum Company (USG) Expansion and Modernization Project (DEIR). The proposed project includes the modernization of the Plaster City plant, storage structures, rail facility and transmission lines. In addition, the quarry areas and overburden areas will be expanded along with an increase of production from 1.1 million tons per year (mty) to 1.9 mty. Similarly, water usage will also increase. The following comments prepared by Catherine Gaggini are offered for your consideration.

The project description included in the DEIR should clearly identify an "amended reclamation plan" as part of the project. Environmental assessments and mitigation measures adopted in the final EIR and related to the amended reclamation plan must be included or referenced in the amended plan. The amended reclamation plan must be a stand-alone document (SMARA Section 2772(d)). All documentation for the amended plan must be submitted by the lead agency to the department at one time. Required information or documents that are prepared as part of the permit application for the mine operation or as part of an environmental document prepared for the project may be included by reference, if that item of information or document is attached to the amended reclamation plan when it is submitted to the OMR for review.

We recommend that the following issues be evaluated in the DEIR so that the optimal alternative can be identified and developed in the approved reclamation plan. [SMARA refers to the Surface Mining and Reclamation Act of 1975 (Public Resources Code Section 2710 et seq.), and the CCR refers to State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations Title 14, Chapter 8, Article 1, Section 3500 et seq., Article 9 Section 3700 et seq.)]

- Potential impacts to water quality, recharge, and groundwater storage.

- Surface and groundwater protection.

- The amended plan must describe and provide for reclamation of mined lands to usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety (SMARA Section 2733). The DEIR should identify alternative end uses and recommend the optimal end use to be adopted in the reclamation plan.

- The amended plan must provide for final slopes that have a minimum factor of safety for the end use and conform to surrounding topography or end use (CCR 3502 (b)(3), 3704(b), (d), (f), and (e)). The DEIR should describe the geology and mining and recommend an optimal reclaimed slope configuration.

- The reclamation of mine wastes must be addressed per CCR Section 3704 (d) and (e), and Section 3502(b)(4). The DEIR should include a description of mine waste that will be generated and recommend how it should be reclaimed.

- Sediment and erosion control potential should be evaluated. The DEIR should recommend optional methods for sediment and erosion control on the site to be adopted as part of the reclamation plan.

- Potential impacts to sensitive species, and wildlife habitat should be evaluated in the DEIR.

- Baseline studies of site vegetation should be included documenting vegetative cover, density and species richness. The DEIR should recommend optimal species and revegetation techniques to be incorporated in the site reclamation plan.

Since much of the information included in the reclamation plan is evaluated in the DEIR, we recommend that both documents be prepared simultaneously. The proposed project, as described above, represents a substantial deviation to the approved reclamation plan. Therefore, an amended reclamation plan must be prepared for the project, pursuant to SMARA Section 2777. In addition, CCR

Section 3700(c) states that when substantial amendments are proposed to reclamation plans which were approved prior to January 15, 1993, the standards set forth in this Article shall be applied by the lead agency in approving or denying approval of the amended reclamation plan.

When submitting the amended reclamation plan to OMR for review, the Lead Agency is required to certify (in writing) to the Department of Conservation that the reclamation plan is in compliance with the applicable requirements of Article 1 (commencing with Section 3500) of Chapter 8 of Division 2 of Title 14 of the CCR per the requirement of SMARA Section 2774(c).

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact me at (916) 323-8565.

Sincerely,

James Pompy

James S. Pompy, Manager
Reclamation Unit

Cc: Neal Krull
California Regional Water Quality Control Board

Julie M. Hamilton
Attorney at Law

February 28, 2002

Jurg Heuberger
Director
Imperial County Planning Department
939 Main Street, Suite B-1
El Centro, CA 92243

**Re: Notice of Preparation of Joint Environmental Impact Report
U.S. Gypsum Co. Expansion/Modernization Project**

Dear Mr. Heuberger:

This letters responds to your request for comments on the Notice of Preparation of a joint environmental report for U.S. Gyspum's Plaster City wallboard manufacturing plant. As you are aware, this office represents the Sierra Club in regards to this specific project. Imperial County was required by Public Resources Code §21092.2 to send Sierra Club and its representative a Notice of Preparation (NOP). Under the CEQA Guidelines, the NOP must include a description of the project, its location on a map and a statement of the project's probable effects. I was faxed a copy of the Second Notice of Preparation on February 1, 2002. I am allowed 30 days after I receive the NOP to respond, therefore, my comments would not be due until March 3, 2002. Since March 3rd is a Sunday, my comments are not due until the next business day, March 4, 2002.

According to the NOP, the expansion/modernization of the wallboard manufacturing plant consists of several elements: the expansion/modernization of the wallboard manufacturing facility, expansion of mining operations, and the renovation and a possible relocation of a portion of the rail line linking the mining operation to the plant. As the lead agency, the County must consider the whole of the project (all of the above elements) in one environmental document. The County must define the project completely to ensure complete analysis of impacts resulting from expansion/ modernization of the wallboard manufacturing plant. Since the project necessarily involves an in increase in well water usage, and an increase in production from the quarry, which may in turn require renovation and/or relocation of the railroad spur, the impacts of each of these aspects of the project must be thoroughly analyzed in the EIR.

Similarly, the EIR must also address impacts resulting from mitigation measures and/or alternatives proposed to reduce impacts below a level of significance. Edie

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www.jmhamiltonlaw.com

Harmon submitted letters to your office February 28, 2002 on behalf of the Sierra Club and several other organizations providing specific detail regarding areas of potential significant impact.

"An accurate project description is necessary for intelligent evaluation of the potential environmental effects of a proposed activity."[1] The project description should include a map, preferably topographical, depicting the project's precise location. The project description must be accurate *and consistent* throughout the EIR.[2] The EIR must identify all federal, state or local agencies, other organizations and private individuals consulted in preparing the EIR, as well as all agencies that the lead agency *should* consult in preparing the EIR.[3]

In this case, the map must show the location of all aspects of the project, including the quarry, rail line, off-site groundwater wells and the wallboard manufacturing plant. The project description must also include a statement of the objectives sought by the proposed project, a general description of the proposed project's technical, economic, and environmental characteristics, a statement describing the intended uses of the EIR; and a list of related environmental review and consultation requirements mandated by federal, state, and local laws, regulations or policies.[4] The EIR must contain a description of the project's objectives, defined broadly enough to adequately consider alternatives.[5] The EIR must contain a summary of the project and its consequences which must identify each significant effect and corresponding mitigation measures and alternatives to reduce or avoid such effects, areas of controversy (including issues raised by the public) and issues to be resolved. The EIR must also describe any inconsistencies between the project and general or regional plans.

Imperial County is required to adopt feasible mitigation measures or feasible environmentally superior alternatives in order to reduce or avoid significant adverse environmental impacts.[6] The EIR must contain a description of any alternatives or mitigation measures and the environmental impacts of these alternatives and measures. The letters provided by Edie Harmon to your office on February 28, 2002 identify a number of alternatives and mitigation measures for the project. Imperial County must provide meaningful analysis of these alternatives and mitigation measures with reasons and facts supporting any conclusions that alternatives are infeasible.[7]

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[1] *McQueen v. Board of Directors of the Mid-Peninsula Regional Open Space District* (1988) 202 Cal.App.3d, 1136, 1143.
[2] *County of Inyo v. City of Los Angeles* 71 Cal. App. 3d 185 (1977).
[3] CEQA Guidelines §15129.
[4] CEQA Guidelines §15124.
[5] CEQA Guidelines §15124.(d).
[6] Pub. Resource Code, §§ 21002, 21081(a); CEQA Guidelines § 15002(a)(3)
[7] *Marin Municipal Water District v. KG Land Corporation California*, 235 Cal. App. 3d 1652 (1991).

growth-inducing impacts of delivering potable water to the manufacturing plant from an alternative source, such as the Colorado River or the Imperial Irrigation District. Of particular relevance to this EIR is a requirement to consider the adequacy of water supplies on a local and *state-wide* basis.[9] In addition, Imperial County must adopt reporting or monitoring programs to implement the adopted mitigation measures.[10]

CEQA enumerates certain environmental impacts which are deemed significant, particularly threats to rare or endangered species.[11] Ms. Harmon's letter lists the areas of concern regarding biological resources.

The EIR must account for any reasonably foreseeable future phases of the project. For example, expanded operations at the gypsum rock quarry can be expected. The EIR must discuss cumulative impacts of the entire project. This requirement necessitates consideration of both cumulative impacts of the multiple elements of the project (the expansion/modernization of the wallboard manufacturing facility, expansion of mining operations, and the renovation and a possible relocation of a portion of the rail line) along with consideration of cumulative impacts of the project with any other projects in the area. Thus, the EIR must account for the effects of the project in light of additional, unrelated developments taking place in the vicinity. For example, the effects of the project should be considered along with any current construction or activity which uses water from the Ocotillo/Coyote Basin.

The EIR "must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the NOP is published .. from both a local and regional perspective."[12] The EIR must describe the environmental setting for the entire project, both local and regional, including its alternatives and mitigation measures. Thus, the EIR shall describe the environmental setting for the wells that provide the project's water supply as well as alternative sources of water; in addition to the environmental setting for the plant, quarry and relocated rail line.

Thank you for your time and consideration of the information in this letter. Please contact me if you have any questions. I request that your office provide me written notice of any and all aspects of the project in the future.

Very truly yours,

Julie M. Hamilton

Julie M. Hamilton
Attorney for Sierra Club

---

[9] *Planning & Conservation League v. Department of Water Res.*, 83 Cal. App. 4th, 892 (2000).

[10] Pub. Resource Code, § 21081.6; CEQA Guidelines § 15097.

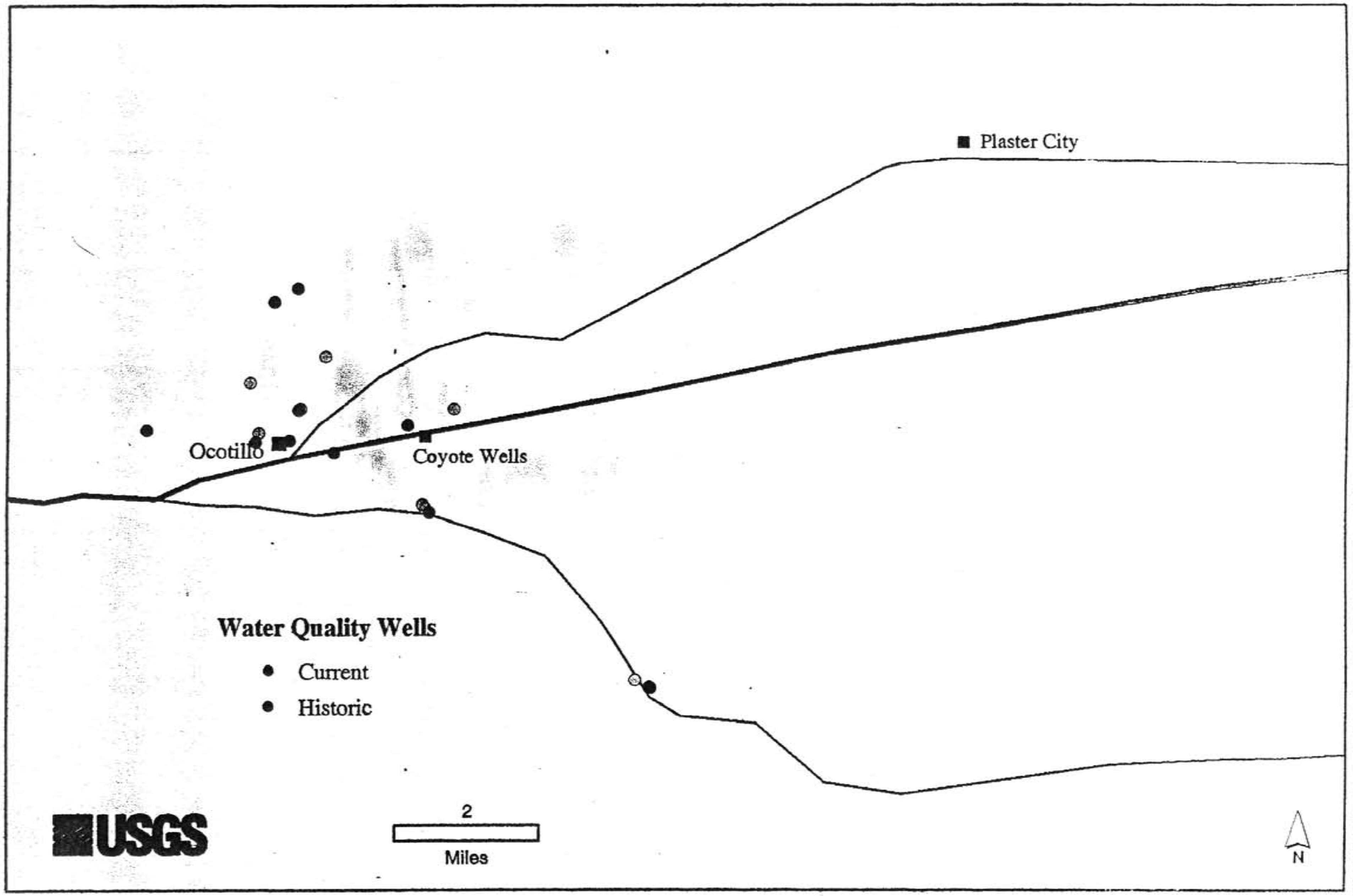
[11] CEQA Guidelines § 15065.

[12] CEQA Guidelines § 15125.

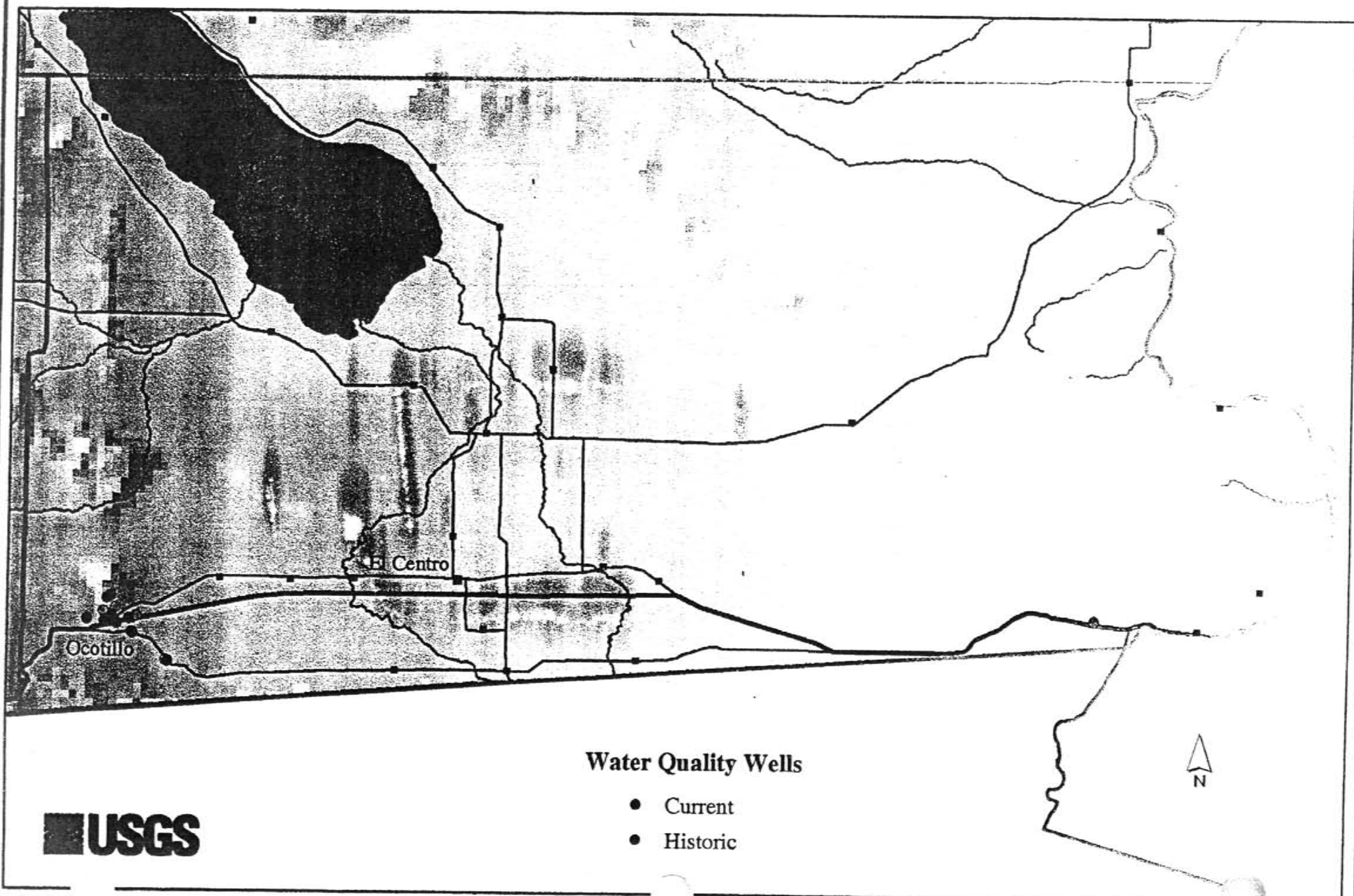
Appendix B Hydrology

Appendix B1 USGS Hydrologic Data

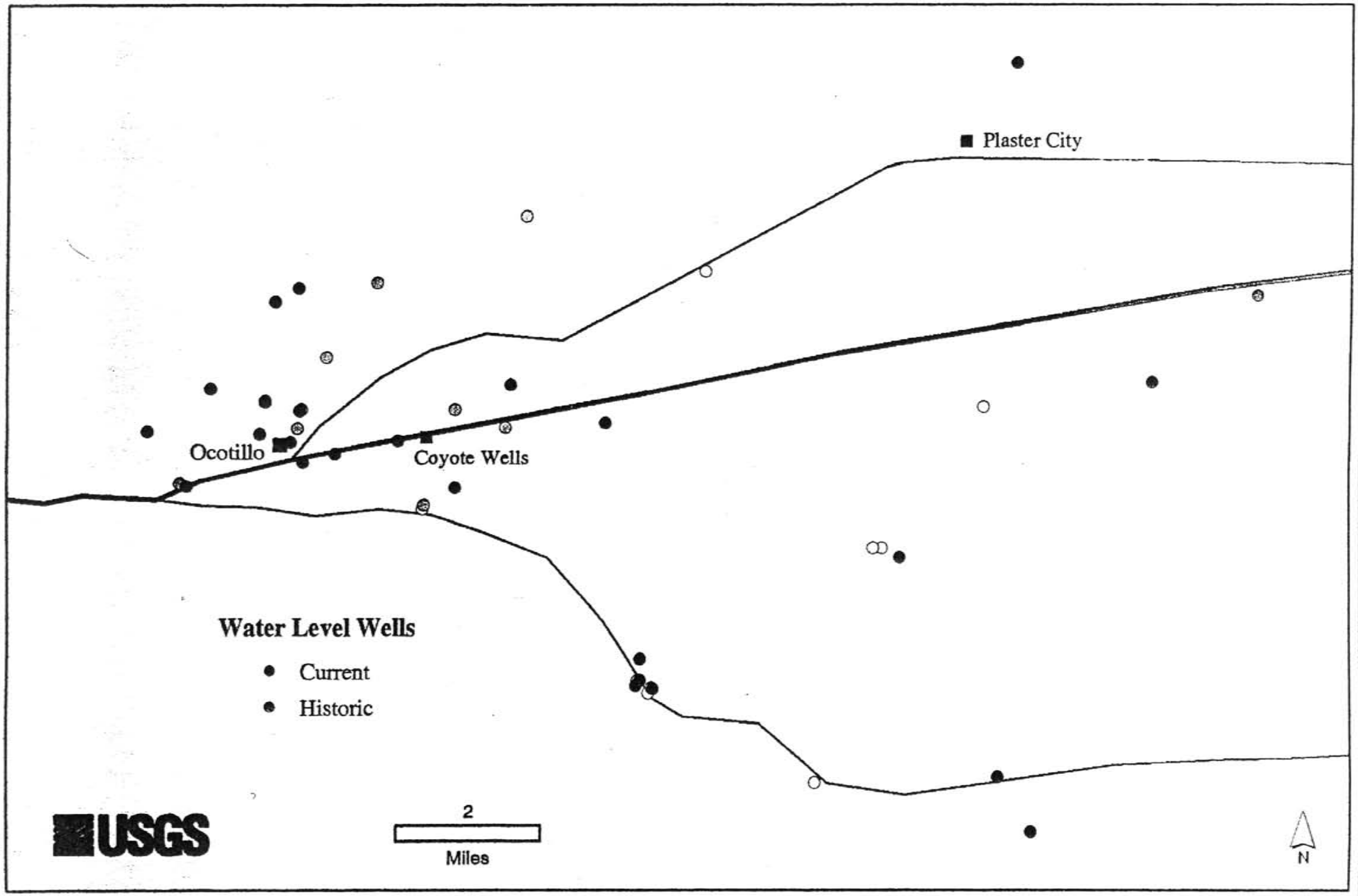
Wells Sampled for Water Quality by the U. S. Geological Survey.



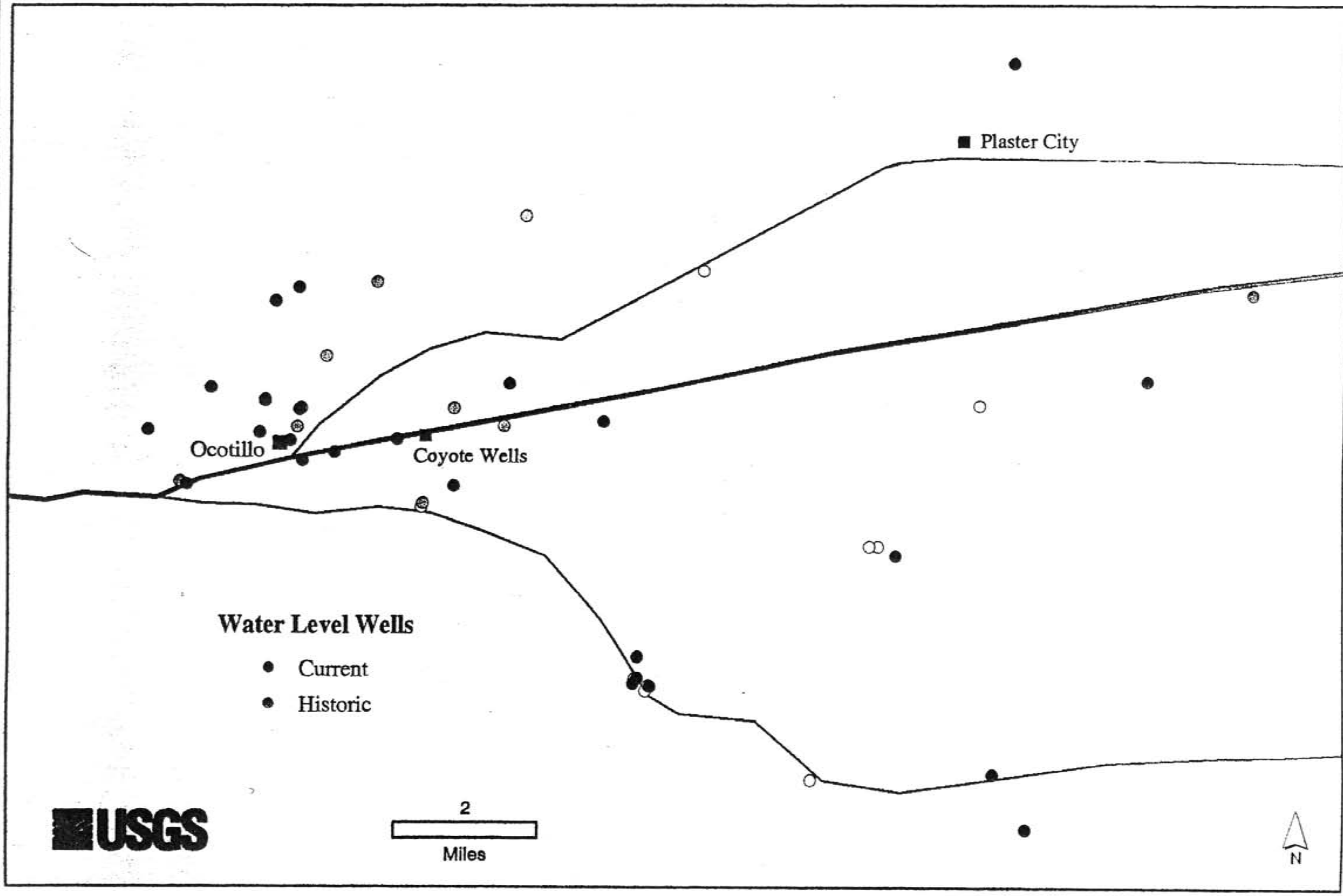
Wells Sampled for Water Quality by the U. S. Geological Survey.



Wells Sampled for Water Level by the U. S. Geological Survey.



Wells Sampled for Water Level by the U. S. Geological Survey.



Imperial County Department of Public Works

Water-Level Monitoring Wells

Ocotillo Area

15S/11E-32R1	16S/10E-29H1
16S/ 9E-24B1	16S/10E-31B1
16S/ 9E-24D1	16S/10E-32P1
16S/ 9E-25M2	16S/11E-23B1
16S/ 9E-26F1	16S/11E-27F1
16S/ 9E-34B1	16S/11E-42L1
16S/ 9E-35N2	17S/10E-11B1
16S/ 9E-36C3	17S/10E-11G1
16S/ 9E-36D2	17S/10E-11G4
16S/ 9E-36G4	17S/10E-11H3
16S/ 9E-36H1	17S/11E-16J1
16S/10E-27R1	17S/11E-22E2

Water Quality Monitoring Wells

Ocotillo Area

16S/ 9E-24B1	16S/ 9E-36D3
16S/ 9E-24D1	16S/ 9E-36H1
16S/ 9E-25K2	16S/10E-30R1
16S/ 9E-26F1 *	16S/10E-42A8
16S/ 9E-34B1	17S/10E-11H3
16S/ 9E-36C2	

* Alternate well; to be sampled in place of a primary well when necessary.

County-wide Network

9S/ 9E- 4M1
10S/19E-25R1
10S/21E-30C1
11S/15E-23M1
12S/ 9E-23D1 *
12S/16E- 9A1
13S/18E-33A1
15S/14E-18C1
16S/21E-21L1
16S/22E-21R1
16S/22E-27K1
16S/23E- 9N1

Water Quality Monitoring Well in the Felicity Area

16S/21E-21L1

* Presently obstructed and unusable. ICDPW to work with property owner to either clear well or drill replacement well on same property.

Imperial County Department of Public Works

List of Chemical Constituents
(mg/L or as indicated)

Dissolved boron (μg/L)

Dissolved calcium

Dissolved chloride

Dissolved fluoride

Dissolved iron (μg/L)

Dissolved manganese (μg/L)

Dissolved magnesium

Dissolved nitrogen (nitrate + nitrite)

Dissolved orthophosphorus (P)

Dissolved potassium

Dissolved silica

Dissolved sodium

Dissolved sulfate

Dissolved solids

Sodium adsorption ratio

Percent sodium

Total alkalinity ($CaCO_3$)

Total Hardness ($CaCO_3$)

Noncarbonate hardness

Temperature °C

pH

Specific conductance

Schedules used: 101, 117, and LC27

SITE ID 323934115504701
LOCAL NUMBER 017S011E22E002S
About 12 miles southeast of Ocotillo and 1 mile south of Highway 98 and Sunrise Butte. Drilled observation well. Diameter 2 inches, depth measured 119.65 feet in 1975, well point 117.6-119.6 feet. Altitude of land-surface datum 303.9 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 08, 1975	102.48	DEC 17, 1981	101.64 S	OCT 19, 1988	100.90 S	OCT 16, 1995	100.17 S
14	102.07	MAR 11, 1982	101.52 S	MAR 13, 1989	100.76 S	MAR 19, 1996	100.22 V
JUN 24	102.10	OCT 07	101.49 S	OCT 30	100.79 S	OCT 16	100.06 S
DEC 09	102.00	MAR 30, 1983	101.40 S	MAR 20, 1990	100.79 S	MAR 17, 1997	100.10 S
OCT 01, 1976	102.05	OCT 26	101.28 S	OCT 23	100.72 S	OCT 20	99.98 V
APR 27, 1977	101.97	APR 12, 1984	101.24 S	APR 02, 1991	100.72 S	MAR 23, 1998	99.83 S
OCT 04	101.89	OCT 23	101.10 S	OCT 07	100.61 S	OCT 27	99.71 S
APR 26, 1978	101.93	APR 12, 1985	101.05 S	MAR 17, 1992	100.65 S	MAR 22, 1999	99.64 S
OCT 04	101.86	OCT 30	100.94 S	OCT 27	100.54 S	OCT 25	99.50 S
MAR 14, 1979	101.93	MAR 28, 1986	101.04 S	APR 13, 1993	100.54 S	MAR 29, 2000	99.50 S
SEP 12	101.72 S	OCT 23	101.07 S	OCT 19	100.52 S	OCT 23	99.40 S
APR 30, 1980	101.68 S	APR 01, 1987	100.94 S	MAR 14, 1994	100.41 S	MAR 27, 2001	99.24 S
SEP 24	101.59 S	OCT 21	100.92 S	OCT 17	100.43 S		
APR 29, 1981	101.67 S	MAR 15, 1988	100.86 S	MAR 29, 1995	100.36 S		

HIGHEST 99.24 MAR 27, 2001
LOWEST 102.48 MAY 08, 1975

SITE ID 324009115532301
LOCAL NUMBER 017S011E18K001S
About 8 miles southeast Ocotillo, west of Highway 98. Augered observation well. Diameter 2 inches, depth 150.3 feet, depth measured 142 feet in 1988, well point 148.3-150.3 feet. Altitude of land-surface datum 341.6 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 14, 1975	136.76	MAR 14, 1979	136.42	MAR 30, 1983	136.12 S	APR 01, 1987	135.60 S
JUN 24	136.69	SEP 12	136.29 S	OCT 26	136.10 S	OCT 21	135.54 S
DEC 10	136.70	APR 30, 1980	136.30 S	APR 12, 1984	136.01 S	MAR 15, 1988	135.50 S
OCT 01, 1976	136.62	SEP 24	136.25 S	OCT 23	135.92 S	OCT 19	135.59 S
APR 27, 1977	136.54	APR 29, 1981	136.24 S	APR 12, 1985	135.80 S	MAR 13, 1989	135.56 S
OCT 04	136.28	NOV 05	136.23 S	OCT 30	135.74 S		
APR 26, 1978	136.29	MAR 11, 1982	136.19 S	MAR 28, 1986	135.75 S		
OCT 04	136.29	OCT 07	136.18 S	OCT 23	135.69 S		

HIGHEST 135.50 MAR 15, 1988
LOWEST 136.76 MAY 14, 1975

SITE I: 32 15511101
LOCAL NUMBE. 17S011E16J001S
About 15 miles west of Calexico south of Highway 98. Drilled unused well. Diameter 4.5 inches, depth measured 336.5 feet in 1974, perforated 226-366 feet. Altitude of land-surface datum 298.7 feet. Water-level records available 1970, 1974 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 19, 1970	95.00 R	SEP 24, 1980	96.06 S	APR 01, 1987	95.44 S	MAR 29, 1995	94.75 S
NOV 22, 1974	96.63	APR 29, 1981	96.14 S	OCT 21	95.39 S	OCT 16	94.58 S
DEC 11	96.63	NOV 05	96.06 S	MAR 15, 1988	95.35 S	MAR 19, 1996	94.57 S
FEB 04, 1975	96.66	MAR 11, 1982	96.00 S	OCT 19	95.37 S	OCT 16	94.42 S
DEC 09	96.55	OCT 07	95.95 S	MAR 13, 1989	95.16 S	MAR 17, 1997	94.56 S
OCT 01, 1976	96.50	MAR 30, 1983	95.90 S	APR 02, 1991	95.13 S	OCT 20	94.29 S
APR 27, 1977	96.46	OCT 26	95.80 S	OCT 07	95.00 S	MAR 23, 1998	94.23 S
OCT 04	96.36	APR 12, 1984	95.78 S	MAR 17, 1992	95.10 S	OCT 27	94.11 S
APR 26, 1978	96.41	OCT 23	95.60 S	OCT 27	94.97 S	MAR 22, 1999	93.97 S
OCT 04	96.29	APR 12, 1985	95.57 S	APR 13, 1993	95.19 S	OCT 25	93.85 S
MAR 14, 1979	96.40	OCT 30	95.44 S	OCT 19	94.96 S	MAR 29, 2000	93.84 S
SEP 12	96.21 S	MAR 28, 1986	95.52 S	MAR 14, 1994	95.09 S	OCT 23	93.76 S
APR 30, 1980	96.14 S	OCT 23	95.55 S	OCT 17	94.85 S	MAR 27, 2001	93.58 S

HIGHEST 93.58 MAR 27, 2001
LOWEST 96.66 FEB 04, 1975

SITE ID 324114115552301
LOCAL NUMBER 017S010E11H001S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic well. Diameter 8 inches, depth measured 329.9 feet in 1989. Altitude of land-surface datum 380 feet. Water-level records available 1964, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1964	158.27	MAR 20, 1980	166.59 S	OCT 26, 1983	174.33 S	MAR 15, 1988	172.18 SR
JUN 19, 1978	226.46 R	APR 18	166.81 S	APR 12, 1984	172.39 S	OCT 19	171.02 S
24	195.36 R	MAY 02	167.65 S	OCT 24	171.79 S	MAR 17, 1989	170.45 S
25	164.20	SEP 25	170.46 S	APR 25, 1985	171.87 S	OCT 31	169.84 S
MAR 15, 1979	164.29	APR 29, 1981	170.69 S	OCT 31	171.69 S	MAR 20, 1990	169.55 S
16	164.27	NOV 06	173.35 S	APR 03, 1986	171.37 S	APR 02, 1991	172.44 S
22	164.24	MAR 13, 1982	177.00 SR	OCT 23	171.33 S	OCT 07	170.39 SR
SEP 13	166.05 S	OCT 07	180.83 SR	APR 01, 1987	171.01 S		
MAR 12, 1980	166.55 S	APR 01, 1983	174.12 S	OCT 23	173.39 SR		

HIGHEST 158.27 JUN 15, 1964
LOWEST 174.33 OCT 26, 1983

SITE ID 324117115552001
LOCAL NUMBER 017S010E11H003S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic water-table well. Diameter 5 inches, depth 348 feet, perforated 202-217, 228-238, 265-273, 284-295, 304-318, 327-333 feet. Altitude of land-surface datum 380 feet. Water-level records available 1987 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 23, 1987	179.29	S	APR 03, 1991	176.64	S	OCT 27, 1994	176.36	S	MAR 23, 1998	175.29	S
MAR 17, 1988	178.81	SR	OCT 08		SO	MAR 30, 1995	175.64	S	NOV 13	175.43	V
OCT 19	180.11	SR	APR 07, 1992	175.57	S	OCT 17	178.32	V	MAR 23, 1999	176.00	S
MAR 17, 1989	177.99	S	OCT 28	176.84	S	MAR 20, 1996		SO	OCT 25	176.39	S
OCT 31	179.08	SR	APR 14, 1993	175.47	S	OCT 16	178.53	V	MAR 29, 2000	175.89	S
MAR 21, 1990	177.73	S	OCT 21	176.35	S	MAR 24, 1997	175.69	S	OCT 23	176.53	S
OCT 24	178.57	S	MAR 24, 1994		P	OCT 20	176.69	V	MAR 26, 2001	174.26	V

HIGHEST 174.26 MAR 26, 2001
LOWEST 179.29 OCT 23, 1987

SITE ID 324118115552101
LOCAL NUMBER 017S010E11H002S
Southeast of Ocotillo along Highway 98 in Yuha Estates. Drilled domestic water-table well in sand and clay. Diameter 4 inches, depth 344 feet. Altitude of land-surface datum 376 feet. Records available 1973, 1978-87.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR .., 1973	165.00	R	SEP 13, 1979	176.29	S	OCT 07, 1982	189.87	S	OCT 31, 1985	190.27	SR
MAY 24, 1978	179.02		MAY 02, 1980	176.60	S	APR 01, 1983	185.95	S	APR 04, 1986	185.06	SR
JUN 24	182.70		SEP 25	180.36	S	OCT 26	187.34	S	OCT 23	187.41	SR
25	169.40		APR 29, 1981	182.35	S	APR 13, 1984	186.39	SR	MAR 31, 1987		W
MAR 15, 1979	171.16		NOV 06	184.43	S	OCT 24	186.75	S			
22	170.52		MAR 13, 1982	185.44	S	APR 25, 1985	186.77	S			

HIGHEST 165.00 MAR , 1973
LOWEST 189.87 OCT 07, 1982

SITE ID 324119115553201
LOCAL NUMBER 017S010E11G004S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled unused well. Diameter 10.75 inches, depth measured 199.1 feet in 1978, deepened to a reported 500 feet in 1981. Altitude of land-surface datum 375 feet. Water-level records available 1978, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 05, 1978	193.18	S	APR 29, 1981	199.37	S	OCT 26, 1983	199.31	S	APR 25, 1985	191.90	S
06	193.12	S	OCT 07, 1982	206.21	S	APR 12, 1984	196.28	S	OCT 31	189.71	S
AUG 02	193.35	S	APR 01, 1983	203.14	S	OCT 24	193.25	S	APR 03, 1986	188.26	S

SITE ID 32 [illegible] 15553201 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1986	187.22 S	OCT 23, 1990	182.14 S	OCT 17, 1994	179.58 V	OCT 27, 1998	176.30 V
MAR 31, 1987	186.69 S	APR 02, 1991	181.45 S	MAR 29, 1995	178.97 V	MAR 22, 1999	176.06 V
OCT 22	185.92 S	OCT 07	180.70 S	OCT 16	178.46 V	OCT 25	175.66 V
MAR 18, 1988	185.21 S	MAR 17, 1992	179.76 S	MAR 19, 1996	178.12 V	MAR 29, 2000	175.34 V
OCT 19	184.26 S	OCT 27	180.08 S	OCT 16	178.00 V	OCT 23	174.94 V
MAR 17, 1989	183.91 S	APR 13, 1993	179.46 S	MAR 17, 1997	177.74 V	MAR 27, 2001	174.48 V
OCT 31	183.47 S	OCT 19	180.10 V	OCT 20	177.34 V		
MAR 20, 1990	182.79 S	MAR 14, 1994	179.56 V	MAR 23, 1998	176.82 V		

HIGHEST 174.48 MAR 27, 2001
LOWEST 206.21 OCT 07, 1982

SITE ID 324123115552901
LOCAL NUMBER 017S010E11G001S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic well. Diameter 8 inches, depth 300 feet, perforated 160-300 feet. Altitude of land-surface datum 375 feet. Water-level records available 1967, 1971-72, 1975-76, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 26, 1967	170.00 R	APR 29, 1981	226.73 SR	OCT 19, 1988	180.50 S	JUL 31, 1995	177.16 V
SEP 30, 1971	150.00 R	NOV 06	232.80 S	MAR 17, 1989	180.95 SR	OCT 16	177.15 V
JUL 25, 1972	164.00 R	MAR 13, 1982	228.15 S	OCT 31	181.22 SR	MAR 19, 1996	176.94 V
JUN 27, 1975	164.94	OCT 07	221.20 S	MAR 20, 1990	179.61 S	OCT 16	177.52 V
JAN 08, 1976	165.11	APR 01, 1983	205.99 S	OCT 23	179.45 S	MAR 17, 1997	176.78 V
JUL 05, 1978	195.56	OCT 26	195.86 S	APR 02, 1991	178.21 S	OCT 20	176.35 V
06	195.58	APR 12, 1984	191.17 S	OCT 07	177.59 S	MAR 23, 1998	175.42 V
MAR 15, 1979	204.38	OCT 24	187.63 S	MAR 17, 1992	176.73 S	OCT 27	175.50 V
SEP 13	216.86 S	OCT 31, 1985	185.31 S	OCT 27	178.03 S	MAR 22, 1999	174.97 V
MAR 12, 1980	222.82 S	APR 03, 1986	182.92 S	APR 13, 1993	176.97 S	OCT 25	174.59 V
20	218.29 S	OCT 23	182.68 S	OCT 19	178.89 S	MAR 29, 2000	174.14 V
APR 18	213.75 SR	MAR 31, 1987	182.73 SR	MAR 14, 1994	178.02 S	OCT 23	174.03 V
MAY 02	216.60 S	OCT 22	182.48 S	OCT 17	SO	MAR 27, 2001	173.38 V
SEP 25	225.64 S	MAR 18, 1988	181.34 S	MAR 29, 1995	SO		

HIGHEST 164.94 JUN 27, 1975
LOWEST 232.80 NOV 06, 1981

SITE ID 324123115553101
LOCAL NUMBER 017S010E11G002S
Southeast of Ocotillo, along Highway 98 in Yuha Estates. Drilled domestic water-table well. Diameter 6.6 inches, depth 335 feet, perforated 235-315 feet. Altitude of land-surface datum 375 feet. Records available 1971, 1975-82, 1984.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV , 1971	158.00 R	MAY 24, 1978	164.91	MAR 15, 1979	165.58	NOV 06, 1981	172.38 S
JUN 01, 1975	164.00 S	JUN 19	164.98	22	165.60	MAR 13, 1982	172.92 S
28	164.25	25	164.80	SEP 13	166.84 S	OCT 07	178.03 SR
OCT 14, 1976	164.04	JUL 05	165.09	MAY 02, 1980	167.64 S	APR 12, 1984	P
APR 27, 1977	163.68	06	165.09	SEP 25	168.93 S	OCT 24	N
OCT 04	164.45	OCT 04	165.58	APR 29, 1981	170.25 S		

HIGHEST 158.00 NOV , 1971
LOWEST 172.92 MAR 13, 1982

SITE ID 324138115552901
LOCAL NUMBER 017S010E11B001S
About 5 miles southeast of Ocotillo in Yuha Estates. Domestic well. Diameter 7 inches, depth reported 301 feet. Altitude of land-surface datum 376 feet. Water-level records available 1975-76, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 27, 1975	156.80	APR 01, 1983	163.03 S	MAR 17, 1989	163.79 S	MAR 30, 1995	163.18 SR
JAN 08, 1976	154.80	OCT 26	163.37 S	OCT 31	163.84 S	OCT 17	P
JUN 24, 1978	157.90	APR 12, 1984	163.34 S	MAR 21, 1990	163.36 S	MAR 20, 1996	163.20 S
MAR 15, 1979	158.27	OCT 24	163.49 S	OCT 24	163.72 S	OCT 17	163.62 S
22	158.25	APR 25, 1985	163.10 S	APR 02, 1991	163.29 S	MAR 18, 1997	163.00 S
SEP 13	159.53 S	OCT 31	163.29 S	OCT 08	163.72 S	OCT 21	163.05 SR
MAY 02, 1980	159.96 S	APR 04, 1986	162.99 S	APR 07, 1992	163.13 S	OCT 28, 1998	P
SEP 25	161.06 S	OCT 23	163.30 S	OCT 28	163.65 S	MAR 26, 1999	162.51 V
APR 29, 1981	161.47 S	APR 03, 1987	163.14 S	APR 14, 1993	163.21 S	OCT 25	162.53 V
NOV 06	162.47 S	OCT 23	163.82 S	OCT 21	163.87 S	MAR 29, 2000	162.33 V
MAR 13, 1982	162.47 S	MAR 18, 1988	163.29 S	MAR 15, 1994	163.34 S	OCT 23	162.47 V
OCT 07	163.03 S	OCT 19	164.05 S	OCT 27	163.56 S	MAR 27, 2001	162.02 V

HIGHEST 154.80 JAN 08, 1976
LOWEST 164.05 OCT 19, 1988

SITE ID 32 15522201
LOCAL NUMBER 016S011E42L001S
About 7.2 miles southeast of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth measured 143.5 feet in 1975, 130.4 feet in 1987, well point 141.5-143.5 feet. Altitude of land-surface datum 195 feet. Water-level records available 1975-76, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1975	44.77		APR 04, 1986	37.23	S	OCT 09, 1991	38.70	S	OCT 16, 1996	22.68	S
14	41.05		MAR 31, 1987	26.36	S	MAR 16, 1992	38.65	S	MAR 17, 1997	23.64	S
JUN 24	39.90		OCT 21	37.01	S	OCT 28	38.68	S	OCT 20	14.04	S
JAN 07, 1976	39.59		MAR 15, 1988	37.35	S	APR 15, 1993	10.94	S	MAR 23, 1998	15.52	S
SEP 30	34.10	S	OCT 18	37.72	S	OCT 21	13.32	S	OCT 27	17.27	S
NOV 04, 1981	29.01	S	MAR 14, 1989	37.94	S	MAR 15, 1994	14.94	S	MAR 22, 1999	18.44	S
MAR 12, 1982	29.52	S	OCT 31	38.20	S	OCT 26	17.17	S	OCT 25	20.20	S
OCT 07	22.85	S	MAR 21, 1990	38.33	S	MAR 29, 1995	18.54	S	MAR 29, 2000	21.65	S
APR 12, 1985	36.02	S	OCT 24	38.51	S	OCT 16	18.99	S	OCT 23	21.12	S
OCT 30	36.83	S	APR 05, 1991	39.12	S	MAR 20, 1996	21.19	S	MAR 27, 2001	21.20	S

HIGHEST 10.94 APR 15, 1993
LOWEST 44.77 MAY 09, 1975

SITE ID 324258115523501
LOCAL NUMBER 016S011E42M001S
About 7 miles southeast of Ocotillo. Unused water-table well. Diameter 50 inches, depth 7 feet in 1980. Altitude of land-surface datum 220 feet. Records available 1949, 1962, 1974 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 18, 1949	7.50		APR 25, 1978	4.39		MAR 12, 1982		D	APR 04, 1986		D
AUG 23, 1962	6.80		OCT 05		D	OCT 07		D	OCT 22		D
OCT 30, 1974	4.93		MAR 21, 1979	4.59		MAR 30, 1983	4.17	S	MAR 31, 1987		D
JUN 24, 1975	4.70		SEP 12		D	OCT 27		D	OCT 21		SD
JAN 07, 1976	5.05		APR 30, 1980	4.50	S	APR 12, 1984		D	MAR 15, 1988		D
SEP 30	4.65		SEP 24		D	OCT 23		D	OCT 18		SD
APR 27, 1977	4.80		APR 29, 1981		D	APR 12, 1985		D	MAR 14, 1989		SD
OCT 04	4.83		NOV 04		D	OCT 30		D			

HIGHEST 4.17 MAR 30, 1983
LOWEST 7.50 JAN 18, 1949

SITE ID 324258115524101
LOCAL NUMBER 016S011E42M005S
About 7 miles southeast of Ocotillo. Unused water-table well. Diameter 5 inches, depth measured 6.5 feet in 1974, 4.4 feet in 1980, deepened to 9.3 feet in 1981 with 1 inch diameter casing, depth measured 8.0 feet in 1988. Altitude of land-surface datum 220 feet. Water-level records available 1949, 1974, 1976-99. Destroyed.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 18, 1949	4.30 R	DEC 18, 1981	4.62 S	OCT 21, 1987	4.97 S	OCT 21, 1993	5.36 S
OCT 30, 1974	3.99	MAR 12, 1982	4.08 S	MAR 15, 1988	4.15 S	MAR 15, 1994	5.37 S
SEP 30, 1976	3.93	OCT 07	5.00 S	OCT 18	5.06 S	OCT 26	5.46 S
APR 27, 1977	3.33	MAR 30, 1983	3.74 S	MAR 14, 1989	4.99 S	MAR 29, 1995	5.53 S
OCT 03	4.36	OCT 27	4.63 S	OCT 31	4.98 S	OCT 16	5.52 S
APR 25, 1978	3.44	APR 12, 1984	3.84 S	MAR 21, 1990	5.03 S	MAR 20, 1996	5.52 S
OCT 05	D	OCT 23	4.97 S	OCT 24	5.09 S	OCT 16	5.56 S
MAR 21, 1979	3.60	APR 12, 1985	3.80 S	APR 05, 1991	5.13 S	MAR 17, 1997	5.56 S
SEP 12	D	OCT 30	4.88 S	OCT 09	5.14 S	OCT 20	O
APR 30, 1980	3.98 S	APR 04, 1986	4.01 S	MAR 16, 1992	5.23 S	MAR 23, 1998	O
SEP 24	D	OCT 22	4.75 S	OCT 28	5.26 S	OCT 27	O
APR 29, 1981	4.32 S	MAR 31, 1987	3.92 S	APR 15, 1993	5.31 S	MAR 22, 1999	W

HIGHEST 3.33 APR 27, 1977
LOWEST 5.56 OCT 16, 1996 MAR 17, 1997

SITE ID 324326115580601
LOCAL NUMBER 016S010E42A001S
About 2 miles southeast of Ocotillo, north of Highway 98. Domestic well, diameter and depth unknown. Altitude of land-surface datum 334 feet. Water-level records available 1995 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUL 31, 1995	87.76 V	OCT 16, 1995	87.72 V	MAR 19, 1996	87.79 V	OCT 17, 1996	88.22 V

HIGHEST 87.72 OCT 16, 1995
LOWEST 88.22 OCT 17, 1996

SITE ID 324329115580501
LOCAL NUMBER 016S010E42A005S
About 2 miles southeast of Ocotillo, north of Highway 98. Domestic well. Diameter and depth unknown. Altitude of land-surface datum 328 feet. Water-level records available 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 30, 1974	73.21	APR 26, 1978	73.84	SEP 24, 1980	74.96 S	OCT 07, 1982	75.96 S
OCT 14, 1976	73.55	OCT 04	74.05	APR 29, 1981	75.18 S	APR 06, 1983	75.74 S
APR 27, 1977	73.58	MAR 23, 1979	74.10	NOV 05	75.55 S	OCT 25	76.20 S
OCT 04	73.74	MAY 01, 1980	74.67 S	MAR 10, 1982	75.61 S	APR 19, 1984	76.33 S

SITE ID 3[illegible] 115580501 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1984	76.64 S	OCT 21, 1987	78.04 S	OCT 23, 1990	79.49 S	OCT 19, 1993	80.60 S
APR 24, 1985	76.79 S	MAR 18, 1988	78.06 S	APR 03, 1991	79.40 S	MAR 14, 1994	80.56 S
OCT 30	77.11 S	OCT 19	78.50 S	OCT 07	79.78 S	23	80.59 S
MAR 28, 1986	77.18 S	MAR 22, 1989	78.58 S	MAR 17, 1992	79.63 S	OCT 17	SO
OCT 22	77.68 S	OCT 30	79.04 S	OCT 27	80.27 S	MAR 30, 1995	SO
APR 03, 1987	77.70 S	MAR 20, 1990	79.05 S	APR 13, 1993	80.05 S		

HIGHEST 73.21 DEC 30, 1974
LOWEST 80.60 OCT 19, 1993

SITE ID 324342115574301
LOCAL NUMBER 016S010E32P001S
In No Mirage. Drilled unused well. Diameter 7 inches, depth unknown. Altitude of land-surface datum 285 feet. Water-level records available since 1992.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 27, 1992	40.16 S	MAR 29, 1995	41.72 S	OCT 20, 1997	41.94 S	MAR 29, 2000	42.47 S
APR 13, 1993	39.83 S	OCT 16	41.35 V	MAR 23, 1998	41.77 S	OCT 23	42.77 S
OCT 19	40.53 S	MAR 19, 1996	41.22 V	OCT 27	42.30 S	MAR 27, 2001	42.52 S
MAR [illegible], 1994	40.41 S	OCT 16	41.70 S	MAR 22, 1999	42.15 S		
OCT 17	40.94 S	MAR [illegible], 1997	41.54 S	OCT 25	42.57 S		

HIGHEST 39.83 APR 13, 1993
LOWEST 42.77 OCT 23, 2000

SITE ID 324343116005501
LOCAL NUMBER 016S009E35N002S
Near Octotillo where Highway 98 and Interstate 8 cross. Drilled unused well. Altitude of land-surface datum 600 feet. Water levels available since 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 01, 1975	317.00 S	MAR 28, 2000	315.21 V	OCT 23, 2000	315.57 V	MAR 27, 2001	315.43 V

HIGHEST 315.21 MAR 28, 2000
LOWEST 317.00 JUN 01, 1975

SITE ID 324345116010001
LOCAL NUMBER 016S009E35M001S
In Ocotillo about 1 mile west of Shell Canyon Road. Drilled domestic water-table well. Diameter 8 inches, depth 535 feet, perforated 415-425, 470-495 feet. Altitude of land-surface datum 610 feet. Records available 1962, 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR , 1962	321.00 R	MAR 22, 1979	325.26	OCT 06, 1982	324.41 S	MAR 25, 1986	325.81 SR
JUN 24, 1975	323.16	SEP 13	323.80 S	MAR 30, 1983	324.43 S	OCT 22	329.06 SR
OCT 14, 1976	323.08	APR 30, 1980	323.84 S	OCT 25	324.69 S	MAR 30, 1987	325.27 S
APR 28, 1977	327.04	SEP 25	323.89 S	APR 11, 1984	324.48 S	OCT 20	325.13 SR
OCT 04	325.38	MAY 01, 1981	324.11 S	OCT 24	324.56 S	MAR 14, 1988	326.21 SR
APR 26, 1978	324.01	NOV 05	323.98 S	APR 11, 1985	325.77 SR	OCT 19	325.16 SR
OCT 06	323.66	MAR 13, 1982	324.17 S	OCT 30	324.87 S	MAR 15, 1989	326.01 SR

HIGHEST 321.00 MAR , 1962
LOWEST 327.04 APR 28, 1977

SITE ID 324401115593201
LOCAL NUMBER 016S009E36G004S
In Ocotillo, south of Interstate 8, and east of Imperial Highway. Drilled industrial water-table well. Diameter 10.75 inches, depth 560 feet, perforated 340-560 feet. Altitude of land-surface datum 382 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 28, 1975	136.47	OCT 06, 1982	134.95 SR	OCT 19, 1988	P	OCT 16, 1995	123.97 S
FEB 08, 1976	126.36	07	125.77 S	MAR 23, 1989	123.10 S	MAR 19, 1996	127.50 VR
OCT 15	128.39	MAR 31, 1983	124.66 S	OCT 31	125.90 SR	OCT 16	129.87 S
APR 29, 1977	129.43	OCT 26	123.30 S	MAR 21, 1990	126.93 S	MAR 17, 1997	125.38 S
OCT 04	126.14	APR 11, 1984	124.95 SR	OCT 24	129.04 S	OCT 20	125.96 S
APR 26, 1978	124.70	12	123.71 S	APR 03, 1991	128.39 S	MAR 23, 1998	125.20 V
OCT 06	128.15	OCT 24	126.35 SR	OCT 08	131.26 SR	NOV 13	126.97 V
MAR 21, 1979	126.68	APR 24, 1985	124.86 SR	APR 07, 1992	127.85 S	MAR 22, 1999	128.16 S
SEP 13	126.05 S	OCT 31	122.63 S	OCT 29	127.62 S	OCT 25	127.93 S
APR 30, 1980	124.10 S	MAR 28, 1986	122.14 S	APR 15, 1993	126.52 S	MAR 29, 2000	132.60 S
SEP 25	126.53 S	OCT 23	122.61 S	OCT 20	126.05 S	OCT 23	128.70 S
APR 30, 1981	125.23 S	APR 03, 1987	122.40 S	MAR 15, 1994	125.11 S	MAR 27, 2001	P
NOV 05	124.24 S	OCT 23	123.39 S	OCT 17	126.11 S		
MAR 12, 1982	123.66 S	MAR 18, 1988	122.65 S	MAR 29, 1995	138.36 S		

HIGHEST 122.14 MAR 28, 1986
LOWEST 138.36 MAR 29, 1995

SITE ID 324 .15590901
LOCAL NUMBER 016S009E36H001S
About 0.5 mile east of Ocotillo, south of Interstate 8. Drilled industrial water-table well in sand and clay. Diameter 10.75 inches, depth 410 feet, perforated 60-380 feet. Altitude of land-surface datum 342 feet. Water-level records available 1954, 1960, 1966, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 21, 1954	68.50 R	NOV 05, 1981	82.72 S	OCT 18, 1988	84.65 SR	OCT 17, 1995	82.60 VR
MAY , 1960	85.00 R	MAR 10, 1982	81.65 S	MAR 17, 1989	83.67 S	MAR 21, 1996	82.11 S
AUG , 1966	81.00 R	OCT 06	82.89 S	NOV 03	84.20 S	MAR 18, 1997	82.39 S
NOV 21, 1974	80.07	MAR 31, 1983	81.02 S	MAR 22, 1990	84.04 S	OCT 20	82.81 S
JAN 08, 1976	80.21	OCT 27	82.51 S	OCT 31	84.07 SR	MAR 24, 1998	P
APR 29, 1977	81.66	APR 20, 1984	82.32 SR	APR 04, 1991	83.45 S	OCT 27	83.36 SR
OCT 04	82.65	OCT 24	82.78 S	OCT 09	83.75 S	MAR 25, 1999	83.04 V
APR 27, 1978	80.89	APR 26, 1985	82.62 S	APR 07, 1992	83.96 S	OCT 25	83.67 VR
OCT 05	83.21	OCT 31	84.08 SR	OCT 29	84.90 S	MAY 30, 2000	84.24 S
MAR 22, 1979	81.82	MAR 27, 1986	83.29 S	APR 14, 1993	84.32 S	OCT 23	85.13 S
SEP 13	83.26 SR	OCT 23	84.19 SR	OCT 21	P	MAR 26, 2001	85.54 S
MAY 01, 1980	82.01 SR	APR 02, 1987	83.42 S	MAR 24, 1994	83.67 S		
SEP 26	82.67 S	OCT 22	84.06 S	OCT 17	84.69 S		
APR 29, 1981	81.25 S	MAR 17, 1988	83.84 SR	MAR 31, 1995	82.02 S		

HIGHEST 68.50 MAR 21, 1954
LOWEST 85.54 MAR 26, 2001

SITE ID 324411114381801
LOCAL NUMBER 016S022E27K001S
In Winterhaven. Drilled unused well. Altitude of land-surface datum 127 feet. Water-level records available 1992 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 22, 1992	14.97 S	MAR 31, 1995	12.19 S	OCT 21, 1997	11.35 S	MAR 29, 2000	12.90 S
APR 13, 1993	9.30 S	OCT 17	11.67 S	MAR 24, 1998	9.17 S	OCT 24	11.83 S
OCT 20	8.88 S	MAR 20, 1996	12.79 S	OCT 28	12.43 S	MAR 27, 2001	12.80 S
MAR 15, 1994	12.38 S	OCT 16	12.72 S	MAR 16, 1999	12.32 V		
OCT 27	10.76 S	MAR 18, 1997	11.91 S	OCT 25	12.44 S		

HIGHEST 8.88 OCT 20, 1993
LOWEST 14.97 SEP 22, 1992

SITE ID 324416115594102
LOCAL NUMBER 016S009E36C003S
In Ocotillo. Drilled public-supply well. Diameter 8 inches, depth drilled 312 feet, perforated 212-312 feet. Altitude of land-surface datum 384.2 feet. Water-level records available since 1950.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 01, 1975	110.00 A	OCT 27, 1998	127.55 S	OCT 25, 1999	P	OCT 23, 2000	P
OCT 20, 1997	125.15 S	MAR 26, 1999	125.48 S	MAR 30, 2000	122.17 S	MAR 26, 2001	178.47 S

HIGHEST 110.00 JUN 01, 1975
LOWEST 178.47 MAR 26, 2001

SITE ID 324417115582401
LOCAL NUMBER 016S010E31B001S
About 1.2 miles southeast of Ocotillo at end of frontage road south of the westbound lane of Interstate 8. Drilled unused well. Diameter 8.5 inches, depth 255 feet, perforated 115-255 feet. Altitude of land-surface datum 297 feet. Water-level records available 1993 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 09, 1993	45.22 S	OCT 1[illegible], 1995	45.56 S	OCT 20, 1997	45.96 S	OCT 25, 1999	46.37 S
OCT 21	45.31 S	MAR 1[illegible], 1996	45.61 S	MAR 23, 1998	45.97 S	MAR 29, 2000	46.54 S
OCT 17, 1994	4[illegible].51 S	OCT 16	45.76 S	OCT 27	46.02 S	OCT 23	46.70 S
MAR 29, 1995	45.48 S	MAR 17, 1997	45.84 S	MAR 22, 1999	46.12 S	MAR 27, 2001	46.80 V

HIGHEST 45.22 SEP 09, 1993
LOWEST 46.80 MAR 27, 2001

SITE ID 324422116000301
LOCAL NUMBER 016S009E36D002S
In Ocotillo, about 300 feet east of Shell Canyon Road. Drilled domestic well. Diameter 8 inches, depth 200 feet, perforated 150-200 feet. Altitude of land-surface datum 435 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 26, 1975	157.90	SEP 25, 1980	159.58 SR	OCT 30, 1985	160.56 S	OCT 23, 1990	161.30 S
JAN 08, 1976	158.16	MAY 01, 1981	159.73 SR	MAR 27, 1986	160.37 S	APR 02, 1991	161.29 S
OCT 14	158.46	NOV 05	160.10 S	OCT 23	160.68 S	OCT 07	161.36 S
APR 28, 1977	158.57	MAR 09, 1982	160.10 S	APR 01, 1987	160.50 S	MAR 17, 1992	161.35 S
OCT 03	158.87	OCT 06	160.36 S	OCT 22	160.78 S	OCT 27	161.57 S
APR 27, 1978	158.79	APR 05, 1983	160.04 S	MAR 16, 1988	160.70 S	APR 12, 1993	161.56 S
OCT 06	159.15	OCT 25	160.49 S	OCT 17	160.92 S	OCT 19	161.74 S
MAR 22, 1979	159.10	APR 20, 1984	160.32 S	MAR 15, 1989	160.94 S	MAR 14, 1994	161.71 S
SEP 13	159.35 S	OCT 24	160.31 S	OCT 30	161.15 S	OCT 17	161.84 S
MAY 01, 1980	159.30 S	APR 24, 1985	160.23 S	APR 10, 1990	161.19 S	MAR 29, 1995	SO

SITE ID 32 16000301 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 24, 1995	162.02 S	MAR 17, 1997	161.90 V	MAR 22, 1999	162.24 V	MAR 27, 2001	162.87 V
OCT 16	161.85 V	OCT 20	162.05 V	OCT 25	162.33 V		
MAR 19, 1996	161.75 V	MAR 23, 1998	162.06 V	MAR 29, 2000	162.54 V		
OCT 16	162.02 V	OCT 27	162.09 V	OCT 23	162.57 V		

HIGHEST 157.90 JUN 26, 1975
LOWEST 162.87 MAR 27, 2001

SITE ID 324424116012301
LOCAL NUMBER 016S009E34B001S
West of Ocotillo. Drilled domestic well. Diameter 2 inches, depth reported 410 feet. Altitude of land-surface datum 580 feet. Water-level records available since 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 24, 1998	324.57 V	OCT 25, 1999	324.66 V	OCT 23, 2000	321.40 V		
MAR 25, 1999	324.73 S	MAR 28, 2000	324.02 S	MAR 28, 2001	324.76 V		

HIGHEST 321.40 OCT 23, 2000
LOWEST 324.76 MAR 28, 2001

SITE ID 324426115593601
LOCAL NUMBER 016S009E25Q001S
In Ocotillo, north of Interstate 8, and east of Imperial Highway. Unused well. Diameter 8 inches, depth measured 128.5 feet in 1974. Altitude of land-surface datum 372 feet. Water-level records available 1974, 1976, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 01, 1974	104.24	OCT 25, 1983	107.18 S	MAR 30, 1987	106.04 S	OCT 23, 1990	107.51 S
30	104.30	APR 11, 1984	106.24 S	OCT 20	106.73 S	APR 02, 1991	107.11 S
JAN 08, 1976	104.38	OCT 24	106.08 S	MAR 14, 1988	106.25 S	OCT 07	107.27 S
DEC 17, 1981	106.89 S	APR 24, 1985	106.14 S	OCT 17	107.17 S	MAR 17, 1992	O
MAR 11, 1982	106.41 S	OCT 30	106.56 S	MAR 13, 1989	106.71 S	OCT 27	SO
OCT 06	107.20 S	MAR 25, 1986	105.92 S	OCT 30	107.33 S		
MAR 29, 1983	105.85 S	OCT 22	106.72 S	MAR 20, 1990	107.18 S		

HIGHEST 104.24 DEC 01, 1974
LOWEST 107.51 OCT 23, 1990

SITE ID 324430115555501
LOCAL NUMBER 016S010E27R001S
About 2 miles east of Coyote Wells. Augered observation water-table well. Diameter 2 inches, depth measured 103.76 feet in 1975, 103.70 feet in 1987, well point 102-104 feet. Altitude of land-surface datum 300 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 12, 1975	98.97	NOV 04, 1981	98.58 S	OCT 18, 1988	98.62 S	OCT 16, 1995	98.53 S
14	98.60	MAR 12, 1982	98.60 S	MAR 14, 1989	98.55 S	MAR 20, 1996	98.53 S
JUN 24	98.79	OCT 07	98.56 S	NOV 03	98.54 S	OCT 16	98.58 V
JAN 07, 1976	98.78	MAR 30, 1983	98.63 S	MAR 21, 1990	98.58 S	MAR 17, 1997	98.60 V
SEP 30	98.62	OCT 27	98.65 S	OCT 24	98.62 S	OCT 20	98.54 S
APR 27, 1977	98.63	APR 13, 1984	98.67 S	APR 05, 1991	98.58 S	MAR 23, 1998	98.58 S
OCT 04	98.66	OCT 23	98.66 S	OCT 09	98.59 S	OCT 27	98.44 S
APR 26, 1978	98.66	APR 12, 1985	98.67 S	APR 07, 1992	98.62 S	MAR 22, 1999	98.48 S
OCT 04	98.58	OCT 30	98.59 S	OCT 28	98.55 S	OCT 25	98.24 S
MAR 21, 1979	98.76	APR 04, 1986	98.58 S	APR 15, 1993	98.58 S	MAR 29, 2000	98.50 S
SEP 12	98.66 S	OCT 22	98.54 S	OCT 21	98.61 S	OCT 23	98.48 S
APR 30, 1980	98.66 S	MAR 31, 1987	98.53 S	MAR 15, 1994	98.69 S	MAR 27, 2001	98.49 S
SEP 24	98.57 S	OCT 21	98.64 S	OCT 26	99.00 S		
APR 29, 1981	98.60 S	MAR 15, 1988	98.48 S	MAR 29, 1995	98.56 S		

HIGHEST 98.24 OCT 25, 1999
LOWEST 99.00 OCT 26, 1994

SITE ID 324439115593401
LOCAL NUMBER 016S009E25K002S
In Ocotillo, east of Imperial Highway. Drilled commercial water-table well. Diameter 10 inches, depth 372 feet, perforated 132-192, 242-372 feet. Altitude of land-surface datum 364 feet. Records available 1972, 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 24, 1972	83.00 R	SEP 25, 1980	145.30 SP	OCT 23, 1986	94.24 SR	APR 15, 1993	P
JUN 26, 1975	129.50 P	APR 29, 1981	95.04 SR	24	94.03 S	OCT 20	95.08 S
JAN 08, 1976	99.70	NOV 06	95.56 S	MAR 31, 1987	93.78 S	MAR 23, 1994	94.85 S
OCT 15	111.57 P	MAR 13, 1982	95.11 S	OCT 23	94.06 S	OCT 17	P
APR 28, 1977	104.10 R	OCT 07	96.84 SR	MAR 18, 1988	93.94 S	MAR 30, 1995	94.32 S
OCT 03	145.[illegible] P	APR 01, 1983	95.10 S	OCT 19	94.40 S	OCT 16	P
APR 26, 1978	98.05 R	OCT 26	95.90 SR	MAR 17, 1989	94.23 S	MAR 20, 1996	94.61 S
OCT 06	144.07 P	27	96.22 SR	OCT 31	94.47 S	MAR 19, 1997	96.59 SR
MAR 14, 1979	101.47	APR 1[illegible], 1984	94.04 S	APR 11, 1990	94.46 S	OCT 20	P
SEP 13	105.80 SR	OCT 24	93.48 S	OCT 24	94.59 S	MAR 23, 1998	P
MAR 12, 1980	93.22 S	APR 24, 1985	93.73 S	APR 02, 1991	94.47 S	OCT 28	P
20	144.85 SP	OCT 31	93.86 S	OCT 08	94.57 S	MAR 24, 1999	P
APR 18	147.30 SP	MAR 27, 1986	93.63 SR	APR 07, 1992	94.46 S	OCT 25	P
MAY 02	93.93 S	APR 04	93.54 S	OCT 28	95.07 S	MAR 29, 2000	P

HIGHEST 83.00 AUG 24, 1972
LOWEST 101.47 MAR 14, 1979

SITE ID 3[illegible] 115574301
LOCAL NUMBER 016S010E29L001S
About 2 miles east of Ocotillo on Highway S80. Augered observation water-table well. Diameter 2 inches, depth measured 48.45 feet in 1976, sand point 44.5-48 feet. Altitude of land-surface datum 280 feet. Records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 09, 1976	23.32	SEP 13, 1979	25.07 S	MAR 31, 1983	26.29 S	APR 03, 1986	28.60 S
17	23.34	MAY 01, 1980	25.27 S	SEP 22	27.25 S	OCT 24	29.19 S
APR 29, 1977	23.64	SEP 25	25.80 S	OCT 26	27.33 S	APR 03, 1987	29.22 S
OCT 03	23.98	APR 30, 1981	26.03 S	APR 20, 1984	27.49 S	OCT 22	29.80 S
APR 27, 1978	24.08	NOV 05	26.63 S	OCT 24	27.94 S	MAR 17, 1988	29.68 S
OCT 05	24.59	MAR 10, 1982	26.50 S	APR 25, 1985	28.04 S		
MAR 15, 1979	24.37	OCT 08	27.05 S	OCT 30	28.56 S		

HIGHEST 23.32 NOV 09, 1976
LOWEST 29.80 OCT 22, 1987

SITE ID 324440115593301
LOCAL NUMBER 016S009E25K001S
In Ocotillo, east of Imperial Highway. Drilled unused water-table well. Diameter 10 inches, depth 256 ft in 1958 but bottom 120 feet separated during earthquake. Altitude of land-surface datum 362 feet. Records available 1958, 1974-80.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 25, 1958	84.00 R	APR 28, 1977	89.43	SEP 13, 1979	89.95 SS	SEP 25, 1980	90.46 SS
DEC 11, 1974	89.09 S	OCT 03	89.79 S	MAR 12, 1980	89.46 S	APR 29, 1981	O
JUN 25, 1975	88.84	APR 26, 1978	89.63	20	89.84 S	JUN 01	N
JAN 08, 1976	88.80	OCT 06	90.02 S	APR 18	90.05 SS		
OCT 15	89.06 S	MAR 14, 1979	89.57	MAY 02	89.78 S		

HIGHEST 84.00 NOV 25, 1958
LOWEST 89.84 MAR 20, 1980

SITE ID 324442115512201
LOCAL NUMBER 016S011E29L001S
About 3.75 miles southwest of Interstate 8 and Dunaway. Drilled unused water-table well. Diameter 2 inches, depth 114 feet, sand point 112-114 feet. Altitude of land-surface datum 210 feet . Records available 1975-80.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 01, 1975	111.0[illegible] S	MAY 09, 1975	110.49	SEP 30, 1976	D	OCT 05, 1978	D
06	111.3[illegible]	14	110.50	APR 27, 1977	D	MAR 21, 1979	D
07	111.70	JUN 24	110.89	OCT 04	D	SEP 12	D
08	110.48	JAN 07, 1976	112.65	APR 25, 1978	D	APR 30, 1980	D

SITE ID 324442115512201 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 01, 1980	N						

HIGHEST 110.48 MAY 08, 1975
LOWEST 112.65 JAN 07, 1976

SITE ID 324444114385901
LOCAL NUMBER 016S022E21R001S
About 1 mile northwest of Winterhaven, and 1 mile north of Colorado River, northwest of Yuma, Arizona. Drilled observation water-table well. Diameter 1.25 inches, depth measured 122.5 feet in 1989. Altitude of land-surface datum 128 feet. Water-level records available 1964, 1967, 1975-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1964	9.57	OCT 20, 1978	9.57 S	FEB 03, 1982	10.97 S	MAR 15, 1994	8.73 S
APR 06, 1967	10.5	JAN 11, 1979	12.26	SEP 30	9.80 S	OCT 27	6.77 S
JUL 18, 1975	11.02 S	12	12.29 S	SEP 20, 1983	4.66 S	MAR 31, 1995	8.05 S
NOV 11	10.01 S	APR 10	11.05 S	SEP 18, 1984	6.96 S	OCT 17	7.82 S
JAN 20, 1976	10.81 S	JUL 09	9.60 S	MAR 01, 1985	6.90 S	MAR 20, 1996	8.53 S
APR 19	10.10 S	OCT 09	10.26 S	JUN 14	8.11 S	OCT 16	8.59 S
JUL 19	10.80 S	JAN 07, 1980	10.70 S	NOV 01, 1989	8.03 S	MAR 18, 1997	8.09 S
OCT 18	10.14 S	APR 02	9.20 S	MAR 21, 1990	10.00 S	OCT 21	7.70 S
JAN 14, 1977	11.25 S	JUN 02	7.92 S	OCT 23	7.28 S	MAR 24, 1998	6.24 S
APR 15	11.72 S	JUL 23	6.99 S	MAR 14, 1991	10.36 S	OCT 28	8.01 S
JUL 21	10.71 S	SEP 05	7.48 S	OCT 02	10.76 S	MAR 16, 1999	8.68 V
OCT 06	11.39 S	DEC 04	8.53 S	APR 08, 1992	10.35 S	OCT 25	8.87 V
JAN 05, 1978	12.67 S	FEB 10, 1981	9.49 S	SEP 22	10.09 S	MAR 29, 2000	8.87 V
MAY 03	11.75 S	MAR 10	8.88 S	APR 13, 1993	6.64 S	OCT 24	7.91 V
JUL 31	11.52 S	AUG 26	9.13 S	OCT 20	6.79 S	MAR 27, 2001	8.74 V

HIGHEST 4.66 SEP 20, 1983
LOWEST 12.67 JAN 05, 1978

SITE ID 324445115595901
LOCAL NUMBER 016S009E25M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
NOV 01, 1974	140.00 S

SITE ID 3[illegible]116003801
LOCAL NUMBER 016S009E26F001S
In Ocotillo. Drilled domestic well. Diameter 8 inches, depth 300 feet, perforated 200-300 feet. Altitude of land-surface datum 430 feet. Water-level records available since 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 1[illegible], 1998	195.01 V	OCT 25, 1999	195.02 V	OCT 23, 2000	195.28 V		
MAR 22, 1999	194.97 V	MAR 29, 2000	195.16 V	MAR 27, 2001	195.23 V		

HIGHEST 194.97 MAR 22, 1999
LOWEST 195.28 OCT 23, 2000

SITE ID 324458115570301
LOCAL NUMBER 016S010E29H001S
About 2.6 miles northeast of Coyote Wells on Highway S80. Augered observation water-table well. Diameter 2 inches, depth measured 38.7 feet in 1975, 36.1 feet in 1985, 35.5 feet in 1991, well point 36.7-38.7 feet. Altitude of land-surface datum 250 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 13, 1975	22.20	NOV 05, 1981	22.53 S	OCT 31, 1989	25.33 S	MAR 19, 1996	26.68 V
JUN 25	22.03	MAR 12, 1982	22.55 S	MAR 20, 1990	25.39 S	OCT 16	26.83 S
DEC 09	22.02	OCT 08	22.74 S	OCT 23	25.58 S	MAR 17, 1997	26.89 S
OCT 13, 1976	22.04	OCT 24, 1984	22.99 S	APR 04, 1991	25.64 S	OCT 20	26.96 S
APR 26, 1977	21.90	APR 26, 1985	23.50 S	OCT 08	21.97 S	MAR 23, 1998	26.98 S
OCT 03	21.76	OCT 30	23.43 S	MAR 17, 1992	23.68 S	OCT 27	27.04 S
APR 26, 1978	21.53	MAR 25, 1986	23.43 S	OCT 28	24.94 S	MAR 22, 1999	26.94 S
OCT 05	21.66	OCT 24	23.93 S	APR 12, 1993	25.32 S	OCT 25	27.02 S
MAR 14, 1979	21.55	MAR 30, 1987	24.00 S	OCT 20	25.72 S	MAR 28, 2000	27.15 S
SEP 13	21.96 S	OCT 22	24.52 S	MAR 14, 1994	25.94 S	OCT 23	27.17 S
APR 30, 1980	22.00 S	MAR 14, 1988	24.52 S	OCT 17	26.23 S	MAR 27, 2001	26.95 S
SEP 25	22.24 S	OCT 18	24.94 S	MAR 29, 1995	26.35 S		
MAY 01, 1981	22.34 S	MAR 14, 1989	25.02 S	OCT 16	26.55 S		

HIGHEST 21.53 APR 26, 1978
LOWEST 27.17 OCT 23, 2000

SITE ID 324500115492101
LOCAL NUMBER 016S011E27F001S
About 3 miles southeast of Plaster City and 1.8 miles southwest of Interstate 8 and Dunaway Road. Augered observation well. Diameter 2 inches, depth measured 134.5 feet in 1975, well point 132.5-134.5 feet. Altitude of land-surface datum 100 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 06, 1975	61.35	SEP 24, 1980	98.90 S	MAR 14, 1988	99.04 S	OCT 16, 1995	99.78 V
07	92.95	APR 29, 1981	98.90 S	OCT 18	99.38 S	MAR 19, 1996	99.91 V
08	98.80	NOV 04	98.89 S	MAR 14, 1989	99.29 S	OCT 16	99.87 V
09	98.89	MAR 12, 1982	98.87 S	OCT 31	99.34 S	MAR 17, 1997	100.04 S
14	98.90	OCT 08	99.16 S	MAR 21, 1990	99.49 S	OCT 20	99.96 S
JUN 24	98.90	MAR 30, 1983	99.00 S	OCT 24	99.59 S	MAR 23, 1998	99.90 S
JAN 07, 1976	99.02	OCT 27	98.90 S	APR 05, 1991	99.57 S	OCT 27	99.91 S
SEP 30	99.01	APR 12, 1984	98.94 S	OCT 09	99.68 S	MAR 22, 1999	99.75 S
APR 27, 1977	98.94	OCT 23	99.00 S	MAR 16, 1992	99.62 S	OCT 25	99.90 S
OCT 04	99.00	APR 12, 1985	99.02 S	OCT 28	99.61 S	MAR 29, 2000	100.05 S
APR 25, 1978	97.95	OCT 29	98.92 S	APR 15, 1993	99.72 S	OCT 23	100.12 S
OCT 05	99.09	APR 04, 1986	98.95 S	OCT 21	99.79 S	MAR 27, 2001	99.95 S
MAR 31, 1979	99.09	OCT 22	98.89 S	MAR 15, 1994	99.75 S		
SEP 1[illegible]	99.05 S	MAR 31, 1987	98.85 S	OCT 17	99.96 S		
APR 30, 1980	98.98 S	OCT 21	98.98 S	MAR 29, 1995	99.83 S		

HIGHEST 61.35 MAY 06, 1975
LOWEST 100.12 OCT 23, 2000

SITE ID 324501114455101
LOCAL NUMBER 016S021E21L001S
In Felicity, 0.1 mile north of Center of the World Drive and 0.6 mile west of Sidewinder Road. Diameter 8 inches, depth reported 305 feet, perforated 200-302 feet. Altitude of land-surface datum 280 feet. Water-level records available since 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 2 . 199	141.24 S	JAN 15, 1998	142.3 TR	OCT 26, 1999	141.24 S	OCT 25, 2000	141.32 S
JAN 15, 1998	142.30 TR	MAR 26, 1999	141.37 S	MAR 30, 2000	140.87 S	MAR 28, 2001	139.92 S

HIGHEST 139.92 MAR 28, 2001
LOWEST 141.37 MAR 26, 1999

SITE ID 32 115591501
LOCAL NUMBER 016S009E24R001S
About 1 mile north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth drilled 105 feet, well point 98-101.5 feet. Altitude of land-surface datum 335 feet. Records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 10, 1976	79.70 Z	MAY 01, 1980	58.89 S	OCT 25, 1983	60.07 S	APR 02, 1987	59.97 S
17	58.00	SEP 25	59.36 S	APR 13, 1984	59.77 S	OCT 22	60.17 S
APR 28, 1977	58.17	APR 30, 1981	59.28 S	20	59.83 S	MAR 17, 1988	60.10 S
OCT 03	58.54	NOV 05	59.58 S	OCT 24	59.71 S	OCT 17	60.38 S
APR 26, 1978	58.19	MAR 11, 1982	59.67 S	APR 26, 1985	59.75 S	MAR 15, 1989	60.33 S
OCT 05	58.74	OCT 06	60.02 S	OCT 30	59.89 S		
MAR 14, 1979	58.52	MAR 31, 1983	59.56 S	APR 03, 1986	59.82 S		
SEP 13	59.00 S	SEP 22	60.23 S	OCT 22	60.04 S		

HIGHEST 58.00 NOV 17, 1976
LOWEST 60.38 OCT 17, 1988

SITE ID 324558115595201
LOCAL NUMBER 016S009E24D001S
About 2 miles north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth 149 feet, well point 145.5-149 feet. Altitude of land-surface datum 382 feet. Water-level records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 10, 1976	131	MAR 31, 1983	104.97 S	OCT 30, 1989	106.13 S	MAR 19, 1996	107.26 V
APR 28, 1977	103.86	OCT 25	105.10 S	APR 10, 1990	106.22 S	OCT 16	107.32 S
OCT 03	103.93	APR 20, 1984	105.20 S	OCT 23	106.32 S	MAR 17, 1997	107.36 S
APR 27, 1978	104.07	OCT 24	105.27 S	APR 02, 1991	106.39 S	OCT 20	108.48 S
OCT 05	104.16	APR 26, 1985	105.36 S	OCT 07	106.47 S	MAR 23, 1998	107.49 S
MAR 14, 1979	104.20	OCT 29	105.44 S	APR 06, 1992	106.56 S	30	107.59 V
SEP 13	104.28 S	APR 02, 1986	105.52 S	OCT 27	106.67 S	OCT 27	107.60 S
MAY 01, 1980	104.40 S	OCT 23	105.62 S	JAN 12, 1993	106.42 S	MAR 22, 1999	107.69 V
SEP 25	104.48 S	APR 03, 1987	105.67 S	OCT 19	106.80 S	OCT 25	107.68 S
APR 30, 1981	104.58 S	OCT 22	105.81 S	MAR 22, 1994	106.90 S	MAR 27, 2000	107.80 S
NOV 05	104.71 S	MAR 16, 1988	105.86 S	OCT 17	106.99 S	OCT 23	107.90 S
MAR 10, 1982	104.77 S	OCT 17	105.97 S	MAR 29, 1995	107.03 S	MAR 22, 2001	107.89 V
OCT 06	104.89 S	MAR 16, 1989	105.99 S	OCT 16	107.13 S		

HIGHEST 103.86 APR 28, 1977
LOWEST 131 DEC 10, 1976

SITE ID 324603115480501
LOCAL NUMBER 016S011E23B001S
About 3.5 miles southeast of Plaster City. Augered observation well. Diameter 1.25 inches, depth measured 114.7 feet in 1974, original depth 123 feet, perforated 121-123 feet. Altitude of land-surface datum 30 feet. Water-level records available available 1964, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 19, 1964		MAR 12, 1982	39.56 S	OCT 18, 1988	40.09 S	MAR 29, 1995	45.78 S
OCT 30, 1974	39.35	OCT 08	39.59 S	MAR 14, 1989	40.06 S	OCT 16	48.62 S
SEP 30, 1976	39.38	MAR 30, 1983	39.67 S	OCT 31	40.39 S	MAR 19, 1996	50.40 V
APR 26, 1977	39.36	OCT 27	40.96 S	MAR 21, 1990	40.35 S	OCT 16	50.15 V
OCT 04	39.38	APR 12, 1984	39.67 S	OCT 24	40.48 S	MAR 17, 1997	43.72 S
APR 25, 1978	39.34	OCT 23	39.88 S	APR 05, 1991	40.93 S	OCT 20	48.54 S
OCT 05	39.45	APR 11, 1985	39.98 S	OCT 09	40.83 S	MAR 23, 1998	49.94 S
MAR 21, 1979	40.03	OCT 29	40.36 S	MAR 16, 1992	41.06 S	OCT 27	50.51 S
SEP 12	39.67 S	APR 04, 1986	40.43 S	OCT 28	46.85 S	MAR 22, 1999	50.32 S
APR 30, 1980	39.65 S	OCT 22	40.32 S	APR 15, 1993	46.29 S	OCT 25	47.25 S
SEP 24	39.55 S	MAR 31, 1987	40.44 S	OCT 21	50.11 S	MAR 29, 2000	48.88 S
APR 30, 1981	39.50 S	OCT 20	40.81 S	MAR 15, 1994	50.44 S	OCT 23	50.73 S
NOV 04	39.62 S	MAR 14, 1988	40.01 S	OCT 17	45.12 S	MAR 27, 2001	50.82 S

HIGHEST 39.34 APR 25, 1978
LOWEST 50.82 MAR 27, 2001

SITE ID 324608115593501
LOCAL NUMBER 016S009E24B001S
About 2 miles north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth measured 128.4 feet in 1992, original depth 128.8 feet, well point 125-128.5 feet. Altitude of land-surface datum 385 feet. Water-level records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 10, 1976	105.35	OCT 06, 1982	106.03 S	MAR 15, 1989	106.85 S	MAR 29, 1995	107.68 S
17	105.34	MAR 29, 1983	106.10 S	OCT 30	106.98 S	OCT 16	107.75 S
APR 28, 1977	105.40	OCT 25	106.16 S	APR 10, 1990	107.07 S	MAR 19, 1996	107.82 V
OCT 03	105.44	APR 18, 1984	106.22 S	OCT 23	107.11 S	OCT 16	107.92 S
APR 27, 1978	105.49	OCT 24	106.29 S	APR 02, 1991	107.17 S	MAR 18, 1997	108.05 V
OCT 05	105.59	APR 26, 1985	106.36 S	OCT 07	107.22 S	OCT 20	108.06 S
MAR 15, 1979	105.62	OCT 29	106.42 S	APR 06, 1992	107.32 S	MAR 30, 1998	108.14 V
SEP 13	105.40 S	APR 02, 1986	106.51 S	OCT 27	107.38 S	OCT 27	108.15 S
MAY 01, 1980	105.74 S	OCT 23	106.58 S	APR 12, 1993	107.72 S	MAR 22, 1999	108.27 V
SEP 25	105.78 S	APR 03, 1987	106.64 S	OCT 19	107.47 S	OCT 25	108.25 S
APR 30, 1981	105.84 S	OCT 22	106.73 S	MAR 14, 1994	107.73 S	MAR 27, 2000	109.39 S
NOV 05	105.90 S	MAR 16, 1988	106.78 S	22	107.55 S	OCT 23	108.44 S
MAR 10, 1982	105.95 S	OCT 17	106.86 S	OCT 17	107.65 S	MAR 22, 2001	108.44 V

HIGHEST 105.34 NOV 17, 1976
LOWEST 109.39 MAR 27, 2000

SITE ID 32[illegible]115583901
LOCAL NUMBER 016S010E18P001S
About 2.5 miles northeast of Ocotillo and 2 miles northwest of Coyote Wells. Drilled unused water-table well. Diameter 6.6 inches, depth drilled 300 feet, 196.2 feet measured in 1975, 70 feet measured in 1985. Altitude of land-surface datum 340 feet. Records available 1975-85.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 01, 1975	70.00 S	MAR 14, 1979	72.23	MAR 29, 1983	71.29 S	MAR 30, 1987	D
04	69.66	SEP 13	71.84 S	OCT 25	71.30 S	OCT 22	SD
05	70.50	APR 30, 1980	71.59 S	APR 18, 1984	71.24 S	MAR 16, 1988	SD
MAY 15	70.30	SEP 25	O	OCT 24	71.18 S	OCT 17	SD
OCT 15, 1976	69.57	APR 30, 1981	71.49 S	APR 11, 1985	D	MAR 15, 1989	SD
APR 28, 1977	69.65	NOV 05	71.32 S	OCT 29	D		
OCT 03	69.62	MAR 11, 1982	71.24 S	APR 02, 1986	D		
OCT 06, 1978	73.24	OCT 06	71.32 S	OCT 23	D		

HIGHEST 69.57 OCT 15, 1976
LOWEST 73.24 OCT 06, 1978

SITE ID 324614114432301
LOCAL NUMBER 016S021E14B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 02, 1979	237.95 R	JUN 24, 1994	230.45 R	JUL 25, 1996	229.16 R	DEC 07, 1998	227.61 V
04	237.69 R	JUL 19	230.53 R	OCT 17, 1997	217.23 V		
31	237.84 R	JUL 19, 1996	229.31 R	MAR 26, 1998	227.37 V		

HIGHEST 217.23 OCT 17, 1997
LOWEST 237.95 DEC 02, 1979

SITE ID 324620115544301
LOCAL NUMBER 016S010E14N001S
About 5 miles northeast of Coyote Wells and about 1.2 miles northeast of Painted Gorge Road and Highway S80. Augered observation well. Diameter 2 inches, depth measured 118.5 feet in 1975, well point 120-122 feet. Altitude of land-surface datum 225 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 13, 1975	9[illegible].79	OCT 05, 1978	95.45	MAR 12, 1982	95.20 S	OCT 30, 1985	95.35 S
JUN 23	95.[illegible]	MAR 14, 1979	95.44	OCT 08	95.38 S	MAR 25, 1986	95.33 S
DEC 08	92.37	SEP 13	95.38 S	MAR 30, 1983	95.44 S	OCT 24	95.36 S
OCT 13, 1976	95.45	APR 30, 1980	95.33 S	OCT 27	95.39 S	MAR 30, 1987	95.34 S
APR 26, 1977	95.28	SEP 25	95.34 S	APR 12, 1984	95.35 S	OCT 20	95.34 S
OCT 03	95.40	MAY 01, 1981	95.36 S	OCT 24	95.42 S	MAR 15, 1988	95.30 S
APR 25, 1978	95.34	NOV 05	95.27 S	APR 26, 1985	95.19 S	OCT 18	95.33 S

SITE ID 324620115544301 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 13, 1989	95.40 S						

HIGHEST 92.37 DEC 08, 1975
LOWEST 96.78 MAY 13, 1975

SITE ID 324641114333501
LOCAL NUMBER 016S023E09N001S
About 2 miles west of the Arizona boundary, 1 mile south of Bard, east of Avenue D, and north of 5th Street. Drilled irrigation water-table well. Diameter 20 inches, depth 235 feet, perforated 124-150, 154-225 feet. Altitude of land-surface datum 137 feet. Water-level records available 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP [illegible], 1951	11.[illegible] R	MAR [illegible], 1990	10.47 S	MAR 15, 1994	8.64 S	MAR 24, 1998	P
MAY [illegible], 1962	P	OCT [illegible]	P	OCT 27	10.68 S	OCT 28	P
OCT [illegible]	1[illegible].50 S	MAR 14, 1991	11.76 S	MAR 30, 1995	9.56 S	MAR 16, 1999	P
01	10.50	OCT 02	P	OCT 17	P	OCT 25	11.02 S
APR 2[illegible], 1963	P	APR 08, 1992	10.39 S	MAR 20, 1996	9.10 S	MAR 29, 2000	9.66 S
JUN 03, 1967	P	AUG 26	10.75 S	OCT 16	P	OCT 24	12.18 S
15	P	APR 13, 1993	9.72 S	MAR 18, 1997	9.61 S	MAR 27, 2001	10.66 S
NOV 01, 1989	11.69 S	OCT 20	P	OCT 21	10.96 S		

HIGHEST 8.64 MAR 15, 1994
LOWEST 12.18 OCT 24, 2000

SITE ID 324656114345001
LOCAL NUMBER 016S023E08E001S
About 3 miles west of Arizona boundary, 1.5 miles west of Bard, near intersection of Ross and Fisher Roads. Drilled unused water-table well. Diameter 8 inches, depth measured 422 feet in 1989, perforated 110-141 feet. Altitude of land-surface datum 130 feet. Water-level records available 1968, 1979-85, 1989-91. Well destroyed in 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 26, 1968	7.74	AUG 26, 1981	7.79	SEP 18, 1984	7.12 S	MAR 21, 1990	7.26 S
JAN 11, 1979	9.15	FEB 03, 1982	8.07 S	MAR 01, 1985	6.55 S	OCT 23	6.65 S
JUL 23, 1980	7.49	SEP 30	6.99 S	JUN 14	6.12 S	MAR 14, 1991	7.02 S
FEB 10, 1981	7.67	SEP 19, 1983	6.53 S	NOV 01, 1989	6.48 S	OCT 02	W

HIGHEST 6.12 JUN 14, 1985
LOWEST 9.15 JAN 11, 1979

SITE ID 3 115565201
LOCAL NUMBER 016S010E16D001S
About 1.5 miles northeast of Coyote Wells. Unused well. Diameter 8 inches, depth reported 105 feet. Altitude of land-surface datum 240 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 23, 1975	46.25	MAR 21, 1979	40.46	OCT 26, 1983	42.18 S	OCT 24, 1986	43.45 S
OCT 13, 1976	40.36	SEP 13	40.88 S	APR 11, 1984	42.24 S	MAR 30, 1987	43.56 S
APR 26, 1977	39.60	APR 30, 1980	40.82 S	OCT 24	42.60 S	OCT 20	43.6 S
OCT 03	39.79	SEP 25	40.74 S	APR 11, 1985	42.76 S	MAR 14, 1988	43.67 S
APR 26, 1978	39.80	MAY 01, 1981	O	OCT 30	42.91 S	OCT 17	43.96 S
OCT 05	40.15	APR 06, 1983	42.26 S	MAR 25, 1986	43.03 S		

HIGHEST 39.60 APR 26, 1977
LOWEST 46.25 JUN 23, 1975

SITE ID 324851115505901
LOCAL NUMBER 015S011E32R001S
About 1.5 miles north of Plaster City. Augered observation water-table well. Diameter 1.25 inches, depth 152 feet, depth measured 145.8 feet in 1974, perforated 138-140 feet. Altitude of land-surface datum 65 feet. Water-level records available 1964, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 19, 1964		MAR 12, 1982	51.05 S	OCT 17, 1988	48.12 S	MAR 29, 1995	46.47 S
OCT 29, 1974	52.09	OCT 06	51.06 S	MAR 13, 1989	47.94 S	OCT 16	46.22 S
OCT 01, 1976	52.07	MAR 30, 1983	50.82 S	OCT 31	47.85 S	MAR 19, 1996	46.19 V
APR 26, 1977	51.96	OCT 26	50.34 S	MAR 20, 1990	47.78 S	OCT 16	46.00 V
OCT 04	51.95	APR 13, 1984	49.90 S	OCT 23	47.74 S	MAR 17, 1997	46.02 V
APR 25, 1978	51.82	OCT 23	49.64 S	APR 04, 1991	47.74 S	OCT 20	45.87 V
OCT 05	51.75	APR 11, 1985	49.40 S	OCT 08	47.50 S	MAR 23, 1998	45.78 V
MAR 15, 1979	51.57	OCT 29	49.21 S	MAR 17, 1992	47.39 S	OCT 27	45.80 V
SEP 12	51.53 S	APR 03, 1986	49.03 S	OCT 28	47.27 S	MAR 22, 1999	45.64 V
APR 30, 1980	51.41 S	OCT 24	48.87 S	APR 12, 1993	46.99 S	OCT 25	45.68 V
SEP 24	51.37 S	MAR 30, 1987	48.34 S	OCT 20	46.85 S	MAR 28, 2000	45.52 V
APR 30, 1981	51.26 S	OCT 20	48.39 S	MAR 14, 1994	46.74 S	OCT 23	45.63 V
NOV 04	51.12 S	MAR 15, 1988	48.33 S	OCT 17	46.53 S	MAR 27, 2001	45.55 V

HIGHEST 45.52 MAR 28, 2000
LOWEST 52.09 OCT 29, 1974

SITE ID 325114115335201
LOCAL NUMBER 015S014E18C001S
In Imperial, east of Imperial Avenue, and about 0.5 mile north of Barioni Boulevard. Drilled unused water-table well. Diameter 8 inches, depth 500 feet in 1958, 379.02 feet in 1978, 378.5 feet in 1989, perforated 140-440 feet. Altitude of land-surface datum -64.97 feet. Water-level records available 1958, 1961, 1978-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 25, 1958	6.30	FEB 06, 1980	6.45	JUN 22, 1982	7.78	JAN 17, 1985	7.70 S
MAY 09	6.50	MAR 06	6.60	JUL 23	7.85	FEB 19	7.66
FEB 16, 1961	6.29	APR 02	6.47	AUG 24	7.70	MAR 19	7.63
JUN 16	6.29	29	6.38	SEP 20	7.54	APR 19	7.59
FEB 13, 1978	7.57	MAY 27	6.60	OCT 20	7.50	MAY 19	7.56
MAR 14	7.62	JUN 22	6.76	NOV 22	7.48	JUN 20	7.68
APR 12	7.48	JUL 24	6.94	DEC 22	7.33	JUL 24	7.77 S
20	7.48	AUG 21	7.03	JAN 18, 1983	7.44 S	SEP 30	7.73 S
MAY 08	7.35	SEP 19	6.93	FEB 17	7.46 S	NOV 02, 1989	8.20 S
JUN 06	7.37	OCT 17	6.90	MAR 15	7.47 S	MAR 20, 1990	8.24 S
JUL 05	7.50	NOV 19	6.99	APR 20	7.37 S	OCT 31	7.99 S
AUG 02	7.54	DEC 17	7.09	MAY 19	7.36 S	MAR 13, 1991	8.01 S
29	7.54	JAN 16, 1981	7.19	JUN 16	7.40 S	OCT 02	7.69 S
SEP 26	7.56	FEB 12	7.32	22	7.42 S	MAR 16, 1992	8.14 S
OCT 24	7.57	MAR 10	7.32	JUL 19	7.52 S	SEP 22	8.15 S
NOV 21	7.59	APR 07	7.24	AUG 17	7.49 S	APR 12, 1993	8.07 S
DEC 19	7.67	29	7.27	SEP 15	7.50 S	OCT 19	7.92 S
JAN 17, 1979	7.74	MAY 28	7.19	OCT 14	7.45	MAR 14, 1994	8.11 S
FEB 08	7.93	JUN 22	7.29	NOV 09	7.51	OCT 26	7.49 S
MAR 07	7.96	JUL 22	7.38	DEC 16	7.60	MAR 30, 1995	7.83 S
APR 06	7.78	AUG 17	7.31	JAN 09, 1984	7.70	OCT 17	7.76 S
MAY 03	7.63	SEP 17	7.32	FEB 07	7.61	MAR 20, 1996	7.99 S
JUN 01	7.64	OCT 14	7.28	MAR 06	7.56	OCT 17	7.81 S
12	7.69	NOV 12	7.44	APR 03	7.50 S	MAR 18, 1997	8.01 S
27	7.69	DEC 07	7.51	MAY 01	7.36 S	OCT 21	7.69 S
JUL 24	7.65	JAN 07, 1982	7.64	29	7.41 S	MAR 23, 1998	7.88 S
AUG 23	7.70	FEB 03	7.66	JUN 27	7.50 S	OCT 27	7.81 S
SEP 19	7.60	04	7.64	JUL 19	7.59 S	MAR 23, 1999	8.13 S
OCT 16	2.61	MAR 05	7.61	AUG 16	7.58 S	OCT 25	8.00 S
22	4.15	19	7.57	SEP 14	7.51 S	MAR 29, 2000	8.02 S
NOV [illegible]	[illegible]	31	7.62	OCT 16	7.45 S	OCT 25	8.24 S
DEC 13	5.99	APR 28	7.52	NOV 20	7.48 S	MAR 27, 2001	8.52 S
JAN 10, 1980	6.30	MAY 2[illegible]	7.57	DEC 18	7.62 S		

HIGHEST 2.61 OCT 16, 1979
LOWEST 8.52 MAR 27, 2001

SITE ID 3[illegible]15042601
LOCAL NUMBER 013S018E33A001S
In Glamis, 0.2 mile north of Highway 78. Drilled unused water-table well. Diameter 6 inches, depth 681 feet, perforated 520-680 ft. Altitude of land-surface datum 335 feet. Water-level records available 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1972	227.	R	FEB 28, 1985	230.87	S	SEP 23, 1993	223.93	V	OCT 21, 1997	224.88	V
JAN 10, 1979	196.11	S	JUN 13	230.54	S	OCT 21	224.06	V	MAR 24, 1998	224.41	V
JUL 23, 1980	194.50	S	NOV 02, 1989	226.69	S	MAR 15, 1994	223.93	V	24	224.00	V
FEB 11, 1981	198.90	S	APR 20, 1990	221.23	S	OCT 17	224.08	V	OCT 28	224.61	V
AUG 26	193.45	S	OCT 31	227.10	S	MAR 30, 1995	224.11	V	MAR 23, 1999	224.51	V
FEB 02, 1982	193.57	S	APR 05, 1991	227.30	V	OCT 17	223.83	V	OCT 26	224.73	V
JAN 26, 1983	194.49	S	OCT 08	227.33	V	MAR 20, 1996	224.17	V	MAR 30, 2000	225.40	V
SEP 21	222.72	SR	MAR 17, 1992	227.22	S	OCT 17	224.15	V	OCT 24	225.31	V
SEP 17, 1984	227.84	SR	SEP 23	220.1	V	MAR 18, 1997	225.09	V	MAR 28, 2001	224.73	V

HIGHEST 193.45 AUG 26, 1981
LOWEST 230.87 FEB 28, 1985

SITE ID 330701116003501
LOCAL NUMBER 012S009E23D001S
About 23 miles northwest of Westmorland, 0.5 mile south of Highway 78, and about 0.75 mile north of San Felipe Creek. Drilled unused water-table well in alluvium. Diameter 14 inches, depth 580 feet. Altitude of land-surface datum -15 feet. Water-level records available 1953-58, 1961-68, 1978, 1980-85, 1989 to 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 15, 1953	64.17		MAR 15, 1962	135.61	P	NOV 08, 1968	114.81	S	OCT 02, 1991	171.66	S
FEB 24, 1954	65.79		NOV 01	141.08	P	DEC 27, 1978	142.58	S	MAR 16, 1992	168.21	S
NOV 10	64.56		MAR 14, 1963	142.55	P	JUL 22, 1980	168.50	S	SEP 24	165.74	S
MAR 06, 1955	129.00	P	OCT 31	142.88	P	FEB 11, 1981	159.91	S	APR 12, 1993	177.01	SS
NOV 29	64.87		MAR 20, 1964	87.87		FEB 04, 1982	167.27	SS	OCT 19	173.23	V
MAR 18, 1956	64.43		MAR 19, 1965	95.40		SEP 27, 1983	153.43	S	MAR 28, 1996	197.30	SS
NOV 16	133.52	P	AUG 12	110.05	S	SEP 17, 1984	152.11	S	OCT 08	204.34	S
MAR 15, 1957	65.00		OCT 25	108.26	S	MAR 20, 1985	162.03	SS	MAR 06, 1997	203.39	VS
NOV 27	70.18		MAR 04, 1966	109.27	S	JUN 14	156.16	S	OCT 09	205.83	V
MAR 15, 1958	66.76		OCT 26	109.65	S	NOV 03, 1989	166.37	ST	MAR 24, 1998	202.35	V
NOV 04	72.48		MAR 23, 1967	111.38	S	MAR 22, 1990	174.35	SS	OCT 28	210.40	V
MAR 09, 1961	79.08	R	OCT 24	112.29	S	OCT 24	179.19	SS	MAR 23, 1999	211.90	V
OCT 26	134.71	P	MAR 12, 1968	114.39	S	MAR 11, 1991	169.03	S	OCT 26		O

HIGHEST 64.17 DEC 15, 1953
LOWEST 211.90 MAR 23, 1999

SITE ID 330842115174701
LOCAL NUMBER 012S016E09A001S
About 14 miles east of Calipatria on Niland-Glamis Road. Drilled irrigation water-table well. Diameter 12 inches, depth 1,000 feet, perforated 150-1,000 feet. Altitude of land-surface datum 220 feet. Water-level records available 1979, 1981-85, 1990 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 02, 1979	126.33 S	APR 20, 1990	137.50 ST	MAR 15, 1994	140.62 S	MAR 24, 1998	143.59 V
MAR 04, 1981	134.83 S	OCT 31	136.17 S	OCT 26	140.63 S	OCT 28	143.83 V
AUG 26	133.55 S	APR 05, 1991	139.20 V	MAR 30, 1995	142.01 V	MAR 23, 1999	144.01 V
FEB 02, 1982	133.23 S	OCT 08	138.90 V	OCT 17	142.58 V	OCT 26	144.77 V
JAN 26, 1983	133.60 S	MAR 18, 1992	139.11 S	MAR 20, 1996	142.78 V	MAR 30, 2000	144.90 V
SEP 17, 1984	133.88 S	SEP 23	137.75 S	OCT 17	143.07 V	OCT 24	145.00 V
FEB 28, 1985	135.10 S	SEP 23, 1993	138.23 S	MAR 18, 1997	143.27 V	MAR 28, 2001	145.23 V
JUN 13	134.94 S	OCT 21	O	OCT 21	143.39 V		

HIGHEST 126.33 AUG 02, 1979
LOWEST 145.23 MAR 28, 2001

SITE ID 331144115231501
LOCAL NUMBER 011S015E23M001S
About 8 miles southeast of Niland in East Mesa area, near Siphon 3 on Coachella Canal. Drilled domestic well. Diameter 12 inches, depth 550 feet in 1958. Altitude of land-surface datum 120 feet. Water-level records available 1953-58, 1961-68, 1978-79, 1980-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN , 1963	25.00 R	JUN 13, 1985	36.74 S	MAR 15, 1994	44.69 S	OCT 28, 1998	O
JAN 10, 1979	20.68	NOV 02, 1989	40.91 S	OCT 26	44.29 S	MAR 23, 1999	O
JUL 23, 1980	22.32 S	APR 20, 1990	41.30 S	MAR 30, 1995	44.41 V	OCT 26	O
FEB 11, 1981	24.44 S	OCT 31	41.89 S	OCT 17	45.41 V	29	46.94 S
AUG 26	28.59 S	OCT 08, 1991	42.46 S	MAR 20, 1996	45.57 V	MAR 30, 2000	46.92 S
FEB 02, 1982	30.57 S	MAR 18, 1992	42.70 S	OCT 17	45.85 V	OCT 24	47.20 S
JAN 26, 1983	33.44 S	SEP 23	43.07 S	MAR 18, 1997	46.04 V	MAR 28, 2001	47.10 V
SEP 21	34.73 S	SEP 23, 1993	43.61 S	OCT 21	46.23 V		
SEP 17, 1984	35.70 S	OCT 21	43.68 S	MAR 24, 1998	46.26 V		

HIGHEST 20.68 JAN 10, 1979
LOWEST 47.20 OCT 24, 2000

SITE ID 33 14550601
LOCAL NUMBER 010S019E25R001S
About 6 miles northwest of Highway 78 and west of Midway Road. Drilled water-table well. Diameter 8 inches, depth 304 ft. Altitude of land-surface datum 820 feet. Water-level records available 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 01, 1979	194.47	S	JUN 13, 1985	195.43	SS	OCT 20, 1993	196.42	S	MAR 24, 1998	196.00	V
JUL 23, 1980	194.41	S	NOV 30, 1989	196.37	S	MAR 15, 1994	198.30	S	OCT 28	195.81	V
JAN 22, 1981	194.23	S	MAR 26, 1990	196.23	S	OCT 27	196.14	S	MAR 23, 1999	195.78	V
AUG 27	194.25	S	OCT 23	196.25	S	MAR 31, 1995	195.81	V	OCT 26	195.63	V
FEB 03, 1982	194.38	S	MAR 14, 1991	195.96	S	OCT 17	196.01	V	MAR 30, 2000	195.62	V
SEP 30	194.89	S	OCT 02	196.22	S	MAR 20, 1996	196.15	V	OCT 24	195.44	V
SEP 20, 1983	194.92	ST	MAR 17, 1992	195.93	S	OCT 17	196.08	V	MAR 28, 2001	195.17	V
SEP 18, 1984	195.28	SS	SEP 22	196.34	S	MAR 18, 1997	196.18	V			
FEB 28, 1985	195.18	SS	SEP 23, 1993	196.44	S	OCT 21	196.27	V			

HIGHEST 194.23 JAN 22, 1981
LOWEST 198.30 MAR 15, 1994

SITE ID 331659114481001
LOCAL NUMBER 010S021E30C001S
In Milpitas Wash, west of Ogilby Road. Drilled observation water-table well. Diameter 1.25 inches, depth 70.1 feet. Altitude of land-surface datum 485 feet. Water-level records available 1972, 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 24, 1972	42.42		FEB 28, 1985	33.59	S	SEP 22, 1992	36.28	S	MAR 18, 1997	41.65	S
AUG 01, 1979	36.04		JUN 13	35.32	S	SEP 23, 1993	36.92	S	OCT 21	41.38	S
JUL 23, 1980	37.11	S	NOV 30, 1989	40.36	S	OCT 20	37.22	S	MAR 24, 1998	40.71	S
JAN 22, 1981	38.27	S	MAR 26, 1990	40.53	S	MAR 15, 1994	38.45	S	OCT 28	41.55	S
AUG 27	39.22	S	OCT 23	40.66	S	OCT 27	39.64	S	MAR 23, 1999	41.86	S
FEB 03, 1982	39.62	S	MAR 14, 1991	40.75	S	MAR 31, 1995	38.84	S	OCT 26	42.57	S
SEP 30	39.77	S	APR 05	42.04	S	OCT 17	39.89	S	MAR 30, 2000	43.10	S
SEP 20, 1983	39.50	S	OCT 02	40.03	S	MAR 20, 1996	40.51	S	OCT 24	43.00	S
SEP 18, 1984	29.90	S	MAR 17, 1992	39.77	S	OCT 17	41.20	S	MAR 28, 2001	42.91	S

HIGHEST 29.90 SEP 18, 1984
LOWEST 43.10 MAR 30, 2000

SITE ID 332501116025701
LOCAL NUMBER 009S009E04M001S
West side of the Salton Sea, north of Desert Shores. Drilled geothermal observation well. Diameter 2 inches, depth 489 feet, screened 486-489 feet. Altitude of land-surface datum -105 feet. Water-level records available 1979, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 21, 1979	72.00	R	FEB 18, 1987	95.33	S	SEP 03, 1992	116.33	S	OCT 09, 1997	132.49	V
JUN 13	71.58		SEP 14	98.93	S	24	116.28	S	MAR 24, 1998	133.77	V
FEB 12, 1981	73.34	S	MAR 10, 1988	100.05	S	APR 21, 1993	116.92	S	OCT 28	134.57	V
SEP 21	74.21	S	SEP 27	103.35	S	OCT 19	118.68	V	MAR 23, 1999	135.35	V
MAR 05, 1982	74.88	S	MAR 31, 1989	104.46	S	MAR 14, 1994	119.77	V	OCT 26	135.43	V
SEP 29	75.97	S	SEP 27	107.95	S	OCT 11	122.16	V	MAR 30, 2000	136.06	V
SEP 21, 1983	79.33	S	MAR 08, 1990	108.95	S	MAR 30, 1995	123.53	S	OCT 25	136.39	V
SEP 20, 1984	84.30	S	SEP 27	111.94	S	OCT 05	125.66	S	MAR 28, 2001	137.48	V
FEB 26, 1985	86.02	S	MAR 11, 1991	112.33	S	MAR 07, 1996	127.09	V			
SEP 13	90.93	S	SEP 23	114.25	S	OCT 08	129.76	S			
MAY 07, 1986	92.68	S	MAR 13, 1992	114.47	S	MAR 06, 1997	131.35	V			

HIGHEST 71.58 JUN 13, 1979
LOWEST 137.48 MAR 28, 2001

LOCAL IDENT-I-FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	HARD-NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
016S009E24B001S	04-28-77	1330	8.5	2220	30.0	25	0	6.80	2.00
	04-27-78	1430	8.8	2200	28.5	22	0	5.50	2.00
	03-15-79	1410	8.8	2150	27.0	18	--	4.00	2.00
	05-01-80	1645	9.3	1850	29.5	20	--	5.00	2.00
	04-30-81	1450	9.0	1830	31.0	14	--	3.60	1.10
	03-10-82	1600	9.0	1920	29.0	15	0	3.70	1.40
	03-29-83	1700	8.7	2210	27.5	11	--	2.60	1.10
	04-18-84	1500	8.7	2120	27.5	16	--	3.30	1.80
	04-26-85	1300	8.6	2190	28.5	16	--	3.00	2.00
	04-02-86	1130	8.5	2210	29.5	26	--	7.00	2.10
	04-03-87	1600	8.4	2200	29.0	23	--	5.60	2.20
	03-16-88	1230	8.6	2210	29.5	23	--	6.10	2.00
	03-15-89	1500	8.6	2220	29.5	23	--	6.10	2.00
	04-10-90	1200	8.6	2160	29.5	24	--	6.20	2.00
	04-06-92	1115	8.6	2160	29.0	21	--	5.20	1.90
	03-22-94	1445	8.6	2170	29.5	18	--	4.40	1.60
	03-29-95	1136	8.9	2160	30.0	14	--	3.20	1.50
	03-19-96	1145	8.7	2170	31.0	14	--	3.20	1.40
	03-18-97	0730	8.7	2170	30.0	15	--	3.80	1.40
	03-30-98	1215	8.7	2180	31.5	17	--	4.10	1.59
	03-22-99	0940	8.7	2100	30.0	14	--	3.23	1.49
	03-27-00	1250	8.6	2180	29.5	16	--	3.76	1.60
	03-22-01	0850	8.5	1970	30.0	16	--	3.72	1.52
016S009E24D001S	04-28-77	1445	8.6	875	29.5	49	0	15.0	2.90
	04-27-78	1200	8.1	830	28.5	43	0	12.0	3.20
	03-15-79	1300	7.3	840	28.5	38	--	10.0	3.00
	05-01-80	1600	8.5	755	29.5	38	--	10.0	3.00
	04-30-81	1600	8.9	760	29.5	26	--	6.40	2.50
	03-10-82	1800	8.6	770	28.5	39	0	10.0	3.40
	03-31-83	1700	8.7	790	29.0	36	--	9.00	3.30
	04-20-84	1530	8.7	800	27.0	37	--	9.40	3.30
	04-26-85	1500	8.4	810	29.0	41	--	11.0	3.40
	04-02-86	1400	8.4	810	29.5	39	--	10.0	3.30
	04-03-87	1430	8.4	800	28.5	42	--	11.0	3.50
	03-16-88	1400	8.5	815	29.5	41	--	11.0	3.30
	03-16-89	1130	8.5	820	29.0	42	--	11.0	3.50
	04-19-90	1600	8.5	820	28.5	41	--	11.0	3.30
	04-06-92	1415	8.4	830	29.5	41	--	11.0	3.30
	03-22-94	1145	8.4	815	29.0	42	--	11.0	3.50
	03-29-95	1426	8.4	825	29.0	42	--	11.0	3.60

LOCAL IDENT- I- FIER	DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S009E24B001S	04-28-77	4.0	41	470	97	--	--	--
	04-27-78	3.2	41	440	97	--	--	--
	03-15-79	2.6	46	449	98	--	--	--
	05-01-80	2.7	42	440	98	--	--	--
	04-30-81	3.3	51	430	98	--	--	--
	03-10-82	2.6	49	440	98	--	--	--
	03-29-83	2.6	58	440	99	--	--	--
	04-18-84	2.6	48	440	98	--	--	--
	04-26-85	2.8	47	430	98	--	--	--
	04-02-86	2.9	43	500	97	--	--	--
	04-03-87	2.7	41	450	97	--	--	--
	03-16-88	3.1	40	450	97	--	--	--
	03-15-89	2.7	42	470	97	--	--	--
	04-10-90	1.6	41	460	97	--	--	--
	04-06-92	2.8	42	440	98	--	--	--
	03-22-94	2.8	47	450	98	--	--	--
	03-29-95	2.9	51	440	98	--	--	--
	03-19-96	2.5	49	420	98	--	--	--
	03-18-97	2.4	48	430	98	167	186	9
	03-30-98	2.5	44	415	98	164	186	7
	03-22-99	2.5	48	414	98	158	172	10
	03-27-00	2.6	46	422	98	164	192	4
	03-22-01	2.5	47	429	98	178	203	6
016S009E24D001S	04-28-77	6.5	10	160	86	--	--	--
	04-27-78	4.5	10	150	87	--	--	--
	03-15-79	4.0	11	150	88	--	--	--
	05-01-80	4.0	11	150	88	--	--	--
	04-30-81	3.9	13	150	91	--	--	--
	03-10-82	4.4	11	153	88	--	--	--
	03-31-83	3.7	12	150	89	--	--	--
	04-20-84	3.6	11	150	89	--	--	--
	04-26-85	3.8	9	140	87	--	--	--
	04-02-86	4.0	11	150	88	--	--	--
	04-03-87	3.6	10	150	88	--	--	--
	03-16-88	4.0	10	150	88	--	--	--
	03-16-89	3.8	11	160	88	--	--	--
	04-19-90	3.7	10	150	88	--	--	--
	04-06-92	3.6	10	150	88	--	--	--
	03-22-94	3.9	10	150	87	--	--	--
	03-29-95	3.8	10	150	87	--	--	--

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LOCAL IDENT- I- FIER	DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
016S009E24B001S	04-28-77	390	1.8	4.2	260	--	--	--
	04-27-78	390	1.7	8.6	180	--	.340	--
	03-15-79	376	1.7	15.0	239	--	--	--
	05-01-80	390	1.6	17.0	264	--	--	--
	04-30-81	390	1.7	14.0	250	--	.050	--
	03-10-82	400	1.7	13.0	240	--	<.100	--
	03-29-83	390	1.7	16.0	270	--	<.100	--
	04-18-84	410	1.7	38.0	260	--	<.100	--
	04-26-85	410	1.6	21.0	290	--	<.100	--
	04-02-86	390	1.8	23.0	300	--	<.100	--
	04-03-87	400	1.6	22.0	290	--	<.100	--
	03-16-88	400	1.8	22.0	300	--	<.100	--
	03-15-89	380	1.7	23.0	290	--	<.100	--
	04-10-90	390	1.4	24.0	280	--	.100	--
	04-06-92	380	1.6	19.0	270	.020	.065	<.010
	03-22-94	380	1.7	21.0	270	.020	<.050	<.010
	03-29-95	370	1.7	14.0	250	<.015	<.050	<.010
	03-19-96	380	1.9	19.0	270	<.015	<.050	<.010
	03-18-97	390	1.9	19.0	270	<.015	<.050	<.010
	03-30-98	382	1.7	20.4	265	.026	<.050	<.010
	03-22-99	385	1.7	19.4	257	<.020	<.050	<.010
	03-27-00	392	1.6	20.8	265	<.020	<.050	<.010
	03-22-01	377	1.7	19.0	263	<.041	<.047	<.006
016S009E24D001S	04-28-77	96.0	1.3	4.3	150	--	--	--
	04-27-78	90.0	1.1	12.0	130	--	.860	--
	03-15-79	80.0	1.0	15.0	140	--	--	--
	05-01-80	90.0	1.0	14.0	140	--	--	--
	04-30-81	91.0	1.0	13.0	140	--	.820	--
	03-10-82	89.0	1.1	16.0	140	--	1.50	--
	03-31-83	91.0	1.0	15.0	140	--	1.20	--
	04-20-84	92.0	1.0	15.0	140	--	1.10	--
	04-26-85	93.0	1.0	17.0	140	--	1.40	--
	04-02-86	86.0	1.1	16.0	130	--	1.40	--
	04-03-87	93.0	1.0	18.0	140	--	1.40	--
	03-16-88	93.0	1.0	17.0	140	--	1.40	--
	03-16-89	92.0	.9	17.0	150	--	1.50	--
	04-19-90	90.0	.9	17.0	150	--	1.40	--
	04-06-92	96.0	1.0	16.0	150	<.010	1.40	<.010
	03-22-94	90.0	1.0	19.0	140	.020	1.40	<.010
	03-29-95	89.0	1.0	17.0	140	<.015	1.40	<.010

LOCAL IDENT-I-FIER	DATE	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
016S009E24B001S	04-28-77	--	1.71	1260	1270	900	--	--
	04-27-78	--	1.65	--	1210	820	30	--
	03-15-79	--	1.66	1220	1220	800	20	--
	05-01-80	--	1.67	1230	1240	900	100	--
	04-30-81	.060	1.63	--	1200	780	40	10
	03-10-82	.040	1.64	--	1210	840	60	10
	03-29-83	.060	1.67	--	1230	810	20	<10
	04-18-84	.030	1.71	--	1260	810	290	<10
	04-26-85	.020	1.73	--	1270	790	210	<10
	04-02-86	<.010	1.82	--	1340	760	90	<10
	04-03-87	<.010	1.75	--	1290	780	120	<10
	03-16-88	<.050	1.74	1280	1300	780	80	10
	03-15-89	<.010	1.73	1270	1290	770	100	<10
	04-10-90	.010	1.73	1270	1270	770	290	<10
	04-06-92	.040	1.67	1230	1230	770	290	10
	03-22-94	<.010	1.69	1240	1240	800	270	<10
	03-29-95	.010	1.67	1230	1180	630	580	30
	03-19-96	.010	1.69	1240	1200	150	330	8
	03-18-97	<.010	1.67	1230	1220	744	210	<3
	03-30-98	.062	1.66	1220	1190	758	180	<12
	03-22-99	.051	1.67	1230	1180	759	160	E5
	03-27-00	.013	1.65	1210	1210	766	230	5
	03-22-01	<.018	1.68	1240	1200	748	210	E6
016S009E24D001S	04-28-77	--	.69	505	495	400	--	--
	04-27-78	--	.64	--	471	430	30	--
	03-15-79	--	.65	481	473	400	<10	--
	05-01-80	--	.62	454	476	400	30	--
	04-30-81	.050	.65	--	478	390	20	2
	03-10-82	.020	.67	--	487	420	10	3
	03-31-83	.030	.66	--	480	440	10	3
	04-20-84	.020	.65	--	479	410	10	3
	04-26-85	<.010	.65	--	475	420	<1	2
	04-02-86	<.010	.63	--	467	420	10	<1
	04-03-87	<.010	.66	--	486	430	<1	<1
	03-16-88	<.050	.66	485	486	430	<1	2
	03-16-89	<.010	.66	482	506	410	<1	<1
	04-19-90	<.010	.64	474	492	430	<1	<1
	04-06-92	.030	.65	481	488	420	<1	<1
	03-22-94	<.010	.64	470	485	420	80	<1
	03-29-95	<.010	.64	468	483	440	10	1

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LOCAL IDENT- I- FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
016S009E24D001S	03-19-96	0830	8.3	830	29.5	41	--	11.0	3.30
	03-17-97	1115	8.3	834	29.5	52	--	14.0	4.20
	03-30-98	0845	8.3	829	29.0	55	--	14.2	4.74
	03-22-99	1055	8.2	830	29.0	40	--	10.4	3.47
	03-27-00	0940	8.3	834	28.5	41	--	10.9	3.37
	03-22-01	1115	8.1	813	29.5	42	--	11.2	3.38
016S009E24R001S	04-28-77	1615	8.7	655	25.5	38	0	10.0	3.20
	04-26-78	1620	8.1	675	25.0	63	0	16.0	5.60
	03-14-79	1415	7.7	670	27.5	56	--	14.0	5.00
	05-01-80	1430	8.4	620	27.5	50	--	12.0	5.00
	04-30-81	1730	8.6	610	28.0	35	--	8.10	3.50
	03-11-82	1115	8.7	630	26.5	48	0	11.0	5.10
	09-22-83	1100	8.8	670	28.0	39	--	8.70	4.30
	04-20-84	1700	8.6	670	26.0	42	--	10.0	4.20
	04-26-85	1100	8.4	670	28.0	55	--	13.0	5.40
	04-03-86	1130	8.3	675	28.0	58	--	14.0	5.60
	04-02-87	1230	8.3	680	28.5	61	--	15.0	5.70
	03-17-88	1500	8.4	680	28.0	61	--	15.0	5.60
	03-15-89	1230	8.4	680	28.0	64	--	16.0	5.90
016S009E25K002S	12-01-72	0930	8.2	--	--	65	0	18.0	4.90
	12-03-74	1100	8.3	--	--	70	0	18.0	6.10
	06-26-75	1050	7.1	460	32.0	66	0	18.0	5.10
	04-28-77	1730	7.9	500	29.0	68	0	19.0	5.00
	04-26-78	1410	7.9	490	27.0	68	0	19.0	5.00
	03-22-79	1700	8.2	510	27.0	66	--	18.0	5.00
	05-01-80	1305	8.0	480	29.5	68	--	19.0	5.00
	05-01-81	1030	8.1	520	29.0	74	--	21.0	5.20
	03-09-82	1500	8.1	590	29.0	95	0	27.0	6.60
	03-31-83	1600	8.1	485	30.0	65	--	18.0	4.70
	03-18-88	1230	8.2	690	29.0	100	--	29.0	6.80
	03-22-89	1300	8.1	650	29.0	93	--	27.0	6.20
	04-11-90	1030	8.0	580	29.0	76	--	22.0	5.20
	04-07-92	1000	8.1	535	29.0	75	--	22.0	4.80
	03-23-94	0830	7.9	585	29.0	83	--	24.0	5.60
	03-30-95	0750	8.0	558	29.0	80	--	23.0	5.40
	03-20-96	0730	8.0	569	28.5	80	--	23.0	5.40
	03-18-97	1040	8.0	593	30.0	83	--	24.0	5.70
	03-23-98	1230	8.0	574	28.5	80	--	23.1	5.44
	03-24-99	0755	7.8	559	29.5	72	--	20.5	5.09
	03-29-00	0815	7.8	544	30.0	69	--	19.8	4.79

LOCAL IDENT-I-FIER	DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S009E24D001S	03-19-96	3.5	10	140	87	--	--	--
	03-17-97	3.7	8	140	84	97	117	1
	03-30-98	3.7	8	139	83	92	112	0
	03-22-99	3.7	10	143	87	94	115	0
	03-27-00	3.6	10	144	87	95	116	--
	03-22-01	3.7	10	146	87	92	112	--
016S009E24R001S	04-28-77	6.0	8	110	84	--	--	--
	04-26-78	5.9	6	110	77	--	--	--
	03-14-79	5.1	6	110	79	--	--	--
	05-01-80	5.2	7	110	81	--	--	--
	04-30-81	5.0	8	110	85	--	--	--
	03-11-82	5.6	8	110	81	--	--	--
	09-22-83	5.5	8	120	85	--	--	--
	04-20-84	5.6	8	120	84	--	--	--
	04-26-85	5.5	6	110	80	--	--	--
	04-03-86	5.3	6	110	79	--	--	--
	04-02-87	5.0	6	110	78	--	--	--
	03-17-88	5.5	6	110	78	--	--	--
	03-15-89	5.2	6	117	78	--	--	--
016S009E25K002S	12-01-72	4.0	4	77.0	70	--	--	--
	12-03-74	4.2	4	74.0	68	--	--	--
	06-26-75	4.8	4	74.0	69	--	--	--
	04-28-77	4.2	4	75.0	69	--	--	--
	04-26-78	5.0	4	75.0	69	--	--	--
	03-22-79	4.4	4	75.0	70	--	--	--
	05-01-80	4.5	4	76.0	69	--	--	--
	05-01-81	5.6	4	78.0	68	--	--	--
	03-09-82	4.9	4	90.0	66	--	--	--
	03-31-83	4.3	4	75.0	70	--	--	--
	03-18-88	5.2	4	100	67	--	--	--
	03-22-89	4.8	5	100	69	--	--	--
	04-11-90	3.4	4	85.0	70	--	--	--
	04-07-92	4.4	4	77.0	68	--	--	--
	03-23-94	4.9	4	81.0	66	--	--	--
	03-30-95	4.8	4	81.0	67	--	--	--
	03-20-96	4.4	4	77.0	66	--	--	--
	03-18-97	4.6	4	81.0	66	112	136	0
	03-23-98	4.6	4	81.1	67	110	134	0
	03-24-99	4.6	4	75.8	68	117	143	0
	03-29-00	4.6	4	77.1	69	119	146	--

LOCAL IDENT-I-FIER	DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
016S009E24D001S	03-19-96	91.0	1.1	17.0	140	<.015	.340	<.010
	03-17-97	91.0	1.1	16.0	140	<.015	1.30	<.010
	03-30-98	87.6	1.0	16.9	144	.034	1.26	<.010
	03-22-99	90.6	1.0	18.5	142	<.020	1.27	<.010
	03-27-00	90.7	.9	18.6	141	<.020	1.33	<.010
	03-22-01	88.8	1.0	16.8	137	<.041	1.38	<.006
016S009E24R001S	04-28-77	78.0	.9	2.0	92.0	--	--	--
	04-26-78	80.0	1.0	10.0	79.0	--	.210	--
	03-14-79	79.0	.9	23.0	91.0	--	--	--
	05-01-80	61.0	.6	14.0	86.0	--	--	--
	04-30-81	79.0	.9	13.0	76.0	--	.510	--
	03-11-82	80.0	.9	19.0	90.0	--	.750	--
	09-22-83	81.0	.8	17.0	95.0	--	.650	--
	04-20-84	84.0	.8	17.0	95.0	--	.720	--
	04-26-85	86.0	.8	23.0	91.0	--	.910	--
	04-03-86	79.0	.9	23.0	91.0	--	1.20	--
	04-02-87	84.0	.8	25.0	90.0	--	1.10	--
	03-17-88	84.0	.8	23.0	94.0	--	1.00	--
	03-15-89	83.0	.7	24.0	94.0	--	1.10	--
016S009E25K002S	12-01-72	56.0	.2	--	44.0	--	--	--
	12-03-74	54.0	.6	--	34.0	--	--	--
	06-26-75	56.0	.7	36.0	40.0	--	1.80	--
	04-28-77	58.0	.6	31.0	36.0	--	--	--
	04-26-78	56.0	.7	32.0	35.0	--	1.60	--
	03-22-79	56.0	.6	33.0	36.0	--	--	--
	05-01-80	59.0	.6	30.0	38.0	--	--	--
	05-01-81	72.0	.7	31.0	38.0	--	1.60	--
	03-09-82	89.0	.8	32.0	51.0	--	2.00	--
	03-31-83	58.0	.6	32.0	38.0	--	1.80	--
	03-18-88	100	.9	31.0	48.0	--	2.30	--
	03-22-89	96.0	.8	31.0	44.0	--	2.00	--
	04-11-90	75.0	.8	31.0	35.0	--	1.50	--
	04-07-92	72.0	.8	29.0	39.0	<.010	1.40	<.010
	03-23-94	77.0	.8	31.0	39.0	.010	1.50	<.010
	03-30-95	70.0	.8	31.0	35.0	<.015	1.30	<.010
	03-20-96	78.0	.8	32.0	39.0	<.015	1.10	.010
	03-18-97	78.0	.9	33.0	41.0	<.015	1.60	<.010
	03-23-98	70.3	.7	32.5	39.9	.050	1.38	.015
	03-24-99	67.2	.8	34.0	40.5	<.020	1.31	<.010
	03-29-00	60.5	<.1	32.6	36.2	<.020	1.26	.012

LOCAL IDENT- I- FIER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
016S009E24D001S	03-19-96	<.010	.66	488	464	400	<1	1
	03-17-97	<.010	.67	494	475	406	10	<1
	03-30-98	.023	.67	491	472	412	10	<4
	03-22-99	<.010	.67	491	475	414	<10	<3
	03-27-00	.012	.64	474	476	406	<10	<2
	03-22-01	<.018	.66	487	470	409	<10	<3
016S009E24R001S	04-28-77	--	.49	362	357	300	--	--
	04-26-78	--	.51	--	378	260	<10	--
	03-14-79	--	.54	394	390	300	20	--
	05-01-80	--	.50	370	345	200	10	--
	04-30-81	.050	.48	--	355	240	20	5
	03-11-82	.010	.52	--	385	270	20	4
	09-22-83	.010	.54	--	395	270	<1	4
	04-20-84	.020	.54	--	398	270	10	6
	04-26-85	<.010	.54	--	397	270	20	10
	04-03-86	<.010	.53	--	393	260	50	16
	04-02-87	<.010	.54	--	399	270	30	15
	03-17-88	<.010	.55	401	401	270	40	17
	03-15-89	<.010	.55	405	410	260	40	16
016S009E25K002S	12-01-72	--	.44	325	253	--	--	<10
	12-03-74	--	.44	320	245	--	--	<10
	06-26-75	--	.42	--	307	170	20	--
	04-28-77	--	.41	299	303	200	--	--
	04-26-78	--	.41	--	304	190	30	--
	03-22-79	--	.42	308	301	200	40	--
	05-01-80	--	.36	262	305	200	10	--
	05-01-81	.040	.44	--	325	190	30	3
	03-09-82	<.010	.52	--	383	260	10	3
	03-31-83	.030	.42	--	306	190	10	<1
	03-18-88	<.010	.55	403	405	260	10	4
	03-22-89	.020	.52	381	393	240	10	1
	04-11-90	<.010	.47	343	337	230	<1	3
	04-07-92	.030	.43	315	326	220	10	1
	03-23-94	<.010	.46	338	337	220	10	1
	03-30-95	<.010	.42	310	335	210	30	3
	03-20-96	<.010	.46	338	334	200	<1	4
	03-18-97	<.010	.47	345	342	211	<1	<1
	03-23-98	.013	.45	330	330	212	<10	<4
	03-24-99	<.010	.46	336	325	213	<10	<3
	03-29-00	.010	.43	314	313	199	<10	<2

LOCAL IDENT- I- FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
016S009E25K002S	03-27-01	0815	7.7	615	27.0	78	--	22.9	5.01
016S009E25K004S	04-20-84	1200	8.1	605	28.5	76	--	21.0	5.60
	04-25-85	0800	8.1	660	29.5	85	--	24.0	6.20
	03-27-86	1300	8.2	650	29.5	68	--	19.0	5.00
	04-01-87	1330	8.1	630	29.5	71	--	20.0	5.10
016S009E26H002S	10-29-70	1040	8.4	--	--	59	0	18.0	3.00
	04-03-91	1615	8.3	515	28.0	60	--	18.0	3.70
	04-14-93	1700	8.1	515	29.0	63	--	19.0	3.80
016S009E34B001S	05-06-97	0930	8.1	513	28.5	27	--	8.17	1.50
	03-23-98	1045	8.1	530	28.5	27	--	8.20	1.54
	06-28-99	0820	8.5	621	32.0	12	--	3.64	.60
	03-28-00	1140	8.1	517	29.5	28	--	8.50	1.62
	03-22-01	1405	7.8	524	29.0	28	--	8.72	1.62
016S009E36C002S	02-08-61	--	8.3	--	--	60	0	16.0	4.90
	03-05-62	--	7.3	584	--	58	0	19.0	2.60
	11-09-62	--	8.0	--	--	76	0	22.0	5.50
	04-02-91	1615	8.0	635	29.0	61	--	19.0	3.30
	04-14-93	1500	7.9	625	29.0	64	--	20.0	3.30
	03-23-94	1300	7.9	610	29.0	58	--	18.0	3.10
	03-30-95	1045	8.1	611	29.0	58	--	18.0	3.20
	03-19-96	1400	8.1	608	29.0	55	--	17.0	3.10
	03-19-97	0815	8.1	611	29.0	55	--	17.0	3.10
	03-30-98	1650	8.1	602	29.0	55	--	17.1	3.08
	03-24-99	1120	7.9	609	29.0	54	--	16.7	3.11
	03-30-00	0845	8.0	621	29.0	54	--	16.7	3.00
	03-26-01	1335	7.9	607	30.0	54	--	16.9	2.89
016S009E36D002S	06-26-75	0845	8.1	580	--	55	0	16.0	3.70
	04-28-77	1115	8.0	610	29.5	51	0	16.0	2.80
	04-26-78	1400	7.9	600	28.0	51	0	16.0	2.60
	03-22-79	1615	8.2	600	27.5	46	--	15.0	2.00
	05-01-80	1230	8.0	560	29.0	48	--	16.0	2.00
	05-01-81	1100	8.1	560	32.0	51	--	16.0	2.70
	03-09-82	1600	8.0	550	28.5	50	0	16.0	2.50
	04-06-83	1430	8.1	565	29.0	48	--	15.0	2.50
	04-20-84	1330	8.1	590	29.0	51	--	16.0	2.60
	04-25-85	1400	8.0	610	29.5	51	--	16.0	2.60
	03-27-86	1100	8.2	585	29.5	45	--	14.0	2.50
	04-01-87	1500	8.1	600	29.0	48	--	15.0	2.60
	03-16-88	1000	8.2	590	29.5	48	--	15.0	2.50
	03-15-89	0900	8.2	580	29.5	48	--	15.0	2.50

LOCAL IDENT-I-FIER	DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S009E25K002S	03-27-01	4.8	4	90.2	70	148	180	--
016S009E25K004S	04-20-84	4.5	5	92.0	71	--	--	--
	04-25-85	5.0	5	98.0	70	--	--	--
	03-27-86	4.5	5	100	75	--	--	--
	04-01-87	4.4	5	98.0	74	--	--	--
016S009E26H002S	10-29-70	2.0	5	82.0	75	--	--	--
	04-03-91	4.6	5	84.0	73	--	--	--
	04-14-93	4.4	4	81.0	72	--	--	--
016S009E34B001S	05-06-97	3.4	8	92.7	87	104	126	0
	03-23-98	3.3	8	95.3	87	100	122	0
	06-28-99	1.0	16	127	96	148	166	9
	03-28-00	3.3	8	93.9	86	103	126	--
	03-22-01	3.5	7	90.8	86	97	118	--
016S009E36C002S	02-08-61	43.0	5	93.0	64	--	--	--
	03-05-62	--	--	--	--	--	--	--
	11-09-62	4.7	4	82.0	68	--	--	--
	04-02-91	4.5	6	100	77	--	--	--
	04-14-93	4.3	5	100	76	--	--	--
	03-23-94	4.3	6	99.0	77	--	--	--
	03-30-95	4.2	6	100	77	--	--	--
	03-19-96	4.0	6	96.0	78	--	--	--
	03-19-97	4.1	6	99.0	78	125	152	0
	03-30-98	4.2	6	94.8	77	118	144	0
	03-24-99	4.1	6	97.0	78	122	149	0
	03-30-00	4.2	6	97.5	78	122	148	--
	03-26-01	3.9	6	94.0	78	122	148	--
016S009E36D002S	06-26-75	4.1	6	100	78	--	--	--
	04-28-77	3.9	6	100	79	--	--	--
	04-26-78	4.3	7	110	81	--	--	--
	03-22-79	3.8	7	102	81	--	--	--
	05-01-80	3.9	6	100	80	--	--	--
	05-01-81	4.8	6	100	79	--	--	--
	03-09-82	3.8	6	100	80	--	--	--
	04-06-83	3.8	6	100	81	--	--	--
	04-20-84	3.8	6	100	80	--	--	--
	04-25-85	4.0	7	110	81	--	--	--
	03-27-86	3.9	6	98.0	81	--	--	--
	04-01-87	3.8	6	100	80	--	--	--
	03-16-88	4.3	6	100	80	--	--	--
	03-15-89	3.9	6	100	80	--	--	--

LOCAL IDENT- I- FIER	DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
016S009E25K002S	03-27-01	73.1	.8	32.4	36.9	<.041	1.29	<.006
016S009E25K004S	04-20-84	78.0	.8	30.0	55.0	--	1.70	--
	04-25-85	94.0	.7	32.0	55.0	--	2.10	--
	03-27-86	87.0	1.0	30.0	55.0	--	1.70	--
	04-01-87	83.0	.8	32.0	50.0	--	1.60	--
016S009E26H002S	10-29-70	59.0	.8	--	33.0	--	--	--
	04-03-91	63.0	.8	29.0	26.0	<.010	1.10	<.010
	04-14-93	61.0	.8	31.0	27.0	<.010	1.30	<.010
016S009E34B001S	05-06-97	72.8	1.9	30.8	20.9	<.015	3.17	<.010
	03-23-98	71.4	1.6	32.4	20.4	.039	3.24	<.010
	06-28-99	72.7	2.7	19.2	30.2	<.020	.227	<.010
	03-28-00	70.7	2.0	32.6	19.4	<.020	3.43	<.010
	03-22-01	70.1	1.9	31.5	20.5	<.041	3.49	<.006
016S009E36C002S	02-08-61	69.0	1.6	--	27.0	--	--	--
	03-05-62	75.0	1.5	14.0	28.0	--	--	--
	11-09-62	68.0	.6	--	35.0	--	--	--
	04-02-91	92.0	1.7	31.0	32.0	.010	1.60	<.010
	04-14-93	87.0	1.6	35.0	33.0	<.010	1.80	<.010
	03-23-94	83.0	1.7	36.0	33.0	.010	1.70	<.010
	03-30-95	81.0	1.7	33.0	30.0	<.015	1.50	<.010
	03-19-96	86.0	1.8	34.0	33.0	<.015	.410	<.010
	03-19-97	80.0	1.7	33.0	33.0	<.015	1.70	<.010
	03-30-98	80.5	1.8	34.9	31.0	.021	1.60	<.010
	03-24-99	82.8	1.8	35.5	32.8	<.020	1.66	<.010
	03-30-00	84.2	1.7	34.2	32.9	<.020	1.76	<.010
	03-26-01	81.6	1.6	33.4	31.8	<.041	1.55	<.006
016S009E36D002S	06-26-75	82.0	2.0	39.0	28.0	--	1.60	--
	04-28-77	82.0	2.3	33.0	27.0	--	--	--
	04-26-78	81.0	1.9	33.0	27.0	--	.630	--
	03-22-79	78.0	2.0	36.0	27.0	--	--	--
	05-01-80	80.0	1.9	34.0	28.0	--	--	--
	05-01-81	87.0	2.0	33.0	28.0	--	.850	--
	03-09-82	86.0	2.0	35.0	28.0	--	.720	--
	04-06-83	78.0	2.0	33.0	25.0	--	.660	--
	04-20-84	13.0	2.0	33.0	120	--	.730	--
	04-25-85	85.0	1.9	35.0	27.0	--	.750	--
	03-27-86	81.0	2.2	32.0	33.0	--	.720	--
	04-01-87	85.0	2.0	36.0	25.0	--	.750	--
	03-16-88	81.0	2.1	35.0	27.0	--	.720	--
	03-15-89	85.0	1.9	33.0	27.0	--	.560	--

LOCAL IDENT- I- FIER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
016S009E25K002S	03-27-01	<.018	.51	376	360	210	10	4
016S009E25K004S	04-20-84	.020	.49	--	364	250	20	3
	04-25-85	<.010	.54	--	394	250	20	2
	03-27-86	.020	.52	--	384	270	20	1
	04-01-87	<.010	.51	--	376	250	10	2
016S009E26H002S	10-29-70	--	.46	335	259	--	--	0
	04-03-91	<.010	.42	307	315	210	20	<1
	04-14-93	<.010	.42	307	302	230	10	<1
016S009E34B001S	05-06-97	.015	.43	314	309	314	100	<1
	03-23-98	.025	.42	309	309	311	270	<4
	06-28-99	.043	.48	354	349	718	120	<3
	03-28-00	.022	.42	307	310	303	480	E2
	03-22-01	E.014	.42	309	303	307	410	4
016S009E36C002S	02-08-61	--	--	--	299	--	--	--
	03-05-62	--	--	--	325	--	--	--
	11-09-62	--	.45	330	277	--	30	0
	04-02-91	<.010	.54	399	367	480	10	<1
	04-14-93	<.010	.50	366	368	540	10	<1
	03-23-94	<.010	.47	348	362	520	M	<1
	03-30-95	<.010	.47	348	354	510	10	<1
	03-19-96	.010	.49	360	352	480	<1	<1
	03-19-97	<.010	.48	354	354	477	<1	<1
	03-30-98	.020	.49	358	346	508	<10	<4
	03-24-99	<.010	.47	345	355	499	70	E2
	03-30-00	<.010	.48	354	355	474	50	<2
	03-26-01	<.018	.49	357	346	472	10	<3
016S009E36D002S	06-26-75	--	.48	--	356	620	<10	--
	04-28-77	--	.49	363	350	600	--	--
	04-26-78	--	.49	--	358	630	60	--
	03-22-79	--	.48	354	347	700	60	--
	05-01-80	--	.46	337	353	700	40	--
	05-01-81	.040	.48	--	356	620	20	<1
	03-09-82	<.010	.48	--	361	660	10	<1
	04-06-83	.020	.47	--	344	660	60	2
	04-20-84	.020	.51	--	375	630	20	1
	04-25-85	<.010	.49	--	363	650	10	2
	03-27-86	.020	.47	--	349	650	40	9
	04-01-87	<.010	.48	--	354	670	20	<1
	03-16-88	<.010	.47	345	351	670	20	<1
	03-15-89	<.010	.45	330	352	610	30	15

LOCAL IDENT- I- FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
016S009E36D002S	04-10-90	1615	8.2	580	29.0	48	--	15.0	2.50
016S009E36D003S	04-07-92	1500	8.4	600	31.0	23	--	7.10	1.30
	03-24-94	1600	8.3	605	31.0	23	--	6.90	1.40
	03-31-95	1138	8.4	612	29.0	23	--	6.90	1.30
	03-20-96	0930	8.4	607	29.0	21	--	6.30	1.20
	03-19-97	1045	8.3	611	31.0	23	--	7.10	1.30
	03-30-98	1515	8.3	612	30.5	22	--	6.62	1.25
	03-24-99	1330	8.1	612	31.5	22	--	6.56	1.32
	03-28-00	1345	8.2	616	32.0	23	--	7.01	1.30
	03-28-01	1345	8.2	605	31.5	22	--	6.68	1.23
016S009E36H001S	02-07-63	--	7.4	479	31.7	58	0	18.0	3.20
	09-29-71	--	8.1	--	29.0	--	--	18.0	--
	04-29-77	1045	8.0	525	30.5	68	0	20.0	4.30
	04-27-78	0830	7.8	500	30.5	61	0	18.0	3.90
	03-22-79	1515	8.1	510	28.5	62	--	18.0	4.00
	05-01-80	0810	8.1	460	30.5	61	--	18.0	4.00
	04-30-81	1200	8.1	395	28.0	60	--	19.0	3.10
	03-10-82	0900	8.1	450	30.5	60	0	18.0	3.60
	03-31-83	0930	8.1	475	31.0	63	--	19.0	3.80
	04-20-84	0830	8.0	475	30.0	60	--	18.0	3.70
	04-26-85	0800	8.1	480	30.5	64	--	19.0	3.90
	03-27-86	0900	8.1	490	31.0	61	--	18.0	3.80
	04-02-87	1000	8.1	485	31.0	60	--	18.0	3.70
	03-17-88	1000	8.2	485	31.0	61	--	18.0	3.90
	03-17-89	1015	8.2	480	31.0	61	--	18.0	3.90
	04-04-91	0930	8.0	485	30.5	63	--	19.0	3.70
	04-14-93	1200	7.9	490	31.0	60	--	18.0	3.70
	03-24-94	1230	8.0	490	31.0	63	--	19.0	3.80
	03-31-95	0847	8.1	493	31.0	61	--	18.0	3.80
	03-21-96	1045	8.1	490	31.0	54	--	16.0	3.40
	03-18-97	1400	8.1	484	30.5	54	--	16.0	3.30
	03-24-98	0745	8.0	498	31.5	61	--	18.3	3.75
	03-25-99	1115	7.9	501	31.5	55	--	16.3	3.60
	05-30-00	0815	7.9	559	31.5	65	--	19.5	4.00
	03-26-01	1115	7.9	498	31.5	59	--	17.8	3.59
016S010E29L001S	04-29-77	1245	8.6	1360	28.5	47	0	13.0	3.60
	04-27-78	1015	8.3	1370	27.0	49	0	12.0	4.50
	03-15-79	1525	8.1	1350	27.0	46	--	12.0	4.00
	05-01-80	1000	8.3	1100	29.0	39	--	9.00	4.00
	04-30-81	1800	8.6	1130	28.0	32	--	7.50	3.30

LOCAL IDENT- I- FIER	DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S009E36D002S	04-10-90	2.7	6	100	81	--	--	--
016S009E36D003S	04-07-92	2.5	11	120	91	--	--	--
	03-24-94	2.4	11	120	91	--	--	--
	03-31-95	2.3	11	120	91	--	--	--
	03-20-96	2.1	11	110	91	--	--	--
	03-19-97	2.4	11	120	91	144	174	1
	03-30-98	2.3	11	112	91	136	166	0
	03-24-99	2.3	11	113	91	144	175	0
	03-28-00	2.3	11	118	91	144	175	--
	03-28-01	2.2	11	113	91	143	174	--
016S009E36H001S	02-07-63	--	4	77.0	--	--	--	--
	09-29-71	1.4	--	83.0	4	--	--	--
	04-29-77	3.9	4	78.0	70	--	--	--
	04-27-78	4.6	4	74.0	71	--	--	--
	03-22-79	4.5	4	76.0	71	--	--	--
	05-01-80	4.3	4	75.0	71	--	--	--
	04-30-81	5.2	4	70.0	70	--	--	--
	03-10-82	4.3	4	74.0	71	--	--	--
	03-31-83	4.2	4	75.0	70	--	--	--
	04-20-84	4.0	4	74.0	71	--	--	--
	04-26-85	4.4	4	75.0	70	--	--	--
	03-27-86	4.2	4	73.0	71	--	--	--
	04-02-87	4.0	4	74.0	71	--	--	--
	03-17-88	4.5	4	76.0	71	--	--	--
	03-17-89	4.3	4	78.0	72	--	--	--
	04-04-91	4.3	4	75.0	71	--	--	--
	04-14-93	4.1	4	73.0	71	--	--	--
	03-24-94	4.3	4	74.0	70	--	--	--
	03-31-95	4.3	4	77.0	72	--	--	--
	03-21-96	3.9	4	71.0	72	104	127	0
	03-18-97	4.0	4	70.0	72	102	124	0
	03-24-98	4.1	4	73.9	71	100	122	0
	03-25-99	4.2	4	69.1	71	100	122	0
	05-30-00	4.8	4	79.0	71	105	128	--
	03-26-01	4.1	4	71.5	71	99	121	--
016S010E29L001S	04-29-77	5.0	16	250	91	--	--	--
	04-27-78	3.6	15	240	91	--	--	--
	03-15-79	2.9	15	235	91	--	--	--
	05-01-80	3.0	16	234	92	--	--	--
	04-30-81	3.6	17	220	93	--	--	--

LOCAL IDENT-I-FIER	DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
016S009E36D002S	04-10-90	82.0	1.9	33.0	27.0	--	.500	--
016S009E36D003S	04-07-92	86.0	3.0	36.0	23.0	<.010	.450	<.010
	03-24-94	78.0	2.9	41.0	20.0	<.010	.430	<.010
	03-31-95	79.0	3.0	39.0	18.0	<.015	.410	<.010
	03-20-96	80.0	3.1	40.0	21.0	<.015	.290	<.010
	03-19-97	77.0	3.0	39.0	20.0	<.015	.440	<.010
	03-30-98	80.3	2.9	41.5	18.5	.022	.389	<.010
	03-24-99	83.8	2.9	41.8	19.9	<.020	.393	<.010
	03-28-00	79.5	3.2	40.4	18.3	<.020	.402	<.010
	03-28-01	78.7	3.3	38.6	19.8	<.041	.388	<.006
016S009E36H001S	02-07-63	60.0	.8	33.0	34.0	--	--	--
	09-29-71	58.0	--	--	--	--	--	--
	04-29-77	66.0	.7	34.0	33.0	--	--	--
	04-27-78	59.0	.7	34.0	33.0	--	1.90	--
	03-22-79	58.0	.7	37.0	34.0	--	--	--
	05-01-80	60.0	.7	34.0	34.0	--	--	--
	04-30-81	63.0	.7	33.0	34.0	--	1.70	--
	03-10-82	51.0	.7	35.0	33.0	--	1.80	--
	03-31-83	61.0	.7	34.0	32.0	--	1.80	--
	04-20-84	57.0	.7	33.0	33.0	--	1.70	--
	04-26-85	61.0	.7	36.0	34.0	--	1.80	--
	03-27-86	61.0	.8	34.0	31.0	--	1.80	--
	04-02-87	61.0	.7	36.0	31.0	--	1.70	--
	03-17-88	60.0	.7	35.0	33.0	--	1.70	--
	03-17-89	59.0	.6	35.0	34.0	--	1.80	--
	04-04-91	60.0	.7	33.0	30.0	<.010	1.40	<.010
	04-14-93	58.0	.6	37.0	31.0	<.010	1.80	<.010
	03-24-94	59.0	.7	36.0	31.0	<.010	1.70	<.010
	03-31-95	59.0	.7	35.0	29.0	<.015	1.80	.010
	03-21-96	58.0	.7	36.0	31.0	<.015	1.70	.090
	03-18-97	57.0	.8	36.0	31.0	<.015	2.00	.090
	03-24-98	62.5	.7	36.9	30.8	.065	1.87	<.010
	03-25-99	65.3	.7	38.0	32.7	<.020	1.80	.010
	05-30-00	71.7	.8	36.6	32.8	<.020	2.03	.017
	03-26-01	61.2	.6	36.0	32.5	<.041	1.81	<.006
016S010E29L001S	04-29-77	230	.7	6.2	120	--	--	--
	04-27-78	250	.9	12.0	68.0	--	.070	--
	03-15-79	232	.9	18.0	68.0	--	--	--
	05-01-80	240	.8	18.0	69.0	--	--	--
	04-30-81	240	.9	15.0	64.0	--	.040	--

LOCAL IDENT- I- FIER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
016S009E36D002S	04-10-90	<.010	.48	353	347	660	100	43
016S009E36D003S	04-07-92	.030	.47	347	372	850	M	<1
	03-24-94	<.010	.48	354	364	790	M	<1
	03-31-95	<.010	.49	362	360	780	10	<1
	03-20-96	<.010	.50	364	351	760	<1	<1
	03-19-97	<.010	.50	364	359	766	<1	<1
	03-30-98	.024	.50	364	350	779	<10	<4
	03-24-99	<.010	.50	366	360	744	<10	<3
	03-28-00	.018	.49	358	358	762	20	<2
	03-28-01	E.011	.50	369	352	742	<10	<3
016S009E36H001S	02-07-63	--	--	--	288	--	--	--
	09-29-71	--	--	--	--	--	--	--
	04-29-77	--	.42	312	312	200	--	--
	04-27-78	--	.41	--	300	190	<10	--
	03-22-79	--	.42	308	303	200	<10	--
	05-01-80	--	.40	292	300	200	30	--
	04-30-81	.050	.40	--	296	190	40	3
	03-10-82	<.010	.39	--	294	210	<1	2
	03-31-83	.060	.41	--	304	210	20	1
	04-20-84	.020	.40	--	294	200	10	<1
	04-26-85	<.010	.41	--	305	210	<1	2
	03-27-86	.020	.40	--	296	200	20	1
	04-02-87	<.010	.41	--	299	220	M	<1
	03-17-88	<.010	.41	299	301	210	10	<1
	03-17-89	.020	.40	296	305	210	<1	<1
	04-04-91	<.010	.42	306	299	210	<1	<1
	04-14-93	<.010	.39	286	295	210	<1	1
	03-24-94	<.010	.41	300	298	220	10	<1
	03-31-95	<.010	.39	288	297	220	<1	<1
	03-21-96	.020	.40	294	290	210	40	1
	03-18-97	<.010	.40	291	288	190	40	<1
	03-24-98	.015	.41	298	300	221	<10	<4
	03-25-99	<.010	.41	305	298	203	<10	<3
	05-30-00	<.010	.44	327	321	259	30	4
	03-26-01	<.018	.42	309	295	187	E10	<3
016S010E29L001S	04-29-77	--	.97	716	713	400	--	--
	04-27-78	--	.94	--	690	380	40	--
	03-15-79	--	.90	659	662	400	60	--
	05-01-80	--	.87	639	667	400	30	--
	04-30-81	.050	.87	--	639	340	30	4

LOCAL IDENT- I- FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
016S010E29L001S	03-10-82	1400	8.3	1080	30.0	29	--	0	6.50
	09-22-83	0930	8.6	1200	28.0	26	--	--	6.00
	04-20-84	1000	8.5	1180	27.0	31	--	--	6.80
	04-25-85	1600	8.4	1180	28.0	29	--	--	6.50
	04-03-86	0900	8.4	1170	28.0	33	--	--	7.80
	04-03-87	1300	8.4	1160	28.0	32	--	--	7.40
	03-17-88	1300	8.5	1170	28.5	35	--	--	7.90
016S010E30R001S	06-27-59	--	7.8	910	--	130	--	0	32.0
	03-05-62	--	7.9	711	--	93	--	0	25.0
	01-14-72	--	7.8	--	24.0	--	--	--	38.0
	06-25-75	0910	--	750	--	120	--	0	32.0
	04-29-77	1200	8.8	810	25.5	110	--	0	30.0
	04-27-78	1630	7.6	820	26.0	110	--	0	30.0
	03-15-79	1615	8.1	955	24.0	150	--	--	41.0
	05-01-80	1100	7.7	920	24.0	160	--	--	44.0
	05-01-81	1015	7.8	920	28.0	150	--	--	40.0
	03-10-82	1300	7.7	850	25.5	140	--	12	37.0
	04-06-83	1030	7.8	895	24.5	140	--	--	38.0
	04-19-84	0830	7.8	975	23.0	160	--	--	42.0
	04-25-85	1400	7.8	985	28.5	160	--	--	43.0
	03-27-86	1430	7.9	1040	28.0	170	--	--	45.0
	04-02-87	1445	7.7	1090	27.5	180	--	--	49.0
	03-16-88	1600	7.7	1320	27.0	240	--	--	62.0
	03-22-89	1500	7.7	1320	27.5	250	--	--	64.0
	05-11-90	1045	7.8	1360	27.0	250	100	--	67.0
	04-06-92	1700	7.7	1260	27.0	--	--	--	--
	04-15-93	0930	7.7	1210	26.0	210	--	--	57.0
	03-23-94	1545	7.7	1170	25.5	190	--	--	50.0
	03-30-95	1610	7.8	1180	26.0	190	--	--	49.0
	03-21-96	1230	7.8	1080	27.5	160	33	--	41.0
	03-19-97	1330	7.8	1060	27.5	160	35	--	42.0
	03-24-98	1245	7.8	1020	28.5	160	42	--	41.9
	03-23-99	1405	7.6	1010	26.5	150	33	--	40.0
	03-29-00	1230	7.8	1010	24.0	150	28	--	38.5
	03-27-01	1250	7.7	966	25.5	140	26	--	37.6
016S010E42A004S	07-31-95	1040	8.1	954	32.0	68	--	--	17.0
016S010E42A005S	12-30-74	--	--	666	--	--	--	--	--
	04-27-77	1730	8.1	705	25.5	38	--	0	9.40
	04-26-78	1030	8.4	705	23.5	36	--	0	8.80
	03-23-79	1145	8.3	700	28.5	35	--	--	9.00

LOCAL IDENT- I- FIER	DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S010E29L001S	03-10-82	3.00	3.0	21	230	94	--	--	--
	09-22-83	2.70	3.0	20	230	94	--	--	--
	04-20-84	3.30	2.9	18	230	94	--	--	--
	04-25-85	3.10	3.2	19	230	94	--	--	--
	04-03-86	3.40	3.2	17	230	93	--	--	--
	04-03-87	3.40	2.9	17	220	93	--	--	--
	03-17-88	3.60	3.3	18	240	93	--	--	--
016S010E30R001S	06-27-59	12.0	5.3	5	129	67	--	--	--
	03-05-62	7.40	--	--	--	--	--	--	--
	01-14-72	--	1.6	--	115	5	--	--	--
	06-25-75	9.20	4.7	5	120	68	--	--	--
	04-29-77	9.50	4.0	5	120	69	--	--	--
	04-27-78	9.40	4.7	5	120	69	--	--	--
	03-15-79	12.0	4.7	5	129	64	--	--	--
	05-01-80	13.0	4.9	5	140	64	--	--	--
	05-01-81	12.0	5.9	5	130	64	--	--	--
	03-10-82	12.0	5.3	6	140	67	--	--	--
	04-06-83	12.0	4.7	5	130	65	--	--	--
	04-19-84	13.0	4.8	4	130	63	--	--	--
	04-25-85	13.0	5.3	4	130	63	--	--	--
	03-27-86	14.0	5.2	4	130	62	--	--	--
	04-02-87	15.0	5.2	5	150	63	--	--	--
	03-16-88	20.0	6.5	5	170	60	--	--	--
	03-22-89	21.0	6.0	5	170	59	--	--	--
	05-11-90	21.0	9.3	5	170	58	--	--	--
	04-06-92	--	--	--	150	--	--	--	--
	04-15-93	16.0	5.4	5	150	60	--	--	--
	03-23-94	15.0	5.5	5	153	63	--	--	--
	03-30-95	16.0	5.8	5	150	63	--	--	--
	03-21-96	13.0	4.9	5	140	65	122	150	0
	03-19-97	13.0	5.1	5	140	65	123	150	0
	03-24-98	12.9	4.8	5	135	64	116	141	0
	03-23-99	12.8	5.0	5	132	64	120	146	0
	03-29-00	12.2	4.7	5	131	65	118	144	--
	03-27-01	11.7	4.9	5	127	65	116	141	--
016S010E42A004S	07-31-95	6.10	3.8	9	170	84	M140	--	--
016S010E42A005S	12-30-74	--	--	--	--	--	--	--	--
	04-27-77	3.50	2.5	9	130	87	--	--	--
	04-26-78	3.30	3.1	10	140	89	--	--	--
	03-23-79	3.00	2.8	10	136	89	--	--	--

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 6-22-01
MULTIPLE STATION ANALYSES

LOCAL IDENT-I-FIER	DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
016S010E29L001S	03-10-82	240	.9	17.0	65.0	--	<.100	--
	09-22-83	240	.8	17.0	70.0	--	<.100	--
	04-20-84	250	1.0	17.0	66.0	--	<.100	--
	04-25-85	250	.8	18.0	68.0	--	<.100	--
	04-03-86	220	.9	18.0	67.0	--	<.100	--
	04-03-87	240	.9	20.0	68.0	--	<.100	--
	03-17-88	240	.9	20.0	66.0	--	<.100	--
016S010E30R001S	06-27-59	128	--	40.0	95.0	--	--	--
	03-05-62	109	1.0	20.0	43.0	--	--	--
	01-14-72	134	--	--	--	--	--	--
	06-25-75	120	.9	41.0	49.0	--	5.00	--
	04-29-77	120	1.0	39.0	45.0	--	--	--
	04-27-78	130	1.1	38.0	43.0	--	4.20	--
	03-15-79	166	.9	39.0	59.0	--	--	--
	05-01-80	180	.8	39.0	60.0	--	--	--
	05-01-81	180	.9	37.0	57.0	--	5.00	--
	03-10-82	170	.9	40.0	58.0	--	5.40	--
	04-06-83	160	.9	39.0	55.0	--	5.20	--
	04-19-84	180	.9	37.0	65.0	--	1.30	--
	04-25-85	180	.8	39.0	61.0	--	6.10	--
	03-27-86	200	1.0	38.0	65.0	--	6.60	--
	04-02-87	210	.8	40.0	68.0	--	6.80	--
	03-16-88	260	.7	40.0	78.0	--	7.80	--
	03-22-89	270	.7	39.0	77.0	--	7.40	--
	05-11-90	280	.5	40.0	96.0	--	6.10	--
	04-06-92	--	.8	37.0	--	<.010	5.30	<.010
	04-15-93	230	.7	40.0	70.0	<.010	5.10	<.010
	03-23-94	230	.8	39.0	71.0	.020	4.80	<.010
	03-30-95	230	.8	39.0	66.0	.020	4.80	.010
	03-21-96	190	.9	40.0	62.0	<.015	3.70	<.010
	03-19-97	190	.9	39.0	60.0	<.015	4.10	<.010
	03-24-98	194	.9	39.0	57.9	<.020	4.01	<.010
	03-23-99	193	.9	41.0	57.6	<.020	3.82	<.010
	03-29-00	189	.8	39.0	53.7	<.020	3.83	<.010
	03-27-01	186	.8	38.5	52.8	<.041	3.77	<.006
016S010E42A004S	07-31-95	150	1.8	36.0	73.0	.020	2.70	<.010
016S010E42A005S	12-30-74	--	--	--	--	--	--	--
	04-27-77	84.0	2.3	32.0	54.0	--	--	--
	04-26-78	85.0	1.8	27.0	54.0	--	.130	--
	03-23-79	81.0	1.9	31.0	55.0	--	--	--

LOCAL IDENT-I-FIER	DATE	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	BORON, DIS-SOLVED (UG/L AS B) (01020)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)
016S010E29L001S	03-10-82	.010	.89	--	656	390	40	2
	09-22-83	.020	.90	--	660	380	50	5
	04-20-84	.020	.90	--	665	380	20	5
	04-25-85	.010	.91	--	667	370	110	3
	04-03-86	<.010	.87	--	640	370	150	3
	04-03-87	<.010	.89	--	651	390	100	5
	03-17-88	<.010	.89	654	670	380	30	4
016S010E30R001S	06-27-59	--	.71	--	527	--	--	--
	03-05-62	--	--	--	391	--	--	--
	01-14-72	--	--	--	--	--	--	--
	06-25-75	--	.65	--	479	330	<10	--
	04-29-77	--	.63	465	473	300	--	--
	04-27-78	--	.65	--	479	330	70	--
	03-15-79	--	.77	566	546	300	60	--
	05-01-80	--	.76	560	579	400	10	--
	05-01-81	.050	.77	--	563	370	10	10
	03-10-82	.010	.77	--	572	400	20	2
	04-06-83	.020	.74	--	545	410	20	3
	04-19-84	.020	.76	--	560	420	20	3
	04-25-85	<.010	.79	--	579	420	10	2
	03-27-86	.020	.83	--	609	430	20	1
	04-02-87	<.010	.89	--	654	460	10	3
	03-16-88	<.010	1.03	756	757	510	10	4
	03-22-89	<.010	1.04	764	766	530	10	2
	05-11-90	<.010	1.07	790	801	660	10	<1
	04-06-92	.030	--	700	--	530	10	3
	04-15-93	.010	.93	684	671	520	10	3
	03-23-94	<.010	.89	658	664	510	20	2
	03-30-95	<.010	.92	674	657	490	10	2
	03-21-96	.020	.83	610	582	430	20	3
	03-19-97	<.010	.81	594	582	447	20	1
	03-24-98	.014	.81	594	574	443	20	<4
	03-23-99	<.010	.80	590	572	436	20	E2
	03-29-00	<.010	.77	569	557	404	20	3
	03-27-01	<.018	.77	565	545	395	20	<3
016S010E42A004S	07-31-95	<.010	.76	558	554	680	20	1
016S010E42A005S	12-30-74	--	--	--	--	--	--	--
	04-27-77	--	.58	423	415	600	--	--
	04-26-78	--	.58	--	424	660	20	--
	03-23-79	--	.58	425	418	700	2300	--

LOCAL IDENT- I- FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	HARD- NESS NONCARB DISSOLV FLD. AS CACO3 (MG/L) (00904)	HARD- NESS NONCARB WH WAT TOT FLD MG/L AS CACO3 (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
016S010E42A005S	05-01-80	1800	8.3	680	21.5	38	--	--	10.0
	04-29-81	1350	8.3	680	29.3	38	--	--	10.0
	03-10-82	1015	8.2	675	29.5	37	--	0	9.50
	04-06-83	1300	8.2	735	28.5	44	--	--	12.0
	04-19-84	1300	8.2	740	28.5	38	--	--	9.50
	04-25-85	1700	8.2	755	29.0	36	--	--	9.30
	03-28-86	1100	8.3	750	29.0	34	--	--	8.70
	04-03-87	1045	8.3	720	29.0	34	--	--	8.70
	03-18-88	1100	8.4	735	29.5	32	--	--	7.90
	03-22-89	1700	8.4	720	29.0	32	--	--	8.00
	04-03-91	1325	8.3	700	29.5	29	--	--	7.50
	04-13-93	1645	8.2	680	29.0	28	--	--	6.90
	03-23-94	1145	8.3	685	29.0	27	--	--	6.80
016S010E42A008S	03-24-94	1400	7.8	1500	29.0	120	--	--	31.0
	03-29-95	1709	8.0	1600	29.0	140	--	--	35.0
	03-21-96	1800	7.7	1640	28.5	130	--	--	32.0
	03-17-97	1415	7.9	1630	29.0	130	--	--	32.0
	03-24-98	1000	7.9	1700	29.0	140	--	--	35.6
	03-23-99	1115	7.7	1630	29.0	140	--	--	36.5
	03-29-00	1010	7.8	1640	29.0	130	--	--	33.5
	03-27-01	1025	7.8	1700	28.5	130	--	--	33.7
016S021E21L001S	03-26-99	1205	7.7	815	26.0	160	--	--	42.1
	03-30-00	1220	7.5	1000	29.0	230	86	--	62.7
	03-28-01	0825	7.6	808	29.0	160	--	--	43.1
017S010E11G002S	11-15-72	1030	7.9	550	26.1	46	--	0	7.90
	04-27-77	1545	8.0	650	29.5	53	--	0	14.0
	04-26-78	0930	7.9	645	26.0	55	--	0	15.0
	03-15-79	1015	7.8	655	25.0	54	--	--	15.0
	05-02-80	0900	8.1	635	22.0	54	--	--	15.0
	04-29-81	1030	8.2	537	31.0	54	--	--	15.0
	03-10-82	1100	8.1	630	27.5	63	--	0	17.0
017S010E11H002S	04-01-83	0845	7.9	480	31.0	77	--	0	23.0
	04-19-84	1500	8.0	475	30.0	71	--	--	21.0
	04-25-85	1000	8.0	500	31.0	74	--	--	22.0
	04-04-86	0830	8.1	495	31.5	68	--	--	20.0
017S010E11H003S	09-15-87	1430	8.1	540	31.0	64	--	--	19.0
	03-18-88	0930	8.2	520	30.5	64	--	--	19.0
	03-17-89	1300	8.2	525	30.5	64	--	--	19.0
	04-03-91	1015	8.1	525	30.0	63	--	--	19.0
	04-14-93	0930	8.0	520	31.0	67	--	--	20.0

LOCAL IDENT- I- FIER	DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
016S010E42A005S	05-01-80	3.00	2.9	10	140	88	--	--	--
	04-29-81	3.20	2.7	10	140	88	--	--	--
	03-10-82	3.30	2.9	11	140	88	--	--	--
	04-06-83	3.40	2.8	10	150	87	--	--	--
	04-19-84	3.40	2.7	11	150	89	--	--	--
	04-25-85	3.20	3.0	10	140	88	--	--	--
	03-28-86	3.10	2.8	10	140	89	--	--	--
	04-03-87	3.10	2.7	10	140	89	--	--	--
	03-18-88	2.90	3.0	12	150	90	--	--	--
	03-22-89	2.90	2.7	12	150	90	--	--	--
	04-03-91	2.60	2.7	11	140	90	--	--	--
	04-13-93	2.60	2.6	12	140	91	--	--	--
	03-23-94	2.50	2.6	11	130	90	--	--	--
016S010E42A008S	03-24-94	11.0	3.9	11	270	82	--	--	--
	03-29-95	13.0	4.6	10	280	81	--	--	--
	03-21-96	12.0	4.1	10	260	81	--	--	--
	03-17-97	12.0	4.3	10	270	81	190	231	0
	03-24-98	12.7	4.3	10	271	80	184	224	0
	03-23-99	13.0	4.7	10	268	79	185	226	0
	03-29-00	12.1	4.6	10	265	81	189	230	--
	03-27-01	11.8	4.1	10	269	81	195	235	--
016S021E21L001S	03-26-99	12.4	3.5	4	102	58	160	195	0
	03-30-00	18.4	4.1	3	96.5	47	146	178	--
	03-28-01	12.1	3.7	3	99.3	57	160	196	--
017S010E11G002S	11-15-72	6.30	4.4	7	110	82	--	--	--
	04-27-77	4.30	4.5	7	110	80	--	--	--
	04-26-78	4.20	5.1	6	110	80	--	--	--
	03-15-79	4.00	5.0	7	112	80	--	--	--
	05-02-80	4.00	4.9	6	110	80	--	--	--
	04-29-81	4.10	4.9	6	110	80	--	--	--
	03-10-82	5.00	5.0	6	112	78	--	--	--
017S010E11H002S	04-01-83	4.60	4.0	4	72.0	66	--	--	--
	04-19-84	4.60	3.9	4	72.0	67	--	--	--
	04-25-85	4.70	4.3	4	73.0	67	--	--	--
	04-04-86	4.50	4.4	4	75.0	69	--	--	--
017S010E11H003S	09-15-87	4.00	4.2	4	81.0	72	--	--	--
	03-18-88	3.90	4.3	4	82.0	72	--	--	--
	03-17-89	4.10	4.0	5	85.0	73	--	--	--
	04-03-91	3.80	4.0	4	82.0	72	--	--	--
	04-14-93	4.10	4.0	4	80.0	71	--	--	--

LOCAL IDENT-I-FIER	DATE	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)
016S010E42A005S	05-01-80	84.0	1.9	33.0	62.0	--	--	--
	04-29-81	82.0	2.1	31.0	56.0	--	.540	--
	03-10-82	82.0	2.2	35.0	59.0	--	.710	--
	04-06-83	84.0	2.2	34.0	62.0	--	.570	--
	04-19-84	86.0	2.4	34.0	62.0	--	.630	--
	04-25-85	85.0	2.4	37.0	60.0	--	.710	--
	03-28-86	83.0	2.8	34.0	68.0	--	.890	--
	04-03-87	83.0	2.6	38.0	57.0	--	.920	--
	03-18-88	80.0	2.9	37.0	55.0	--	1.00	--
	03-22-89	76.0	2.7	37.0	52.0	--	1.10	--
	04-03-91	71.0	3.3	36.0	41.0	<.010	1.10	<.010
	04-13-93	69.0	3.4	39.0	41.0	<.010	1.40	<.010
	03-23-94	68.0	3.3	40.0	43.0	<.010	1.30	<.010
016S010E42A008S	03-24-94	270	1.5	42.0	140	.010	1.30	<.010
	03-29-95	300	1.5	42.0	130	.020	1.30	.010
	03-21-96	300	1.6	44.0	140	<.015	1.20	<.010
	03-17-97	330	1.6	43.0	140	<.015	1.40	<.010
	03-24-98	312	1.4	44.2	148	<.020	1.10	<.010
	03-23-99	315	1.5	45.2	149	<.020	1.18	<.010
	03-29-00	292	.8	45.4	138	<.020	1.23	<.010
	03-27-01	296	1.5	42.2	146	<.041	1.17	<.006
016S021E21L001S	03-26-99	111	.3	25.6	81.9	--	--	--
	03-30-00	157	.2	22.2	94.6	<.020	1.90	.013
	03-28-01	106	.3	22.8	82.1	<.041	.068	<.006
017S010E11G002S	11-15-72	69.0	.3	--	58.0	--	--	--
	04-27-77	81.0	.3	17.0	59.0	--	--	--
	04-26-78	85.0	.4	16.0	59.0	--	.010	--
	03-15-79	84.0	.3	17.0	61.0	--	--	--
	05-02-80	91.0	.3	16.0	63.0	--	--	--
	04-29-81	99.0	.4	15.0	62.0	--	.030	--
	03-10-82	99.0	.4	17.0	67.0	--	<.100	--
017S010E11H002S	04-01-83	47.0	.5	20.0	54.0	--	<.100	--
	04-19-84	44.0	.5	19.0	52.0	--	<.100	--
	04-25-85	47.0	.4	20.0	55.0	--	<.100	--
	04-04-86	47.0	.5	19.0	52.0	--	<.100	--
017S010E11H003S	09-15-87	51.0	.5	19.0	65.0	--	<.100	--
	03-18-88	51.0	.5	19.0	63.0	--	<.100	--
	03-17-89	52.0	.4	19.0	65.0	--	.110	--
	04-03-91	54.0	.5	18.0	63.0	.010	.067	<.010
	04-14-93	49.0	.4	21.0	58.0	.010	.082	<.010

LOCAL IDENT- I- FIER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
016S010E42A005S	05-01-80	--	.59	431	443	800	210	--
	04-29-81	.050	.59	--	432	630	210	3
	03-10-82	.010	.60	--	446	720	10	1
	04-06-83	.030	.63	--	463	770	60	6
	04-19-84	.030	.63	--	461	720	20	1
	04-25-85	.010	.61	--	451	730	20	2
	03-28-86	.020	.62	--	453	700	10	1
	04-03-87	<.010	.61	--	448	760	10	1
	03-18-88	.030	.61	451	455	760	10	4
	03-22-89	<.010	.60	444	448	710	10	<1
	04-03-91	<.010	.59	437	425	670	10	<1
	04-13-93	<.010	.56	414	418	670	10	3
	03-23-94	<.010	.56	410	410	660	20	2
016S010E42A008S	03-24-94	<.010	1.21	888	886	1200	10	<1
	03-29-95	<.010	1.26	928	928	1300	20	<1
	03-21-96	.020	1.31	960	906	1300	10	<1
	03-17-97	<.010	1.29	945	954	1210	<1	<1
	03-24-98	.018	1.32	974	946	1250	20	<4
	03-23-99	.014	1.33	980	951	1250	20	E2
	03-29-00	<.010	1.27	936	910	1190	20	E2
	03-27-01	E.010	1.31	964	926	1200	30	<3
016S021E21L001S	03-26-99	--	.67	494	475	115	<10	E2
	03-30-00	<.010	.78	575	552	111	20	<2
	03-28-01	<.018	.67	491	466	129	<10	E3
017S010E11G002S	11-15-72	--	.45	331	335	150	--	--
	04-27-77	--	.49	361	363	100	--	--
	04-26-78	--	.50	--	369	160	<10	--
	03-15-79	--	.51	372	370	100	40	--
	05-02-80	--	.50	364	377	200	10	--
	04-29-81	.050	.51	--	377	120	10	7
	03-10-82	<.010	.54	--	392	20	<1	3
017S010E11H002S	04-01-83	.050	.41	--	300	160	40	5
	04-19-84	.020	.40	--	291	160	20	3
	04-25-85	<.010	.40	--	297	160	10	2
	04-04-86	<.010	.40	--	293	170	10	5
017S010E11H003S	09-15-87	<.010	.40	295	313	180	M	<1
	03-18-88	<.010	.43	313	311	180	10	<1
	03-17-89	<.010	.43	316	319	170	M	<1
	04-03-91	<.010	.44	326	316	180	<1	<1
	04-14-93	<.010	.41	301	307	170	M	<1

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 6-22-01
MULTIPLE STATION ANALYSES

LOCAL IDENT-I-FIER	DATE	TIME	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
017S010E11H003S	03-24-94	0830	8.0	525	30.5	67	20.0	4.20
	03-30-95	1337	8.1	532	31.0	64	19.0	4.10
	03-20-96	1500	8.1	540	31.0	61	18.0	3.80
	03-17-97	1650	8.1	535	31.0	64	19.0	4.00
	03-23-98	1515	8.0	543	30.5	65	19.3	3.96
	03-23-99	0845	7.9	516	31.0	63	18.3	4.19
	03-28-00	0835	8.0	551	31.0	61	18.2	3.91
	03-26-01	0850	7.9	487	31.5	62	18.3	3.95

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY   PROCESS DATE 6-22-01

MULTIPLE STATION ANALYSES

LOCAL IDENT- I- FIER	DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	SODIUM AD- SORP- TION RATIO (00931)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)
017S010E11H003S	03-24-94	4.0	4	83.0	71	--	--	--
	03-30-95	4.0	5	85.0	73	--	--	--
	03-20-96	3.6	4	78.0	72	--	--	--
	03-17-97	3.9	4	82.0	72	112	137	0
	03-23-98	3.9	5	83.1	72	108	132	0
	03-23-99	4.0	4	74.8	71	114	140	0
	03-28-00	3.9	5	81.9	73	112	136	--
	03-26-01	3.8	4	70.6	70	116	142	--

UNITED STATES DEPARTMENT OF INTERIOR - GEOLOGICAL SURVEY PROCESS DATE 6-22-01
MULTIPLE STATION ANALYSES

LOCAL IDENT- I- FIER	DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
017S010E11H003S	03-24-94	53.0	.5	21.0	58.0	.020	.091	<.010
	03-30-95	54.0	.5	19.0	57.0	.020	.130	.010
	03-20-96	55.0	.6	20.0	59.0	<.015	.050	<.010
	03-17-97	53.0	.6	20.0	58.0	<.015	.110	<.010
	03-23-98	53.7	.4	19.7	57.1	.066	.091	<.010
	03-23-99	50.8	.5	21.7	55.0	<.020	.099	<.010
	03-28-00	54.0	.5	20.7	56.7	<.020	.093	<.010
	03-26-01	43.5	.5	19.9	49.8	<.041	E.034	<.006

LOCAL IDENT- I- FIER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	BORON, DIS- SOLVED (UG/L AS B) (01020)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
017S010E11H003S	03-24-94	<.010	.43	318	315	170	M	<1
	03-30-95	<.010	.43	316	312	180	M	<1
	03-20-96	.010	.43	314	306	170	<1	<1
	03-17-97	<.010	.42	309	309	178	<1	<1
	03-23-98	.012	.42	310	307	180	<10	<4
	03-23-99	<.010	.41	305	299	179	<10	<3
	03-28-00	<.010	.41	304	307	172	<10	<2
	03-26-01	<.018	.41	298	280	160	<10	<3

EXPLANATION OF WATER-LEVEL REMARK CODES

METHOD OF MEASUREMENT (M)

A = Airline
B = Analog
C = Calibrated Airline
E = Estimated
G = Pressure Gage

H = Calibrated Pressure Gage
L = Geophysical Logs
M = Manometer
N = Nonrecording Gage
R = Reported

S = Steel Tape
T = Electric Tape
V = Calibrated Electric Tape
Z = Other

SITE STATUS (S)

D = Dry
E = Recently Flowing
F = Flowing
G = Nearby Flowing
H = Nearby Recently Flowing

I = Injector
J = Injector or Site Monitor
N = Discontinued Measuring
O = Obstruction
P = Pumping

R = Recently Pumped
S = Nearby Pumping
T = Nearby Recently Pumped
V = Foreign Matter on Water
W = Well Destroyed
X = Affected by Surface Water Site
Z = Other

SITE ID 323933116000301
LOCAL NUMBER 017S010E19F001S
In Davies Valley, about 0.15 mile east of Main Road. Drilled unused water-table well. Diameter 8 inches. Altitude of land-surface datum 1120 feet. Records available 1974.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
OCT 30, 1974	346.05 S

SITE ID 323934115504701
LOCAL NUMBER 017S011E22E002S
About 12 miles southeast of Ocotillo and 1 mile south of Highway 98 and Sunrise Butte. Drilled observation well. Diameter 2 inches, depth measured 119.65 feet in 1975, well point 117.6-119.6 feet. Altitude of land-surface datum 303.9 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 08, 1975	102.48	DEC 17, 1981	101.64 S	OCT 19, 1988	100.90 S	OCT 16, 1995	100.17 S
14	102.07	MAR 11, 1982	101.52 S	MAR 13, 1989	100.76 S	MAR 19, 1996	100.22 V
JUN 24	102.10	OCT 07	101.49 S	OCT 30	100.79 S	OCT 16	100.06 S
DEC 09	102.00	MAR 30, 1983	101.40 S	MAR 20, 1990	100.79 S	MAR 17, 1997	100.10 S
OCT 01, 1976	102.05	OCT 26	101.28 S	OCT 23	100.72 S	OCT 20	99.98 V
APR 27, 1977	101.97	APR 12, 1984	101.24 S	APR 02, 1991	100.72 S	MAR 23, 1998	99.83 S
OCT 04	101.89	OCT 23	101.10 S	OCT 07	100.61 S	OCT 27	99.71 S
APR 26, 1978	101.93	APR 12, 1985	101.05 S	MAR 17, 1992	100.65 S	MAR 22, 1999	99.64 S
OCT 04	101.86	OCT 30	100.94 S	OCT 27	100.54 S	OCT 25	99.50 S
MAR 14, 1979	101.93	MAR 28, 1986	101.04 S	APR 13, 1993	100.54 S	MAR 29, 2000	99.50 S
SEP 12	101.72 S	OCT 23	101.07 S	OCT 19	100.52 S	OCT 23	99.40 S
APR 30, 1980	101.68 S	APR 01, 1987	100.94 S	MAR 14, 1994	100.41 S	MAR 27, 2001	99.24 S
SEP 24	101.59 S	OCT 21	100.92 S	OCT 17	100.43 S		
APR 29, 1981	101.67 S	MAR 15, 1988	100.86 S	MAR 29, 1995	100.36 S		

HIGHEST 99.24 MAR 27, 2001
LOWEST 102.48 MAY 08, 1975

SITE ID 324009115532301
LOCAL NUMBER 017S011E18K001S
About 8 miles southeast Ocotillo, west of Highway 98. Augered observation well. Diameter 2 inches, depth 150.3 feet, depth measured 142 feet in 1988, well point 148.3-150.3 feet. Altitude of land-surface datum 341.6 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 14, 1975	136.76	OCT 01, 1976	136.62	APR 26, 1978	136.29	SEP 12, 1979	136.29 S
JUN 24	136.69	APR 27, 1977	136.54	OCT 04	136.29	APR 30, 1980	136.30 S
DEC 10	136.70	OCT 04	136.28	MAR 14, 1979	136.42	SEP 24	136.25 S

DATE: 06/

SITE ID 324009115532301 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 29, 1981	136.24 S	OCT 26, 1983	136.10 S	MAR 28, 1986	135.75 S	OCT 19, 1988	135.59 S
NOV 05	136.23 S	APR 12, 1984	136.01 S	OCT 23	135.69 S	MAR 13, 1989	135.56 S
MAR 11, 1982	136.19 S	OCT 23	135.92 S	APR 01, 1987	135.60 S		
OCT 07	136.18 S	APR 12, 1985	135.80 S	OCT 21	135.54 S		
MAR 30, 1983	136.12 S	OCT 30	135.74 S	MAR 15, 1988	135.50 S		

HIGHEST 135.50 MAR 15, 1988
LOWEST 136.76 MAY 14, 1975

SITE ID 324013115511101
LOCAL NUMBER 017S011E16J001S
About 15 miles west of Calexico south of Highway 98. Drilled unused well. Diameter 4.5 inches, depth measured 336.5 feet in 1974, perforated 226-366 feet. Altitude of land-surface datum 298.7 feet. Water-level records available 1970, 1974 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 19, 1970	95.00 R	SEP 24, 1980	96.06 S	APR 01, 1987	95.44 S	MAR 29, 1995	94.75 S
NOV 22, 1974	96.63	APR 29, 1981	96.14 S	OCT 21	95.39 S	OCT 16	94.58 S
DEC 11	96.63	NOV 05	96.06 S	MAR 15, 1988	95.35 S	MAR 19, 1996	94.57 S
FEB 04, 1975	96.66	MAR 11, 1982	96.00 S	OCT 19	95.37 S	OCT 16	94.42 S
DEC 09	96.55	OCT 07	95.95 S	MAR 13, 1989	95.16 S	MAR 17, 1997	94.56 S
OCT 01, 1976	96.50	MAR 30, 1983	95.90 S	APR 02, 1991	95.13 S	OCT 20	94.29 S
APR 27, 1977	96.46	OCT 26	95.80 S	OCT 07	95.00 S	MAR 23, 1998	94.23 S
OCT 04	96.36	APR 12, 1984	95.78 S	MAR 17, 1992	95.10 S	OCT 27	94.11 S
APR 26, 1978	96.41	OCT 23	95.60 S	OCT 27	94.97 S	MAR 22, 1999	93.97 S
OCT 04	96.29	APR 12, 1985	95.57 S	APR 13, 1993	95.19 S	OCT 25	93.85 S
MAR 14, 1979	96.40	OCT 30	95.44 S	OCT 19	94.96 S	MAR 29, 2000	93.84 S
SEP 12	96.21 S	MAR 28, 1986	95.52 S	MAR 14, 1994	95.09 S	OCT 23	93.76 S
APR 30, 1980	96.14 S	OCT 23	95.55 S	OCT 17	94.85 S	MAR 27, 2001	93.58 S

HIGHEST 93.58 MAR 27, 2001
LOWEST 96.66 FEB 04, 1975

SITE ID 324038115454701
LOCAL NUMBER 017S012E17A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
NOV 01, 1974	56.00 S

SITE ID 324114115552301
LOCAL NUMBER 017S010E11H001S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic well. Diameter 8 inches, depth measured 329.9 feet in 1989. Altitude of land-surface datum 380 feet. Water-level records available 1964, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1964	158.27	MAR 20, 1980	166.59 S	OCT 26, 1983	174.33 S	MAR 15, 1988	172.18 SR
JUN 19, 1978	226.46 R	APR 18	166.81 S	APR 12, 1984	172.39 S	OCT 19	171.02 S
24	195.36 R	MAY 02	167.65 S	OCT 24	171.79 S	MAR 17, 1989	170.45 S
25	164.20	SEP 25	170.46 S	APR 25, 1985	171.87 S	OCT 31	169.84 S
MAR 15, 1979	164.29	APR 29, 1981	170.69 S	OCT 31	171.69 S	MAR 20, 1990	169.55 S
16	164.27	NOV 06	173.35 S	APR 03, 1986	171.37 S	APR 02, 1991	172.44 S
22	164.24	MAR 13, 1982	177.00 SR	OCT 23	171.33 S	OCT 07	170.39 SR
SEP 13	166.05 S	OCT 07	180.83 SR	APR 01, 1987	171.01 S		
MAR 12, 1980	166.55 S	APR 01, 1983	174.12 S	OCT 23	173.39 SR		

HIGHEST 158.27 JUN 15, 1964
LOWEST 174.33 OCT 26, 1983

SITE ID 324117115552001
LOCAL NUMBER 017S010E11H003S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic water-table well. Diameter 5 inches, depth 348 feet, perforated 202-217, 228-238, 265-273, 284-295, 304-318, 327-333 feet. Altitude of land-surface datum 380 feet. Water-level records available 1987 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1987	179.29 S	APR 03, 1991	176.64 S	OCT 27, 1994	176.36 S	MAR 23, 1998	175.29 S
MAR 17, 1988	178.81 SR	OCT 08	SO	MAR 30, 1995	175.64 S	NOV 13	175.43 V
OCT 19	180.11 SR	APR 07, 1992	175.57 S	OCT 17	178.32 V	MAR 23, 1999	176.00 S
MAR 17, 1989	177.99 S	OCT 28	176.84 S	MAR 20, 1996	SO	OCT 25	176.39 S
OCT 31	179.08 SR	APR 14, 1993	175.47 S	OCT 16	178.53 V	MAR 29, 2000	175.89 S
MAR 21, 1990	177.73 S	OCT 21	176.35 S	MAR 24, 1997	175.69 S	OCT 23	176.53 S
OCT 24	178.57 S	MAR 24, 1994	P	OCT 20	176.69 V	MAR 26, 2001	174.26 V

HIGHEST 174.26 MAR 26, 2001
LOWEST 179.29 OCT 23, 1987

SITE ID 324118115552101
LOCAL NUMBER 017S010E11H002S
Southeast of Ocotillo along Highway 98 in Yuha Estates. Drilled domestic water-table well in sand and clay. Diameter 4 inches, depth 344 feet. Altitude of land-surface datum 376 feet. Records available 1973, 1978-87.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR , 1973	165.00 R	SEP 13, 1979	176.29 S	OCT 07, 1982	189.87 S	OCT 31, 1985	190.27 SR
MAY 24, 1978	179.02	MAY 02, 1980	176.60 S	APR 01, 1983	185.95 S	APR 04, 1986	185.06 SR
JUN 24	182.70	SEP 25	180.36 S	OCT 26	187.34 S	OCT 23	187.41 SR
25	169.40	APR 29, 1981	182.35 S	APR 13, 1984	186.39 SR	MAR 31, 1987	W
MAR 15, 1979	171.16	NOV 06	184.43 S	OCT 24	186.75 S		
22	170.52	MAR 13, 1982	185.44 S	APR 25, 1985	186.77 S		

HIGHEST 165.00 MAR , 1973
LOWEST 189.87 OCT 07, 1982

SITE ID 324119115553201
LOCAL NUMBER 017S010E11G004S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled unused well. Diameter 10.75 inches, depth measured 199.1 feet in 1978, deepened to a reported 500 feet in 1981. Altitude of land-surface datum 375 feet. Water-level records available 1978, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUL 05, 1978	193.18 S	APR 03, 1986	188.26 S	OCT 07, 1991	180.70 S	MAR 17, 1997	177.74 V
06	193.12 S	OCT 23	187.22 S	MAR 17, 1992	179.76 S	OCT 20	177.34 V
AUG 02	193.35 S	MAR 31, 1987	186.69 S	OCT 27	180.08 S	MAR 23, 1998	176.82 V
APR 29, 1981	199.37 S	OCT 22	185.92 S	APR 13, 1993	179.46 S	OCT 27	176.30 V
OCT 07, 1982	206.21 S	MAR 18, 1988	185.21 S	OCT 19	180.10 V	MAR 22, 1999	176.06 V
APR 01, 1983	203.14 S	OCT 19	184.26 S	MAR 14, 1994	179.56 V	OCT 25	175.66 V
OCT 26	199.31 S	MAR 17, 1989	183.91 S	OCT 17	179.58 V	MAR 29, 2000	175.34 V
APR 12, 1984	196.28 S	OCT 31	183.47 S	MAR 29, 1995	178.97 V	OCT 23	174.94 V
OCT 24	193.25 S	MAR 20, 1990	182.79 S	OCT 16	178.46 V	MAR 27, 2001	174.48 V
APR 25, 1985	191.90 S	OCT 23	182.14 S	MAR 19, 1996	178.12 V		
OCT 31	189.71 S	APR 02, 1991	181.45 S	OCT 16	178.00 V		

HIGHEST 174.48 MAR 27, 2001
LOWEST 206.21 OCT 07, 1982

SITE ID 324123115552901
LOCAL NUMBER 017S010E11G001S
About 5 miles southeast of Ocotillo in Yuha Estates. Drilled domestic well. Diameter 8 inches, depth 300 feet, perforated 160-300 feet. Altitude of land-surface datum 375 feet. Water-level records available 1967, 1971-72, 1975-76, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 26, 1967	170.00	R	APR 29, 1981	226.73	SR	OCT 19, 1988	180.50	S	JUL 31, 1995	177.16	V
SEP 30, 1971	150.00	R	NOV 06	232.80	S	MAR 17, 1989	180.95	SR	OCT 16	177.15	V
JUL 25, 1972	164.00	R	MAR 13, 1982	228.15	S	OCT 31	181.22	SR	MAR 19, 1996	176.94	V
JUN 27, 1975	164.94		OCT 07	221.20	S	MAR 20, 1990	179.61	S	OCT 16	177.52	V
JAN 08, 1976	165.11		APR 01, 1983	205.99	S	OCT 23	179.45	S	MAR 17, 1997	176.78	V
JUL 05, 1978	195.56		OCT 26	195.86	S	APR 02, 1991	178.21	S	OCT 20	176.35	V
06	195.58		APR 12, 1984	191.17	S	OCT 07	177.59	S	MAR 23, 1998	175.42	V
MAR 15, 1979	204.38		OCT 24	187.63	S	MAR 17, 1992	176.73	S	OCT 27	175.50	V
SEP 13	216.86	S	OCT 31, 1985	185.31	S	OCT 27	178.03	S	MAR 22, 1999	174.97	V
MAR 12, 1980	222.82	S	APR 03, 1986	182.92	S	APR 13, 1993	176.97	S	OCT 25	174.59	V
20	218.29	S	OCT 23	182.68	S	OCT 19	178.89	S	MAR 29, 2000	174.14	V
APR 18	213.75	SR	MAR 31, 1987	182.73	SR	MAR 14, 1994	178.02	S	OCT 23	174.03	V
MAY 02	216.60	S	OCT 22	182.48	S	OCT 17		SO	MAR 27, 2001	173.38	V
SEP 25	225.64	S	MAR 18, 1988	181.34	S	MAR 29, 1995		SO			

HIGHEST 164.94 JUN 27, 1975
LOWEST 232.80 NOV 06, 1981

SITE ID 324123115553101
LOCAL NUMBER 017S010E11G002S
Southeast of Ocotillo, along Highway 98 in Yuha Estates. Drilled domestic water-table well. Diameter 6.6 inches, depth 335 feet, perforated 235-315 feet. Altitude of land-surface datum 375 feet. Records available 1971, 1975-82, 1984.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV , 1971	158.00	R	MAY 24, 1978	164.91		MAR 15, 1979	165.58		NOV 06, 1981	172.38	S
JUN 01, 1975	164.00	S	JUN 19	164.98		22	165.60		MAR 13, 1982	172.92	S
28	164.25		25	164.80		SEP 13	166.84	S	OCT 07	178.03	SR
OCT 14, 1976	164.04		JUL 05	165.09		MAY 02, 1980	167.64	S	APR 12, 1984		P
APR 27, 1977	163.68		06	165.09		SEP 25	168.93	S	OCT 24		N
OCT 04	164.45		OCT 04	165.58		APR 29, 1981	170.25	S			

HIGHEST 158.00 NOV , 1971
LOWEST 172.92 MAR 13, 1982

SITE ID 324138115552901
LOCAL NUMBER 017S010E11B001S
About 5 miles southeast of Ocotillo in Yuha Estates. Domestic well. Diameter 7 inches, depth reported 301 feet.
Altitude of land-surface datum 376 feet. Water-level records available 1975-76, 1978 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 27, 1975	156.80		APR 01, 1983	163.03	S	MAR 17, 1989	163.79	S	MAR 30, 1995	163.18	SR
JAN 08, 1976	154.80		OCT 26	163.37	S	OCT 31	163.84	S	OCT 17		P
JUN 24, 1978	157.90		APR 12, 1984	163.34	S	MAR 21, 1990	163.36	S	MAR 20, 1996	163.20	S
MAR 15, 1979	158.27		OCT 24	163.49	S	OCT 24	163.72	S	OCT 17	163.62	S
22	158.25		APR 25, 1985	163.10	S	APR 02, 1991	163.29	S	MAR 18, 1997	163.00	S
SEP 13	159.53	S	OCT 31	163.29	S	OCT 08	163.72	S	OCT 21	163.05	SR
MAY 02, 1980	159.96	S	APR 04, 1986	162.99	S	APR 07, 1992	163.13	S	OCT 28, 1998		P
SEP 25	161.06	S	OCT 23	163.30	S	OCT 28	163.65	S	MAR 26, 1999	162.51	V
APR 29, 1981	161.47	S	APR 03, 1987	163.14	S	APR 14, 1993	163.21	S	OCT 25	162.53	V
NOV 06	162.47	S	OCT 23	163.82	S	OCT 21	163.87	S	MAR 29, 2000	162.33	V
MAR 13, 1982	162.47	S	MAR 18, 1988	163.29	S	MAR 15, 1994	163.34	S	OCT 23	162.47	V
OCT 07	163.03	S	OCT 19	164.05	S	OCT 27	163.56	S	MAR 27, 2001	162.02	V

HIGHEST	154.80	JAN 08, 1976
LOWEST	164.05	OCT 19, 1988

SITE ID 324217114591601
LOCAL NUMBER 017S019E02G005S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 14, 1978	17.4	R	MAY 06, 1999	12.71	Z

HIGHEST	12.71	MAY 06, 1999
LOWEST	17.4	NOV 14, 1978

SITE ID 324217114591701
LOCAL NUMBER 017S019E02G003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 14, 1978	40.1	R	MAY 06, 1999	40.00	Z

HIGHEST	40.00	MAY 06, 1999
LOWEST	40.1	NOV 14, 1978

SITE ID 324217114591702
LOCAL NUMBER 017S019E02G004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 14, 1978	34.3 R	MAY 06, 1999	33.89 Z

HIGHEST 33.89 MAY 06, 1999
LOWEST 34.3 NOV 14, 1978

SITE ID 324217116013501
LOCAL NUMBER 017S009E12E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 01, 1974	42.00 S

SITE ID 324226114554901
LOCAL NUMBER 017S020E04D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 21, 1997	49.81 S	APR 24, 1998	50.64 S	JAN 04, 1999	49.57 V		
21	49.81 S	JUL 17	50.52 S	MAY 06	50.60 S		

HIGHEST 49.57 JAN 04, 1999
LOWEST 50.64 APR 24, 1998

SITE ID 324227114554602
LOCAL NUMBER 017S020E04D003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 21, 1997	50.77 V	APR 24, 1998	51.67 Z	JAN 04, 1999	50.56 V

HIGHEST 50.56 JAN 04, 1999
LOWEST 51.67 APR 24, 1998

SITE ID 32423311457530l
LOCAL NUMBER 016S019E36P004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 02, 1998	43.03 T	DEC 11, 1998	41.82 S

HIGHEST 41.82 DEC 11, 1998
LOWEST 43.03 MAR 02, 1998

SITE ID 324234114552601
LOCAL NUMBER 016S020E32R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 21, 1961	56.36 S	JUL 17, 1996	W

HIGHEST 56.36 NOV 21, 1961
LOWEST 56.36 NOV 21, 1961

SITE ID 324248115523901
LOCAL NUMBER 016S011E42M006S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 01, 1975	1.00 S

SITE ID 324251114563101
LOCAL NUMBER 016S020E31K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 02, 1962	51.2 S	APR 30, 1997	W

HIGHEST 51.2 MAY 02, 1962
LOWEST 51.2 MAY 02, 1962

SITE ID 324251115522201
LOCAL NUMBER 016S011E42L001S
About 7.2 miles southeast of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth measured 143.5 feet in 1975, 130.4 feet in 1987, well point 141.5-143.5 feet. Altitude of land-surface datum 195 feet. Water-level records available 1975-76, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 09, 1975	44.77		APR 04, 1986	37.23	S	OCT 09, 1991	38.70	S	OCT 16, 1996	22.68	S
14	41.05		MAR 31, 1987	26.36	S	MAR 16, 1992	38.65	S	MAR 17, 1997	23.64	S
JUN 24	39.90		OCT 21	37.01	S	OCT 28	38.68	S	OCT 20	14.04	S
JAN 07, 1976	39.59		MAR 15, 1988	37.35	S	APR 15, 1993	10.94	S	MAR 23, 1998	15.52	S
SEP 30	34.10	S	OCT 18	37.72	S	OCT 21	13.32	S	OCT 27	17.27	S
NOV 04, 1981	29.01	S	MAR 14, 1989	37.94	S	MAR 15, 1994	14.94	S	MAR 22, 1999	18.44	S
MAR 12, 1982	29.52	S	OCT 31	38.20	S	OCT 26	17.17	S	OCT 25	20.20	S
OCT 07	22.85	S	MAR 21, 1990	38.33	S	MAR 29, 1995	18.54	S	MAR 29, 2000	21.65	S
APR 12, 1985	36.02	S	OCT 24	38.51	S	OCT 16	18.99	S	OCT 23	21.12	S
OCT 30	36.83	S	APR 05, 1991	39.12	S	MAR 20, 1996	21.19	S	MAR 27, 2001	21.20	S

HIGHEST 10.94 APR 15, 1993
LOWEST 44.77 MAY 09, 1975

SITE ID 324252114555801
LOCAL NUMBER 016S020E32L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 19, 1983	56.3	R	MAR 28, 1984	64.5	R	MAY 05, 1999	59.83	Z

HIGHEST 56.3 DEC 19, 1983
LOWEST 64.5 MAR 28, 1984

SITE ID 324252114555802
LOCAL NUMBER 016S020E32L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 05, 1999	49.43	Z

SITE ID 3242[illegible]8114571301
LOCAL NUMBER 016S020E31M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 01, 1998	30.84 Z	MAY 01, 1998	30.84 Z	DEC 11, 1998	30.12 V

HIGHEST 30.12 DEC 11, 1998
LOWEST 30.84 MAY 01, 1998 MAY 01, 1998

SITE ID 324258115523501
LOCAL NUMBER 016S011E42M001S
About 7 miles southeast of Ocotillo. Unused water-table well. Diameter 50 inches, depth 7 feet in 1980.
Altitude of land-surface datum 220 feet. Records available 1949, 1962, 1974 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 18, 1949	7.50	APR 25, 1978	4.39	MAR 12, 1982	D	APR 04, 1986	D
AUG 23, 1962	6.80	OCT 05	D	OCT 07	D	OCT 22	D
OCT 30, 1974	4.93	MAR 21, 1979	4.59	MAR 30, 1983	4.17 S	MAR 31, 1987	D
JUN 24, 1975	4.70	SEP 12	D	OCT 27	D	OCT 21	SD
JAN 07, 1976	5.05	APR 30, 1980	4.50 S	APR 12, 1984	D	MAR 15, 1988	D
SEP 30	4.65	SEP 24	D	OCT 23	D	OCT 18	SD
APR 27, 1977	4.80	APR 29, 1981	D	APR 12, 1985	D	MAR 14, 1989	SD
OCT 04	4.83	NOV 04	D	OCT 30	D		

HIGHEST 4.17 MAR 30, 1983
LOWEST 7.50 JAN 18, 1949

SITE ID 324258115523502
LOCAL NUMBER 016S011E42M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
OCT 01, 1974	3.00 S

SITE ID 324258115523901
LOCAL NUMBER 016S011E42M004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
OCT 01, 1974	6.00 S

SITE ID 324258115524101
LOCAL NUMBER 016S011E42M005S
About 7 miles southeast of Ocotillo. Unused water-table well. Diameter 5 inches, depth measured 6.5 feet in 1974, 4.4 feet in 1980, deepened to 9.3 feet in 1981 with 1 inch diameter casing, depth measured 8.0 feet in 1988. Altitude of land-surface datum 220 feet. Water-level records available 1949, 1974, 1976-99. Destroyed.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 18, 1949	4.30	R	DEC 18, 1981	4.62	S	OCT 21, 1987	4.97	S	OCT 21, 1993	5.36	S
OCT 30, 1974	3.99		MAR 12, 1982	4.08	S	MAR 15, 1988	4.15	S	MAR 15, 1994	5.37	S
SEP 30, 1976	3.93		OCT 07	5.00	S	OCT 18	5.06	S	OCT 26	5.46	S
APR 27, 1977	3.33		MAR 30, 1983	3.74	S	MAR 14, 1989	4.99	S	MAR 29, 1995	5.53	S
OCT 03	4.36		OCT 27	4.63	S	OCT 31	4.98	S	OCT 16	5.52	S
APR 25, 1978	3.44		APR 12, 1984	3.84	S	MAR 21, 1990	5.03	S	MAR 20, 1996	5.52	S
OCT 05		D	OCT 23	4.97	S	OCT 24	5.09	S	OCT 16	5.56	S
MAR 21, 1979	3.60		APR 12, 1985	3.80	S	APR 05, 1991	5.13	S	MAR 17, 1997	5.56	S
SEP 12		D	OCT 30	4.88	S	OCT 09	5.14	S	OCT 20		O
APR 30, 1980	3.98	S	APR 04, 1986	4.01	S	MAR 16, 1992	5.23	S	MAR 23, 1998		O
SEP 24		D	OCT 22	4.75	S	OCT 28	5.26	S	OCT 27		O
APR 29, 1981	4.32	S	MAR 31, 1987	3.92	S	APR 15, 1993	5.31	S	MAR 22, 1999		W

HIGHEST 3.33 APR 27, 1977
LOWEST 5.56 OCT 16, 1996 MAR 17, 1997

SITE ID 324300115574701
LOCAL NUMBER 016S010E41M001S
ABOUT .19 MI SOUTH OF HWY 98. DRILLED DOMESTIC WATER-TABLE WELL. DIAM 8-10 IN. ALTITUDE OF LSD 340 FT. RECORDS AVAILABLE 1971.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
OCT 12, 1971	71.00	

SITE ID 324303114462301
LOCAL NUMBER 016S021E32R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 14, 1997	33.07	S	JAN 08, 1998	36.23	Z	JUL 17, 1998	32.98	V			
14	33.07	S	MAR 27	37.71	S	MAY 06, 1999	34.77	Z			

HIGHEST 32.98 JUL 17, 1998
LOWEST 37.71 MAR 27, 1998

DATE: 06/'

SITE ID 324303114462302
LOCAL NUMBER 016S021E32R003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 14, 1997	33.14 S	JAN 08, 1998	36.28 Z	JUL 17, 1998	32.71 V		
14	33.14 S	MAR 27	37.82 Z	MAY 06, 1999	34.84 Z		

HIGHEST 32.71 JUL 17, 1998
LOWEST 37.82 MAR 27, 1998

SITE ID 324303114480501
LOCAL NUMBER 016S021E31P003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 02, 1986	64.1 R	JAN 04, 1999	49.01 V

HIGHEST 49.01 JAN 04, 1999
LOWEST 64.1 DEC 02, 1986

SITE ID 324304114480401
LOCAL NUMBER 016S021E31P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 27, 1984	61.17 R	APR 24, 1998	50.00 Z	MAY 05, 1999	47.30 Z

HIGHEST 47.30 MAY 05, 1999
LOWEST 61.17 JUN 27, 1984

SITE ID 324304114480402
LOCAL NUMBER 016S021E31P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 02, 1986	63.3 R	JUL 17, 1998	48.00 S	MAY 05, 1999	47.30 Z		
APR 24, 1998	50.00 Z	JAN 04, 1999	48.74 V				

HIGHEST 47.30 MAY 05, 1999
LOWEST 63.3 DEC 02, 1986

SITE ID 324306114442801
LOCAL NUMBER 016S021E34K003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 05, 1999	O

SITE ID 324306114442802
LOCAL NUMBER 016S021E34K004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 19, 1983	48.3 R	MAY 05, 1999	O

HIGHEST 48.3 DEC 19, 1983
LOWEST 48.3 DEC 19, 1983

SITE ID 324306114462001
LOCAL NUMBER 016S021E32R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 28, 1961	56.61 S	OCT 14, 1997	33.15 S	JUL 17, 1998	33.43 V		
MAY , 1964	57.7 S	JAN 08, 1998	36.16 Z	DEC 14	34.26 V		
JUN 03, 1994	43.70 R	MAR 27	37.77 S	MAY 06, 1999	34.84 Z		

HIGHEST 33.15 OCT 14, 1997
LOWEST 57.7 MAY , 1964

SITE ID 324311115563601
LOCAL NUMBER 016S010E40F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 01, 1974	49.00 S

DATE: 06/

SITE ID 324312114442701
LOCAL NUMBER 016S021E34K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 17, 1978	80.75 R	MAY 05, 1999	63.56 Z

HIGHEST 63.56 MAY 05, 1999
LOWEST 80.75 FEB 17, 1978

SITE ID 324312114442702
LOCAL NUMBER 016S021E34K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 17, 1978	54.10 R	MAY 05, 1999	59.63 Z

HIGHEST 54.10 FEB 17, 1978
LOWEST 59.63 MAY 05, 1999

SITE ID 324312115581201
LOCAL NUMBER 016S010E42H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	109.00 E

SITE ID 324315115580301
LOCAL NUMBER 016S010E42H002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	84.00 S

SITE ID 324322115583101
LOCAL NUMBER 016S010E42C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	119.00 S

SITE ID 324324115580501
LOCAL NUMBER 016S010E42A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 01, 1974	83.00 S

SITE ID 324325114461001
LOCAL NUMBER 016S021E33E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 30, 1994	68.65 R	MAR 27, 1998	61.73 V	DEC 14, 1998	58.78 S		
JAN 08, 1998	60.21 Z	JUL 17	58.92 V	MAY 05, 1999	60.34 Z		

HIGHEST	58.78	DEC 14, 1998
LOWEST	68.65	JUN 30, 1994

SITE ID 324326115580301
LOCAL NUMBER 016S010E42A004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 01, 1974	73.00 S

DATE: 06/

SITE ID 324326115580601
LOCAL NUMBER 016S010E42A001S
About 2 miles southeast of Ocotillo, north of Highway 98. Domestic well, diameter and depth unknown. Altitude of land-surface datum 334 feet. Water-level records available 1995 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUL 31, 1995	87.76 V	OCT 16, 1995	87.72 V	MAR 19, 1996	87.79 V	OCT 17, 1996	88.22 V

HIGHEST	87.72	OCT 16, 1995
LOWEST	88.22	OCT 17, 1996

SITE ID 324329115580501
LOCAL NUMBER 016S010E42A005S
About 2 miles southeast of Ocotillo, north of Highway 98. Domestic well. Diameter and depth unknown. Altitude of land-surface datum 328 feet. Water-level records available 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 30, 1974	73.21	NOV 05, 1981	75.55 S	OCT 22, 1986	77.68 S	OCT 07, 1991	79.78 S
OCT 14, 1976	73.55	MAR 10, 1982	75.61 S	APR 03, 1987	77.70 S	MAR 17, 1992	79.63 S
APR 27, 1977	73.58	OCT 07	75.96 S	OCT 21	78.04 S	OCT 27	80.27 S
OCT 04	73.74	APR 06, 1983	75.74 S	MAR 18, 1988	78.06 S	APR 13, 1993	80.05 S
APR 26, 1978	73.84	OCT 25	76.20 S	OCT 19	78.50 S	OCT 19	80.60 S
OCT 04	74.05	APR 19, 1984	76.33 S	MAR 22, 1989	78.58 S	MAR 14, 1994	80.56 S
MAR 23, 1979	74.10	OCT 23	76.64 S	OCT 30	79.04 S	23	80.59 S
MAY 01, 1980	74.67 S	APR 24, 1985	76.79 S	MAR 20, 1990	79.05 S	OCT 17	SO
SEP 24	74.96 S	OCT 30	77.11 S	OCT 23	79.49 S	MAR 30, 1995	SO
APR 29, 1981	75.18 S	MAR 28, 1986	77.18 S	APR 03, 1991	79.40 S		

HIGHEST	73.21	DEC 30, 1974
LOWEST	80.60	OCT 19, 1993

SITE ID 324332115591301
LOCAL NUMBER 016S009E36R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 01, 1974	163.00 S

SITE ID 324333115555901
LOCAL NUMBER 016S010E34N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 01, 1975	77.00 S

SITE ID 324342115574301
LOCAL NUMBER 016S010E32P001S
In No Mirage. Drilled unused well. Diameter 7 inches, depth unknown. Altitude of land-surface datum 285 feet. Water-level records available since 1992.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 27, 1992	40.16 S	MAR 29, 1995	41.72 S	OCT 20, 1997	41.94 S	MAR 29, 2000	42.47 S
APR 13, 1993	39.83 S	OCT 16	41.35 V	MAR 23, 1998	41.77 S	OCT 23	42.77 S
OCT 19	40.53 S	MAR 19, 1996	41.22 V	OCT 27	42.30 S	MAR 27, 2001	42.52 S
MAR 23, 1994	40.41 S	OCT 16	41.70 S	MAR 22, 1999	42.15 S		
OCT 17	40.94 S	MAR 17, 1997	41.54 S	OCT 25	42.57 S		

HIGHEST 39.83 APR 13, 1993
LOWEST 42.77 OCT 23, 2000

SITE ID 324343116005501
LOCAL NUMBER 016S009E35N002S
Near Octotillo where Highway 98 and Interstate 8 cross. Drilled unused well. Altitude of land-surface datum 600 feet. Water levels available since 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 01, 1975	317.00 S	MAR 28, 2000	315.21 V	OCT 23, 2000	315.57 V	MAR 27, 2001	315.43 V

HIGHEST 315.21 MAR 28, 2000
LOWEST 317.00 JUN 01, 1975

SITE ID 324345116010001
LOCAL NUMBER 016S009E35M001S
In Ocotillo about 1 mile west of Shell Canyon Road. Drilled domestic water-table well. Diameter 8 inches, depth 535 feet, perforated 415-425, 470-495 feet. Altitude of land-surface datum 610 feet. Records available 1962, 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR , 1962	321.00 R	MAR 22, 1979	325.26	OCT 06, 1982	324.41 S	MAR 25, 1986	325.81 SR
JUN 24, 1975	323.16	SEP 13	323.80 S	MAR 30, 1983	324.43 S	OCT 22	329.06 SR
OCT 14, 1976	323.08	APR 30, 1980	323.84 S	OCT 25	324.69 S	MAR 30, 1987	325.27 S
APR 28, 1977	327.04	SEP 25	323.89 S	APR 11, 1984	324.48 S	OCT 20	325.13 SR
OCT 04	325.38	MAY 01, 1981	324.11 S	OCT 24	324.56 S	MAR 14, 1988	326.21 SR
APR 26, 1978	324.01	NOV 05	323.98 S	APR 11, 1985	325.77 SR	OCT 19	325.16 SR
OCT 06	323.66	MAR 13, 1982	324.17 S	OCT 30	324.87 S	MAR 15, 1989	326.01 SR

HIGHEST 321.00 MAR , 1962
LOWEST 327.04 APR 28, 1977

SITE ID 324350115574201
LOCAL NUMBER 016S010E32L003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	31.00 S

SITE ID 324350115593701
LOCAL NUMBER 016S009E36L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	152.00 S

SITE ID 324359114375601
LOCAL NUMBER 016S022E27R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 06, 1994	SD

SITE ID 324359114375602
LOCAL NUMBER 016S022E27R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	20.0 R	DEC 06, 1990	19.0 R	MAR 05, 1993	13.6 R	JAN 06, 1994	15.4 R
MAR 05	19.0 R	JAN 03, 1991	19.2 R	APR 16	12.2 R	FEB 04	16.4 R
APR 10	19.9 R	MAR 22	19.7 R	MAY 07	12.9 R	MAR 04	16.8 R
MAY 16	19.6 R	JUN 21	20.1 R	27	13.3 R	APR 18	16.6 R
JUN 06	19.9 R	SEP 18	19.9 R	JUN 29	14.6 R	MAY 06	16.5 S
JUL 05	19.8 R	JAN 07, 1992	19.3 R	JUL 30	15.4 R	06	16.5 S
AUG 07	20.0 R	MAR 24	19.4 R	SEP 02	15.0 R	JUN 03	16.3 R
SEP 17	19.6 R	JUN 18	19.3 R	OCT 07	14.5 R		
OCT 05	19.7 R	SEP 24	19.9 R	NOV 04	13.7 R		
NOV 07	19.4 R	FEB 04, 1993	16.1 R	DEC 03	14.6 R		

HIGHEST 12.2 APR 16, 1993
LOWEST 20.1 JUN 21, 1991

SITE ID 324359115570001
LOCAL NUMBER 016S010E33E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 01, 1975	17.00 S

SITE ID 324401115593201
LOCAL NUMBER 016S009E36G004S
In Ocotillo, south of Interstate 8, and east of Imperial Highway. Drilled industrial water-table well. Diameter 10.75 inches, depth 560 feet, perforated 340-560 feet. Altitude of land-surface datum 382 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 28, 1975	136.47	NOV 05, 1981	124.24 S	OCT 23, 1986	122.61 S	OCT 29, 1992	127.62 S
FEB 08, 1976	126.36	MAR 12, 1982	123.66 S	APR 03, 1987	122.40 S	APR 15, 1993	126.52 S
OCT 15	128.39	OCT 06	134.95 SR	OCT 23	123.39 S	OCT 20	126.05 S
APR 29, 1977	129.43	07	125.77 S	MAR 18, 1988	122.65 S	MAR 15, 1994	125.11 S
OCT 04	126.14	MAR 31, 1983	124.66 S	OCT 19	P	OCT 17	126.11 S
APR 26, 1978	124.70	OCT 26	123.30 S	MAR 23, 1989	123.10 S	MAR 29, 1995	138.36 S
OCT 06	128.15	APR 11, 1984	124.95 SR	OCT 31	125.90 SR	OCT 16	123.97 S
MAR 21, 1979	126.68	12	123.71 S	MAR 21, 1990	126.93 S	MAR 19, 1996	127.50 VR
SEP 13	126.05 S	OCT 24	126.35 SR	OCT 24	129.04 S	OCT 16	129.87 S
APR 30, 1980	124.10 S	APR 24, 1985	124.86 SR	APR 03, 1991	128.39 S	MAR 17, 1997	125.38 S
SEP 25	126.53 S	OCT 31	122.63 S	OCT 08	131.26 SR	OCT 20	125.96 S
APR 30, 1981	125.23 S	MAR 28, 1986	122.14 S	APR 07, 1992	127.85 S	MAR 23, 1998	125.20 V

SITE ID .01115593201 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 13, 1998	126.97 V	OCT 25, 1999	127.93 S	OCT 23, 2000	128.70 S		
MAR 22, 1999	128.16 S	MAR 29, 2000	132.60 S	MAR 27, 2001	P		

HIGHEST 122.14 MAR 28, 1986
LOWEST 138.36 MAR 29, 1995

SITE ID 324404114382801
LOCAL NUMBER 016S022E27P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	16.45 R	NOV 07, 1990	14.55 R	SEP 24, 1992	15.35 R	NOV 04, 1993	9.55 R
MAR 05	15.25 R	DEC 06	14.45 R	FEB 04, 1993	12.25 R	DEC 03	10.35 R
APR 10	15.25 R	JAN 03, 1991	14.65 R	MAR 05	9.95 R	JAN 06, 1994	11.15 R
MAY 16	14.75 R	MAR 22	15.15 R	APR 16	9.05 R	FEB 04	12.05 R
JUN 06	15.25 R	JUN 21	15.45 R	MAY 27	9.65 R	MAR 04	12.45 R
JUL 05	15.25 R	SEP 18	15.45 R	JUN 29	10.85 R	APR 18	12.45 R
AUG 07	15.45 R	JAN 07, 1992	14.95 R	JUL 30	11.65 R	MAY 06	12.18 S
SEP 17	15.15 R	MAR 24	14.95 R	SEP 02	11.25 R	06	12.18 S
OCT 05	15.15 R	JUN 18	14.95 R	OCT 07	10.15 R	JUN 03	12.15 R

HIGHEST 9.05 APR 16, 1993
LOWEST 16.45 FEB 15, 1990

SITE ID 324405114432501
LOCAL NUMBER 016S021E26K003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	10.04 R	APR 23, 1998	10.25 Z	DEC 09, 1998	10.20 S

HIGHEST 10.04 NOV 08, 1996
LOWEST 10.25 APR 23, 1998

SITE ID 324406114363301
LOCAL NUMBER 016S022E25L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 29, 1994	12.93 S

SITE ID 324407114432501
LOCAL NUMBER 016S021E26K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	27.74 R	APR 23, 1998	26.41 Z	DEC 09, 1998	28.27 V

HIGHEST 26.41 APR 23, 1998
LOWEST 28.27 DEC 09, 1998

SITE ID 324407114432502
LOCAL NUMBER 016S021E26K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	28.22 R	APR 23, 1998	27.50 Z	DEC 09, 1998	28.79 V

HIGHEST 27.50 APR 23, 1998
LOWEST 28.79 DEC 09, 1998

SITE ID 324407115590901
LOCAL NUMBER 016S009E36H001S
About 0.5 mile east of Ocotillo, south of Interstate 8. Drilled industrial water-table well in sand and clay. Diameter 10.75 inches, depth 410 feet, perforated 60-380 feet. Altitude of land-surface datum 342 feet. Water-level records available 1954, 1960, 1966, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 21, 1954	68.50 R	OCT 05, 1978	83.21	OCT 06, 1982	82.89 S	OCT 23, 1986	84.19 SR
MAY , 1960	85.00 R	MAR 22, 1979	81.82	MAR 31, 1983	81.02 S	APR 02, 1987	83.42 S
AUG , 1966	81.00 R	SEP 13	83.26 SR	OCT 27	82.51 S	OCT 22	84.06 S
NOV 21, 1974	80.07	MAY 01, 1980	82.01 SR	APR 20, 1984	82.32 SR	MAR 17, 1988	83.84 SR
JAN 08, 1976	80.21	SEP 26	82.67 S	OCT 24	82.78 S	OCT 18	84.65 SR
APR 29, 1977	81.66	APR 29, 1981	81.25 S	APR 26, 1985	82.62 S	MAR 17, 1989	83.67 S
OCT 04	82.65	NOV 05	82.72 S	OCT 31	84.08 SR	NOV 03	84.20 S
APR 27, 1978	80.89	MAR 10, 1982	81.65 S	MAR 27, 1986	83.29 S	MAR 22, 1990	84.04 S

SITE ID - J7115590901 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 31, 1990	84.07	SR	OCT 21, 1993		P	MAR 18, 1997	82.39	S	MAY 30, 2000	84.24	S
APR 04, 1991	83.45	S	MAR 24, 1994	83.67	S	OCT 20	82.81	S	OCT 23	85.13	S
OCT 09	83.75	S	OCT 17	84.69	S	MAR 24, 1998		P	MAR 26, 2001	85.54	S
APR 07, 1992	83.96	S	MAR 31, 1995	82.02	S	OCT 27	83.36	SR			
OCT 29	84.90	S	OCT 17	82.60	VR	MAR 25, 1999	83.04	V			
APR 14, 1993	84.32	S	MAR 21, 1996	82.11	S	OCT 25	83.67	VR			

HIGHEST 68.50 MAR 21, 1954
LOWEST 85.54 MAR 26, 2001

SITE ID 324408114364101
LOCAL NUMBER 016S022E25M003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 26, 1994	8.98	S

SITE ID 324409114385701
LOCAL NUMBER 016S022E27M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 15, 1990	13.43	R	DEC 06, 1990	12.33	R	MAR 05, 1993	8.53	R	JAN 06, 1994	9.13	R
MAR 05	13.23	R	JAN 03, 1991	12.53	R	APR 16	7.83	R	FEB 04	10.13	R
APR 10	13.23	R	MAR 22	13.13	R	MAY 07	7.53	R	MAR 04	10.63	R
MAY 16	13.13	R	JUN 21	13.63	R	27	8.13	R	APR 18	10.63	R
JUN 06	13.53	R	SEP 18	13.73	R	JUN 29	9.33	R	MAY 06	10.34	S
JUL 05	13.53	R	JAN 07, 1992	13.33	R	JUL 30	10.23	R	06	10.34	S
AUG 07	13.63	R	MAR 24	13.23	R	SEP 02	9.83	R	JUN 03	10.33	R
SEP 17	13.33	R	JUN 18	13.13	R	OCT 07	8.93	R			
OCT 05	13.03	R	SEP 24	13.53	R	NOV 04	7.13	R			
NOV 07	13.03	R	FEB 04, 1993	10.53	R	DEC 03	8.33	R			

HIGHEST 7.13 NOV 04, 1993
LOWEST 13.73 SEP 18, 1991

SITE ID 324409114432501
LOCAL NUMBER 016S021E26K005S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	34.98 R	APR 23, 1998	34.56 Z	DEC 09, 1998	35.44 V

HIGHEST 34.56 APR 23, 1998
LOWEST 35.44 DEC 09, 1998

SITE ID 324409114432502
LOCAL NUMBER 016S021E26K004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	35.72 R	APR 23, 1998	34.91 Z	DEC 09, 1998	36.39 V	MAY 07, 1999	34.82 V

HIGHEST 34.82 MAY 07, 1999
LOWEST 36.39 DEC 09, 1998

SITE ID 324410114432601
LOCAL NUMBER 016S021E26K006S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
NOV 08, 1996	19.49 R

SITE ID 324410114533801
LOCAL NUMBER 016S020E27B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 09, 1987	36.38 R	JUL 17, 1996	27.02 V	JUL 17, 1996	27.34 V

HIGHEST 27.02 JUL 17, 1996
LOWEST 36.38 JUN 09, 1987

SITE ID . .11114381801
LOCAL NUMBER 016S022E27K001S
In Winterhaven. Drilled unused well. Altitude of land-surface datum 127 feet. Water-level records available 1992 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 22, 1992	14.97 S	MAR 31, 1995	12.19 S	OCT 21, 1997	11.35 S	MAR 29, 2000	12.90 S
APR 13, 1993	9.30 S	OCT 17	11.67 S	MAR 24, 1998	9.17 S	OCT 24	11.83 S
OCT 20	8.88 S	MAR 20, 1996	12.79 S	OCT 28	12.43 S	MAR 27, 2001	12.80 S
MAR 15, 1994	12.38 S	OCT 16	12.72 S	MAR 16, 1999	12.32 V		
OCT 27	10.76 S	MAR 18, 1997	11.91 S	OCT 25	12.44 S		

HIGHEST 8.88 OCT 20, 1993
LOWEST 14.97 SEP 22, 1992

SITE ID 324411114533901
LOCAL NUMBER 016S020E27C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 04, 1987	42.9 R	JUL 17, 1998	39.21 S	MAY 05, 1999	40.50 V		
APR 09, 1998	41.78 V	DEC 15	40.87 V				

HIGHEST 39.21 JUL 17, 1998
LOWEST 42.9 AUG 04, 1987

SITE ID 324412114392701
LOCAL NUMBER 016S022E28K007S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	10.04 R	NOV 07, 1990	9.0 R	SEP 24, 1992	10.06 R	NOV 04, 1993	4.7 R
MAR 05	10.02 R	DEC 06	9.4 R	FEB 04, 1993	7.6 R	DEC 03	5.6 R
APR 10	10.03 R	JAN 03, 1991	9.6 R	MAR 05	4.1 R	JAN 06, 1994	6.3 R
MAY 16	10.01 R	MAR 22	10.00 R	APR 16	4.3 R	FEB 04	7.3 R
JUN 06	10.07 R	JUN 21	10.02 R	MAY 07	5.2 R	MAR 04	7.8 R
JUL 05	10.08 R	SEP 18	11.00 R	27	5.8 R	APR 18	7.6 R
AUG 07	10.07 R	JAN 07, 1992	10.05 R	JUL 30	8.0 R	MAY 06	7.69 S
SEP 17	10.04 R	MAR 24	10.04 R	SEP 02	7.3 R	06	7.69 S
OCT 05	10.01 R	JUN 18	10.03 R	OCT 07	6.2 R	JUN 03	7.7 R

HIGHEST 4.1 MAR 05, 1993
LOWEST 11.00 SEP 18, 1991

SITE ID 324412114425801
LOCAL NUMBER 016S021E25M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 16, 1991	40.85 R	JUL 23, 1996	35.05 R

HIGHEST 35.05 JUL 23, 1996
LOWEST 40.85 MAY 16, 1991

SITE ID 324413114381301
LOCAL NUMBER 016S022E27K003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 26, 1994	12.00 S

SITE ID 324414114372501
LOCAL NUMBER 016S022E26K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 03, 1989	15.85 R	JUL 05, 1990	16.35 R	MAR 24, 1992	15.85 R	NOV 04, 1993	11.05 R
30	15.85 R	AUG 07	16.35 R	JUN 18	15.95 R	DEC 03	12.15 R
OCT 12	14.75 R	SEP 17	16.55 R	SEP 24	17.55 R	JAN 06, 1994	12.85 R
NOV 03	15.25 R	OCT 05	16.15 R	MAR 05, 1993	11.95 R	FEB 04	13.55 R
DEC 08	15.75 R	NOV 07	15.85 R	APR 16	10.05 R	MAR 04	13.85 R
JAN 12, 1990	16.15 R	DEC 06	11.45 R	MAY 07	10.45 R	APR 18	13.35 R
FEB 15	16.65 R	JAN 03, 1991	15.05 R	27	10.65 R	MAY 06	13.35 R
MAR 05	16.65 R	MAR 22	15.65 R	JUN 29	11.65 R	JUN 03	13.85 R
APR 10	16.45 R	JUN 21	15.45 R	JUL 30	12.55 R		
MAY 16	15.35 R	SEP 18	16.05 R	SEP 02	12.55 R		
JUN 06	16.55 R	JAN 07, 1992	16.15 R	OCT 07	11.85 R		

HIGHEST 10.05 APR 16, 1993
LOWEST 17.55 SEP 24, 1992

SITE ID 3.   .14114532301
LOCAL NUMBER 016S020E27D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
, 1933	70.	R	MAY 23, 1963	49.62	S

HIGHEST 49.62 MAY 23, 1963
LOWEST 70.   , 1933

SITE ID 324416114375601
LOCAL NUMBER 016S022E26M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	14.9	R	JUL 05, 1990	15.4	R	MAR 24, 1992	15.4	R	OCT 07, 1993	11.4	R
30	15.0	R	AUG 07	15.4	R	JUN 18	14.9	R	NOV 04	9.8	R
OCT 12	13.3	R	SEP 17	15.5	R	SEP 24	14.1	R	DEC 03	10.9	R
NOV 03	14.1	R	OCT 05	15.2	R	FEB 04, 1993	13.9	R	JAN 06, 1994	11.8	R
DEC 08	13.2	R	NOV 07	14.3	R	MAR 05	11.9	R	FEB 04	12.4	R
JAN 12, 1990	15.0	R	DEC 06	12.5	R	APR 16	8.6	R	MAR 04	13.0	R
FEB 15	15.7	R	JAN 03, 1991	15.5	R	MAY 07	9.6	R	APR 18	12.5	R
MAR 05	15.6	R	MAR 22	15.5	R	27	10.1	R	MAY 04	12.36	S
APR 10	15.6	R	JUN 21	15.0	R	JUN 29	11.3	R	06	12.4	R
MAY 16	15.1	R	SEP 18	16.0	R	JUL 30	12.1	R	JUN 03	12.7	R
JUN 06	15.5	R	JAN 07, 1992	15.2	R	SEP 02	12.2	R			

HIGHEST 8.6 APR 16, 1993
LOWEST 16.0 SEP 18, 1991

SITE ID 324416114381701
LOCAL NUMBER 016S022E27K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
OCT 13, 1983	8.6	R

SITE ID 324416115594101
LOCAL NUMBER 016S009E36C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	125.00 A

SITE ID 324416115594102
LOCAL NUMBER 016S009E36C003S
In Ocotillo. Drilled public-supply well. Diameter 8 inches, depth drilled 312 feet, perforated 212-312 feet. Altitude of land-surface datum 384.2 feet. Water-level records available since 1950.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 01, 1975	110.00 A	OCT 27, 1998	127.55 S	OCT 25, 1999	P	OCT 23, 2000	P
OCT 20, 1997	125.15 S	MAR 26, 1999	125.48 S	MAR 30, 2000	122.17 S	MAR 26, 2001	178.47 S

HIGHEST 110.00 JUN 01, 1975
LOWEST 178.47 MAR 26, 2001

SITE ID 324417114380401
LOCAL NUMBER 016S022E27J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 08, 1978	10. R

SITE ID 324417115582401
LOCAL NUMBER 016S010E31B001S
About 1.2 miles southeast of Ocotillo at end of frontage road south of the westbound lane of Interstate 8. Drilled unused well. Diameter 8.5 inches, depth 255 feet, perforated 115-255 feet. Altitude of land-surface datum 297 feet. Water-level records available 1993 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 09, 1993	45.22 S	OCT 16, 1995	45.56 S	OCT 20, 1997	45.96 S	OCT 25, 1999	46.37 S
OCT 21	45.31 S	MAR 19, 1996	45.61 S	MAR 23, 1998	45.97 S	MAR 29, 2000	46.54 S
OCT 17, 1994	45.51 S	OCT 16	45.76 S	OCT 27	46.02 S	OCT 23	46.70 S
MAR 29, 1995	45.48 S	MAR 17, 1997	45.84 S	MAR 22, 1999	46.12 S	MAR 27, 2001	46.80 V

HIGHEST 45.22 SEP 09, 1993
LOWEST 46.80 MAR 27, 2001

SITE ID . .18115585201
LOCAL NUMBER 016S010E31D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 07, 1992	61.44 S

SITE ID 324419114352101
LOCAL NUMBER 016S023E30G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 26, 1994	12.38 S

SITE ID 324419114365401
LOCAL NUMBER 016S022E25E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	14.95 R	DEC 06, 1990	13.55 R	MAR 05, 1993	11.85 R	JAN 06, 1994	11.45 R
MAR 05	15.05 R	JAN 03, 1991	12.95 R	APR 16	10.55 R	FEB 04	11.95 R
APR 10	14.95 R	MAR 22	14.85 R	MAY 07	9.75 R	MAR 04	12.05 R
MAY 16	14.85 R	JUN 21	14.95 R	27	10.15 R	APR 18	11.65 R
JUN 06	15.45 R	SEP 18	15.65 R	JUN 29	10.65 R	MAY 06	11.65 R
JUL 05	15.35 R	JAN 07, 1992	14.75 R	JUL 30	11.55 R	19	11.88 V
AUG 07	15.05 R	MAR 24	15.25 R	SEP 02	11.75 R	JUN 03	12.25 R
SEP 17	15.55 R	JUN 18	15.05 R	OCT 07	10.25 R		
OCT 05	14.65 R	SEP 24	15.15 R	NOV 04	10.05 R		
NOV 07	13.85 R	FEB 04, 1993	13.55 R	DEC 03	10.55 R		

HIGHEST 9.75 MAY 07, 1993
LOWEST 15.65 SEP 18, 1991

SITE ID 324420114400101
LOCAL NUMBER 016S022E29H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 06, 1994	SD

SITE ID 324420114400102
LOCAL NUMBER 016S022E29H002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 06, 1994	SD

SITE ID 324420114400103
LOCAL NUMBER 016S022E29H003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 03, 1989	11.25 R	JUL 05, 1990	11.85 R	MAR 24, 1992	11.55 R	NOV 04, 1993	6.45 R
30	10.85 R	AUG 07	11.65 R	JUN 18	11.25 R	DEC 03	6.95 R
OCT 12	9.25 R	SEP 17	11.45 R	SEP 24	11.15 R	JAN 06, 1994	7.85 R
NOV 03	10.65 R	OCT 05	9.95 R	FEB 04, 1993	9.35 R	FEB 04	8.55 R
DEC 08	10.75 R	NOV 07	9.95 R	MAR 05	8.55 R	MAR 04	9.05 R
JAN 12, 1990	11.05 R	DEC 06	10.45 R	APR 16	7.35 R	APR 18	8.85 R
FEB 15	11.55 R	JAN 03, 1991	10.75 R	MAY 07	7.05 R	MAY 06	8.55 R
MAR 05	11.15 R	MAR 22	11.15 R	27	7.25 R	JUN 03	9.15 R
APR 10	11.45 R	JUN 21	11.15 R	JUN 29	8.25 R		
MAY 16	11.55 R	SEP 18	11.85 R	JUL 30	9.15 R		
JUN 06	11.75 R	JAN 07, 1992	11.35 R	SEP 02	8.85 R		

HIGHEST 6.45 NOV 04, 1993
LOWEST 11.85 JUL 05, 1990 SEP 18, 1991

SITE ID 324420114590601
LOCAL NUMBER 016S019E23N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 09, 1967	52.4 R	JAN 08, 1998	48.52 V	DEC 11, 1998	47.55 V		
JAN 08, 1998	48.52 V	MAY 01	47.31 Z				

HIGHEST 47.31 MAY 01, 1998
LOWEST 52.4 JUN 09, 1967

SITE ID 324420116001701
LOCAL NUMBER 016S009E35A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	194.00 S

SITE ID 324421114320101
LOCAL NUMBER 016S023E10A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 15, 1994	16.30 S

SITE ID 324421114360001
LOCAL NUMBER 016S022E25E002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1994	11.00 S	JUN 15, 1994	11.00 S

HIGHEST	11.00	JUN 15, 1994	JUN 15, 1994
LOWEST	11.00	JUN 15, 1994	JUN 15, 1994

SITE ID 324421114482101
LOCAL NUMBER 016S021E30E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 08, 1998	82.18 S	JAN 28, 1999	82.36 V	MAY 06, 1999	82.48 V

HIGHEST	82.18	DEC 08, 1998
LOWEST	82.48	MAY 06, 1999

SITE ID 324421116002401
LOCAL NUMBER 016S009E35B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 01, 1975	216.00	S

SITE ID 324422116000301
LOCAL NUMBER 016S009E36D002S
In Ocotillo, about 300 feet east of Shell Canyon Road. Drilled domestic well. Diameter 8 inches, depth 200 feet, perforated 150-200 feet. Altitude of land-surface datum 435 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 26, 1975	157.90		OCT 06, 1982	160.36	S	OCT 30, 1989	161.15	S	MAR 19, 1996	161.75	V
JAN 08, 1976	158.16		APR 05, 1983	160.04	S	APR 10, 1990	161.19	S	OCT 16	162.02	V
OCT 14	158.46		OCT 25	160.49	S	OCT 23	161.30	S	MAR 17, 1997	161.90	V
APR 28, 1977	158.57		APR 20, 1984	160.32	S	APR 02, 1991	161.29	S	OCT 20	162.05	V
OCT 03	158.87		OCT 24	160.31	S	OCT 07	161.36	S	MAR 23, 1998	162.06	V
APR 27, 1978	158.79		APR 24, 1985	160.23	S	MAR 17, 1992	161.35	S	OCT 27	162.09	V
OCT 06	159.15		OCT 30	160.56	S	OCT 27	161.57	S	MAR 22, 1999	162.24	V
MAR 22, 1979	159.10		MAR 27, 1986	160.37	S	APR 12, 1993	161.56	S	OCT 25	162.33	V
SEP 13	159.35	S	OCT 23	160.68	S	OCT 19	161.74	S	MAR 29, 2000	162.54	V
MAY 01, 1980	159.30	S	APR 01, 1987	160.50	S	MAR 14, 1994	161.71	S	OCT 23	162.57	V
SEP 25	159.58	SR	OCT 22	160.78	S	OCT 17	161.84	S	MAR 27, 2001	162.87	V
MAY 01, 1981	159.73	SR	MAR 16, 1988	160.70	S	MAR 29, 1995		SO			
NOV 05	160.10	S	OCT 17	160.92	S	MAY 24	162.02	S			
MAR 09, 1982	160.10	S	MAR 15, 1989	160.94	S	OCT 16	161.85	V			

HIGHEST 157.90 JUN 26, 1975
LOWEST 162.87 MAR 27, 2001

SITE ID 324423114382802
LOCAL NUMBER 016S022E27F003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	9.3	R	SEP 09, 1987	13.1	R	MAY 18, 1988	12.8	R	JAN 20, 1989	12.3	R
FEB 10	9.2	R	OCT 09	11.4	R	JUN 21	13.0	R	FEB 17	13.0	R
MAR 11	10.2	R	NOV 13	11.6	R	JUL 08	13.3	R	MAR 13	12.7	R
APR 16	10.6	R	DEC 17	12.3	R	AUG 19	12.9	R	APR 07	12.5	R
MAY 13	12.0	R	JAN 15, 1988	12.6	R	SEP 21	12.3	R	MAY 04	12.2	R
JUN 19	12.6	R	FEB 18	12.9	R	OCT 06	12.1	R	JUN 15	12.7	R
JUL 10	12.7	R	MAR 25	13.4	R	NOV 10	10.1	R	JUL 12	12.8	R
AUG 14	12.9	R	APR 07	13.7	R	DEC 15	9.7	R	AUG 03	12.5	R

SITE ID .. .23114382802 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 30, 1989	12.6	R	AUG 07, 1990	13.3	R	JUN 18, 1992	12.8	R	NOV 04, 1993	7.9	R
OCT 12	11.2	R	SEP 17	13.3	R	SEP 24	12.5	R	DEC 03	8.8	R
NOV 03	11.7	R	OCT 05	12.5	R	FEB 04, 1993	12.0	R	JAN 06, 1994	9.8	R
DEC 08	11.2	R	NOV 07	11.4	R	MAR 05	10.3	R	FEB 04	10.4	R
JAN 12, 1990	12.6	R	DEC 06	11.6	R	APR 16	7.8	R	MAR 04	10.9	R
FEB 15	13.3	R	JAN 03, 1991	12.2	R	MAY 07	7.8	R	APR 18	10.7	R
MAR 05	13.2	R	MAR 22	12.7	R	27	8.6	R	29	10.37	S
APR 10	13.1	R	JUN 21	12.6	R	JUN 29	10.1	R	MAY 06	10.2	R
MAY 16	13.1	R	SEP 18	13.9	R	JUL 30	10.7	R	JUN 03	10.7	R
JUN 06	13.3	R	JAN 07, 1992	12.6	R	SEP 02	10.6	R	JUL 11	11.1	R
JUL 05	13.2	R	MAR 24	13.2	R	OCT 07	7.3	R			

HIGHEST 7.3 OCT 07, 1993
LOWEST 13.9 SEP 18, 1991

SITE ID 324423115575301
LOCAL NUMBER 016S010E32D002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 01, 1975	19.00	S

SITE ID 324424116012301
LOCAL NUMBER 016S009E34B001S
West of Ocotillo. Drilled domestic well. Diameter 2 inches, depth reported 410 feet. Altitude of land-surface datum 580 feet. Water-level records available since 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 24, 1998	324.57	V	OCT 25, 1999	324.66	V	OCT 23, 2000	321.40	V			
MAR 25, 1999	324.73	S	MAR 28, 2000	324.02	S	MAR 28, 2001	324.76	V			

HIGHEST 321.40 OCT 23, 2000
LOWEST 324.76 MAR 28, 2001

SITE ID 324425114405001
LOCAL NUMBER 016S022E29E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 15, 1990	10.0	R	DEC 06, 1990	9.1	R	MAR 05, 1993	4.5	R	JAN 06, 1994	5.9	R
MAR 05	9.5	R	JAN 03, 1991	9.2	R	APR 16	3.5	R	FEB 04	6.7	R
APR 10	9.9	R	MAR 22	9.6	R	MAY 07	4.5	R	MAR 04	7.0	R
MAY 16	9.9	R	JUN 21	9.8	R	27	4.6	R	APR 18	7.0	R
JUN 06	10.1	R	SEP 18	10.1	R	JUN 29	5.6	R	MAY 06	7.0	R
JUL 05	10.1	R	JAN 07, 1992	9.9	R	JUL 30	6.6	R	06	7.27	S
AUG 07	10.1	R	MAR 24	10.1	R	SEP 02	6.5	R	JUN 03	7.3	R
SEP 17	9.7	R	JUN 18	10.0	R	OCT 07	5.7	R			
OCT 05	8.9	R	SEP 24	10.1	R	NOV 04	5.3	R			
NOV 07	8.9	R	FEB 04, 1993	6.8	R	DEC 03	5.2	R			

HIGHEST 3.5 APR 16, 1993
LOWEST 10.1 JUN 06, 1990 JUL 05, 1990 AUG 07, 1990 SEP 18, 1991 MAR 24, 1992 SEP 24, 1992

SITE ID 324426114403201
LOCAL NUMBER 016S022E29G003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	14.1	R	JUL 05, 1990	14.7	R	MAR 24, 1992	14.3	R	NOV 04, 1993	10.0	R
30	13.7	R	AUG 07	14.5	R	JUN 18	14.1	R	DEC 03	9.9	R
OCT 12	13.3	R	SEP 17	14.3	R	SEP 24	14.1	R	JAN 06, 1994	10.7	R
NOV 03	13.3	R	OCT 05	11.5	R	FEB 04, 1993	12.5	R	FEB 04	11.5	R
DEC 08	13.7	R	NOV 07	12.8	R	MAR 05	10.3	R	MAR 04	11.5	R
JAN 12, 1990	13.9	R	DEC 06	13.3	R	APR 16	9.1	R	APR 18	11.2	R
FEB 15	14.5	R	JAN 03, 1991	13.6	R	MAY 07	9.5	R	MAY 06	11.4	R
MAR 05	13.2	R	MAR 22	13.7	R	27	9.6	R	JUN 03	12.2	R
APR 10	14.4	R	JUN 21	13.6	R	JUN 29	10.5	R			
MAY 16	14.4	R	SEP 18	14.7	R	JUL 30	11.7	R			
JUN 06	14.5	R	JAN 07, 1992	14.1	R	SEP 02	11.8	R			

HIGHEST 9.1 APR 16, 1993
LOWEST 14.7 JUL 05, 1990 SEP 18, 1991

SITE ID 324426114530901
LOCAL NUMBER 016S020E49R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 16, 1993	37.3	R	JUL 17, 1998	32.08	S	MAY 05, 1999	32.94	V			
APR 09, 1998	34.37	V	DEC 15	32.89	V						

HIGHEST 32.08 JUL 17, 1998
LOWEST 37.3 FEB 16, 1993

SITE ID _ .426114530902
LOCAL NUMBER 016S020E27C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 09, 1987	45.30 R

SITE ID 324426115593601
LOCAL NUMBER 016S009E25Q001S
In Ocotillo, north of Interstate 8, and east of Imperial Highway. Unused well. Diameter 8 inches, depth measured 128.5 feet in 1974. Altitude of land-surface datum 372 feet. Water-level records available 1974, 1976, 1981 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 01, 1974	104.24	OCT 25, 1983	107.18 S	MAR 30, 1987	106.04 S	OCT 23, 1990	107.51 S
30	104.30	APR 11, 1984	106.24 S	OCT 20	106.73 S	APR 02, 1991	107.11 S
JAN 08, 1976	104.38	OCT 24	106.08 S	MAR 14, 1988	106.25 S	OCT 07	107.27 S
DEC 17, 1981	106.89 S	APR 24, 1985	106.14 S	OCT 17	107.17 S	MAR 17, 1992	O
MAR 11, 1982	106.41 S	OCT 30	106.56 S	MAR 13, 1989	106.71 S	OCT 27	SO
OCT 06	107.20 S	MAR 25, 1986	105.92 S	OCT 30	107.33 S		
MAR 29, 1983	105.85 S	OCT 22	106.72 S	MAR 20, 1990	107.18 S		

HIGHEST 104.24 DEC 01, 1974
LOWEST 107.51 OCT 23, 1990

SITE ID 324427114531001
LOCAL NUMBER 016S020E27C003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 08, 1987	27.95 R

SITE ID 324428115570701
LOCAL NUMBER 016S010E29R002S
About 1 miles east of Coyote Wells. Drilled unused water-table well. Diameter 2 inches, depth 30.15 feet, sand point 28-30 feet. Altitude of land-surface datum 258 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 12, 1975	9.74	JAN 07, 1976	9.95	APR 27, 1977	10.32	APR 25, 1978	10.47
JUN 24	9.95	SEP 30	9.94	OCT 04	10.95	OCT 04	11.75

SITE ID 324428115570701 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 21, 1979	11.07	MAR 12, 1982	14.13 S	APR 12, 1985	16.23 S	MAR 15, 1988	SD
SEP 12	12.61 S	OCT 07	14.92 S	OCT 30	D	OCT 18	SD
APR 30, 1980	12.49 S	MAR 30, 1983	13.89 S	APR 04, 1986	D	MAR 14, 1989	SD
SEP 24	13.49 S	OCT 27	15.65 S	OCT 22	D		
APR 29, 1981	13.67 S	APR 13, 1984	15.66 S	MAR 31, 1987	D		
NOV 04	14.43 S	OCT 23	16.24 S	OCT 21	SD		

HIGHEST 9.74 MAY 12, 1975
LOWEST 16.24 OCT 23, 1984

SITE ID 324430115555501
LOCAL NUMBER 016S010E27R001S
About 2 miles east of Coyote Wells. Augered observation water-table well. Diameter 2 inches, depth measured 103.76 feet in 1975, 103.70 feet in 1987, well point 102-104 feet. Altitude of land-surface datum 300 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 12, 1975	98.97	NOV 04, 1981	98.58 S	OCT 18, 1988	98.62 S	OCT 16, 1995	98.53 S
14	98.60	MAR 12, 1982	98.60 S	MAR 14, 1989	98.55 S	MAR 20, 1996	98.53 S
JUN 24	98.79	OCT 07	98.56 S	NOV 03	98.54 S	OCT 16	98.58 V
JAN 07, 1976	98.78	MAR 30, 1983	98.63 S	MAR 21, 1990	98.58 S	MAR 17, 1997	98.60 V
SEP 30	98.62	OCT 27	98.65 S	OCT 24	98.62 S	OCT 20	98.54 S
APR 27, 1977	98.63	APR 13, 1984	98.67 S	APR 05, 1991	98.58 S	MAR 23, 1998	98.58 S
OCT 04	98.66	OCT 23	98.66 S	OCT 09	98.59 S	OCT 27	98.44 S
APR 26, 1978	98.66	APR 12, 1985	98.67 S	APR 07, 1992	98.62 S	MAR 22, 1999	98.48 S
OCT 04	98.58	OCT 30	98.59 S	OCT 28	98.55 S	OCT 25	98.24 S
MAR 21, 1979	98.76	APR 04, 1986	98.58 S	APR 15, 1993	98.58 S	MAR 29, 2000	98.50 S
SEP 12	98.66 S	OCT 22	98.54 S	OCT 21	98.61 S	OCT 23	98.48 S
APR 30, 1980	98.66 S	MAR 31, 1987	98.53 S	MAR 15, 1994	98.69 S	MAR 27, 2001	98.49 S
SEP 24	98.57 S	OCT 21	98.64 S	OCT 26	99.00 S		
APR 29, 1981	98.60 S	MAR 15, 1988	98.48 S	MAR 29, 1995	98.56 S		

HIGHEST 98.24 OCT 25, 1999
LOWEST 99.00 OCT 26, 1994

SITE ID 324431114385801
LOCAL NUMBER 016S022E27D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 17, 1987	10.5 R	MAR 11, 1987	10.7 R	MAY 13, 1987	11.3 R	JUL 10, 1987	12.6 R
FEB 10	10.3 R	APR 16	10.9 R	JUN 19	11.6 R	AUG 14	13.9 R

SITE ID 3[illegible]431114385801 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 09, 1987	13.6	R	FEB 17, 1989	11.1	R	JUL 05, 1990	13.0	R	MAY 07, 1993	10.2	R
OCT 09	12.5	R	MAR 13	11.4	R	AUG 07	14.5	R	27	10.0	R
NOV 13	12.9	R	APR 07	12.0	R	SEP 17	15.0	R	JUN 29	10.4	R
DEC 17	13.6	R	MAY 04	11.6	R	OCT 05	11.2	R	JUL 30	11.4	R
JAN 15, 1988	14.0	R	JUN 15	13.3	R	NOV 07	11.2	R	SEP 02	12.5	R
FEB 18	14.1	R	JUL 12	13.3	R	DEC 06	12.3	R	OCT 07	10.4	R
MAR 25	14.4	R	AUG 03	13.7	R	JAN 03, 1991	13.3	R	NOV 04	8.3	R
APR 07	14.6	R	30	13.7	R	MAR 22	13.7	R	DEC 03	8.6	R
MAY 18	13.4	R	OCT 12	9.1	R	JUN 21	13.5	R	JAN 06, 1994	10.4	R
JUN 21	13.6	R	NOV 03	12.7	R	SEP 18	15.1	R	FEB 04	11.2	R
JUL 08	14.3	R	DEC 08	12.9	R	JAN 07, 1992	13.6	R	MAR 04	12.0	R
AUG 19	12.5	R	JAN 12, 1990	13.2	R	MAR 24	14.0	R	APR 18	12.1	R
SEP 21	12.1	R	FEB 15	14.4	R	JUN 18	13.6	R	29	11.53	S
OCT 06	12.0	R	MAR 05	14.1	R	SEP 24	13.4	R	MAY 06	11.3	R
NOV 10	9.3	R	APR 10	14.2	R	FEB 04, 1993	12.5	R	JUN 03	11.4	R
DEC 15	8.8	R	MAY 16	14.7	R	MAR 05	12.8	R	JUL 11	12.1	R
JAN 20, 1989	10.6	R	JUN 06	14.8	R	APR 16	10.5	R			

HIGHEST 8.3 NOV 04, 1993
LOWEST 15.1 SEP 18, 1991

SITE ID 324437114393001
LOCAL NUMBER 016S022E28C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	9.3	R	JUL 05, 1990	10.0	R	MAR 24, 1992	9.9	R	NOV 04, 1993	3.5	R
30	9.1	R	AUG 07	9.6	R	JUN 18	9.7	R	DEC 03	5.2	R
OCT 12	6.7	R	SEP 17	10.0	R	SEP 24	9.8	R	JAN 06, 1994	6.0	R
NOV 03	8.0	R	OCT 05	8.4	R	MAR 05, 1993	6.6	R	FEB 04	6.9	R
DEC 08	8.5	R	NOV 07	7.0	R	APR 16	5.4	R	MAR 04	7.5	R
JAN 12, 1990	8.9	R	DEC 06	8.0	R	MAY 07	5.7	R	APR 18	7.2	R
FEB 15	9.6	R	JAN 03, 1991	8.6	R	27	6.0	R	MAY 06	6.7	R
MAR 05	9.3	R	MAR 22	9.1	R	JUN 29	7.1	R	JUN 03	7.3	R
APR 10	9.4	R	JUN 21	8.9	R	JUL 30	8.0	R			
MAY 16	8.0	R	SEP 18	10.3	R	SEP 02	7.8	R			
JUN 06	9.8	R	JAN 07, 1992	9.8	R	OCT 07	6.5	R			

HIGHEST 3.5 NOV 04, 1993
LOWEST 10.3 SEP 18, 1991

SITE ID 324439114452201
LOCAL NUMBER 016S021E21R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 17, 1996	157.20	S	JAN 08, 1998	156.09	S	JUL 17, 1998	155.60	V	MAY 06, 1999	154.85	V
17	157.20	S	MAR 27	155.83	V	DEC 14	155.05	V			

HIGHEST 154.85 MAY 06, 1999
LOWEST 157.20 JUL 17, 1996 JUL 17, 1996

SITE ID 324439115593401
LOCAL NUMBER 016S009E25K002S
In Ocotillo, east of Imperial Highway. Drilled commercial water-table well. Diameter 10 inches, depth 372 feet, perforated 132-192, 242-372 feet. Altitude of land-surface datum 364 feet. Records available 1972, 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 24, 1972	83.00	R	SEP 25, 1980	145.30	SP	OCT 23, 1986	94.24	SR	APR 15, 1993		P
JUN 26, 1975	129.50	P	APR 29, 1981	95.04	SR	24	94.03	S	OCT 20	95.08	S
JAN 08, 1976	99.70		NOV 06	95.56	S	MAR 31, 1987	93.78	S	MAR 23, 1994	94.85	S
OCT 15	111.57	P	MAR 13, 1982	95.11	S	OCT 23	94.06	S	OCT 17		P
APR 28, 1977	104.10	R	OCT 07	96.84	SR	MAR 18, 1988	93.94	S	MAR 30, 1995	94.32	S
OCT 03	145.62	P	APR 01, 1983	95.10	S	OCT 19	94.40	S	OCT 16		P
APR 26, 1978	98.05	R	OCT 26	95.90	SR	MAR 17, 1989	94.23	S	MAR 20, 1996	94.61	S
OCT 06	144.07	P	27	96.22	SR	OCT 31	94.47	S	MAR 19, 1997	96.59	SR
MAR 14, 1979	101.47		APR 12, 1984	94.04	S	APR 11, 1990	94.46	S	OCT 20		P
SEP 13	105.80	SR	OCT 24	93.48	S	OCT 24	94.59	S	MAR 23, 1998		P
MAR 12, 1980	93.22	S	APR 24, 1985	93.73	S	APR 02, 1991	94.47	S	OCT 28		P
20	144.85	SP	OCT 31	93.86	S	OCT 08	94.57	S	MAR 24, 1999		P
APR 18	147.30	SP	MAR 27, 1986	93.63	SR	APR 07, 1992	94.46	S	OCT 25		P
MAY 02	93.93	S	APR 04	93.54	S	OCT 28	95.07	S	MAR 29, 2000		P

HIGHEST 83.00 AUG 24, 1972
LOWEST 101.47 MAR 14, 1979

SITE ID 324440114451601
LOCAL NUMBER 016S021E21R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 26, 1998	156.84	S

SITE ID 3..440115323501
LOCAL NUMBER 016S014E20K01SLYS S-371

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	11.25 V	MAY 23, 1989	10.96 S	JUL 18, 1989	11.65 S

HIGHEST 10.96 MAY 23, 1989
LOWEST 11.65 JUL 18, 1989

SITE ID 324440115323502
LOCAL NUMBER 016S014E20K02SLYS S-371

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	11.63 VT	MAY 23, 1989	9.97 V	JUL 18, 1989	11.53 S

HIGHEST 9.97 MAY 23, 1989
LOWEST 11.53 JUL 18, 1989

SITE ID 324440115323503
LOCAL NUMBER 016S014E20K03SLYS S-371

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	10 V	MAY 23, 1989	9.83 S	JUL 18, 1989	9.77 S

HIGHEST 9.77 JUL 18, 1989
LOWEST 10 APR 14, 1989

SITE ID 324440115323504
LOCAL NUMBER 016E014E20K04SLYS S-371

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	VD	MAY 23, 1989	SD	JUL 18, 1989	SD

HIGHEST --
LOWEST --

SITE ID 324440115574301
LOCAL NUMBER 016S010E29L001S
About 2 miles east of Ocotillo on Highway S80. Augered observation water-table well. Diameter 2 inches, depth measured 48.45 feet in 1976, sand point 44.5-48 feet. Altitude of land-surface datum 280 feet. Records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 09, 1976	23.32	SEP 13, 1979	25.07 S	MAR 31, 1983	26.29 S	APR 03, 1986	28.60 S
17	23.34	MAY 01, 1980	25.27 S	SEP 22	27.25 S	OCT 24	29.19 S
APR 29, 1977	23.64	SEP 25	25.80 S	OCT 26	27.33 S	APR 03, 1987	29.22 S
OCT 03	23.98	APR 30, 1981	26.03 S	APR 20, 1984	27.49 S	OCT 22	29.80 S
APR 27, 1978	24.08	NOV 05	26.63 S	OCT 24	27.94 S	MAR 17, 1988	29.68 S
OCT 05	24.59	MAR 10, 1982	26.50 S	APR 25, 1985	28.04 S		
MAR 15, 1979	24.37	OCT 08	27.05 S	OCT 30	28.56 S		

HIGHEST 23.32 NOV 09, 1976
LOWEST 29.80 OCT 22, 1987

SITE ID 324440115593301
LOCAL NUMBER 016S009E25K001S
In Ocotillo, east of Imperial Highway. Drilled unused water-table well. Diameter 10 inches, depth 256 ft in 1958 but bottom 120 feet separated during earthquake. Altitude of land-surface datum 362 feet. Records available 1958, 1974-80.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 25, 1958	84.00 R	APR 28, 1977	89.43	SEP 13, 1979	89.95 SS	SEP 25, 1980	90.46 SS
DEC 11, 1974	89.09 S	OCT 03	89.79 S	MAR 12, 1980	89.46 S	APR 29, 1981	O
JUN 25, 1975	88.84	APR 26, 1978	89.63	20	89.84 S	JUN 01	N
JAN 08, 1976	88.80	OCT 06	90.02 S	APR 18	90.05 SS		
OCT 15	89.06 S	MAR 14, 1979	89.57	MAY 02	89.78 S		

HIGHEST 84.00 NOV 25, 1958
LOWEST 89.84 MAR 20, 1980

SITE ID 324442115233004
LOCAL NUMBER 016S014E20G004S S-371 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	13.65 V	MAY 23, 1989	13.53 S

HIGHEST 13.53 MAY 23, 1989
LOWEST 13.65 APR 14, 1989

SITE ID 3. .42115323301
LOCAL NUMBER 016S014E20G001S S-371 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	14.55	V	MAY 23, 1989	14.48	S

HIGHEST 14.48 MAY 23, 1989
LOWEST 14.55 APR 14, 1989

SITE ID 324442115323302
LOCAL NUMBER 016S014E20G002S S-371-AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	14.65	V	MAY 23, 1989	14.61	SS

HIGHEST 14.65 APR 14, 1989
LOWEST 14.65 APR 14, 1989

SITE ID 324442115323303
LOCAL NUMBER 016S014E20G003S S-371 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	14.15	V	MAY 23, 1989	15.34	SS

HIGHEST 14.15 APR 14, 1989
LOWEST 14.15 APR 14, 1989

SITE ID 324442115323305
LOCAL NUMBER 016S014E20G005S S-371 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	15.31	V	MAY 23, 1989	14.78	S

HIGHEST 14.78 MAY 23, 1989
LOWEST 15.31 APR 14, 1989

SITE ID 324442115512201
LOCAL NUMBER 016S011E29L001S
About 3.75 miles southwest of Interstate 8 and Dunaway. Drilled unused water-table well. Diameter 2 inches, depth 114 feet, sand point 112-114 feet. Altitude of land-surface datum 210 feet . Records available 1975-80.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 01, 1975	111.00	S	MAY 14, 1975	110.50		OCT 04, 1977		D	APR 30, 1980		D
06	111.36		JUN 24	110.89		APR 25, 1978		D	MAY 01		N
07	111.70		JAN 07, 1976	112.65		OCT 05		D			
08	110.48		SEP 30		D	MAR 21, 1979		D			
09	110.49		APR 27, 1977		D	SEP 12		D			

HIGHEST 110.48 MAY 08, 1975
LOWEST 112.65 JAN 07, 1976

SITE ID 324443114362401
LOCAL NUMBER 016S022E25B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 19, 1994		VD

SITE ID 324443114362402
LOCAL NUMBER 016S022E25B002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 12, 1989	10.45	R	JUN 06, 1990	10.55	R	JAN 07, 1992	10.95	R	SEP 02, 1993	8.65	R
AUG 03	11.05	R	JUL 05	11.25	R	MAR 24	10.55	R	OCT 07	3.85	R
30	9.65	R	AUG 07	10.25	R	JUN 18	10.45	R	NOV 04	6.85	R
OCT 12	6.85	R	SEP 17	11.55	R	SEP 24	11.85	R	DEC 03	6.85	R
NOV 03	7.35	R	OCT 05	7.15	R	FEB 04, 1993	9.95	R	JAN 06, 1994	7.85	R
DEC 08	9.75	R	NOV 07	6.25	R	MAR 05	9.55	R	FEB 04	5.95	R
JAN 12, 1990	9.65	R	DEC 06	5.95	R	APR 16	8.15	R	MAR 04	4.85	R
FEB 15	10.15	R	JAN 03, 1991	9.05	R	MAY 07	5.45	R	APR 18	6.05	R
MAR 05	10.35	R	MAR 22	9.65	R	27	6.25	R	MAY 06	6.65	R
APR 10	10.55	R	JUN 21	10.05	R	JUN 29	7.05	R	19	7.43	V
MAY 16	10.45	R	SEP 18	10.75	R	JUL 30	7.95	R	JUN 03	8.25	R

HIGHEST 3.85 OCT 07, 1993
LOWEST 11.85 SEP 24, 1992

SITE ID - .43114365501
LOCAL NUMBER 016S022E26A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 12, 1989	12.3	R	JUN 06, 1990	7.9	R	JAN 07, 1992	12.9	R	SEP 02, 1993	10.5	R
AUG 03	12.1	R	JUL 05	12.6	R	MAR 24	12.6	R	OCT 07	9.0	R
30	11.9	R	AUG 07	11.3	R	JUN 18	12.5	R	NOV 02	8.0	R
OCT 12	7.7	R	SEP 17	12.8	R	SEP 24	16.3	R	DEC 03	9.0	R
NOV 03	9.0	R	OCT 05	11.3	R	FEB 04, 1993	12.0	R	JAN 06, 1994	9.9	R
DEC 08	7.7	R	NOV 07	9.6	R	MAR 05	11.4	R	FEB 04	10.1	R
JAN 12, 1990	7.7	R	DEC 06	9.4	R	APR 16	8.2	R	MAR 04	9.7	R
FEB 15	7.8	R	JAN 03, 1991	11.1	R	MAY 07	7.6	R	APR 18	9.3	R
MAR 05	7.8	R	MAR 22	8.1	R	27	8.3	R	MAY 06	8.8	R
APR 10	7.9	R	JUN 21	11.4	R	JUN 29	9.1	R	19	8.83	V
MAY 16	7.9	R	SEP 18	11.5	R	JUL 30	10.0	R	JUN 03	10.1	R

HIGHEST 7.6 MAY 07, 1993
LOWEST 16.3 SEP 24, 1992

SITE ID 324443114382801
LOCAL NUMBER 016S022E27C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 15, 1990	10.0	R	NOV 07, 1990	7.6	R	SEP 24, 1992	11.3	R	NOV 04, 1993	5.3	R
MAR 05	10.0	R	DEC 06	8.1	R	MAR 05, 1993	8.1	R	DEC 03	6.4	R
APR 10	10.1	R	JAN 03, 1991	9.1	R	APR 16	6.8	R	JAN 06, 1994	7.1	R
MAY 16	9.1	R	MAR 22	9.7	R	MAY 07	5.7	R	FEB 04	7.9	R
JUN 06	10.2	R	JUN 21	9.6	R	27	6.1	R	MAR 04	8.3	R
JUL 05	10.0	R	SEP 18	10.9	R	JUN 29	7.8	R	APR 18	7.8	R
AUG 07	9.9	R	JAN 07, 1992	10.2	R	JUL 30	8.4	R	29	7.54	S
SEP 17	10.2	R	MAR 24	11.8	R	SEP 02	8.2	R	MAY 06	7.6	R
OCT 05	8.8	R	JUN 18	11.5	R	OCT 07	7.0	R	JUN 03	8.1	R

HIGHEST 5.3 NOV 04, 1993
LOWEST 11.8 MAR 24, 1992

SITE ID 324444114355301
LOCAL NUMBER 016S023E19N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	9.7	R	MAY 13, 1987	10.0	R	SEP 09, 1987	10.5	R	JAN 15, 1988	11.1	R
FEB 10	9.5	R	JUN 19	10.4	R	OCT 09	9.6	R	FEB 18	10.9	R
MAR 11	9.6	R	JUL 10	11.2	R	NOV 13	10.9	R	MAR 25	10.8	R
APR 16	9.7	R	AUG 14	11.0	R	DEC 17	11.2	R	APR 07	11.1	R

SITE ID 324444114355301 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 18, 1988	10.6	R	AUG 03, 1989	12.7	R	NOV 07, 1990	9.8	R	JUN 29, 1993	8.6	R
JUN 21	10.9	R	30	11.9	R	DEC 06	10.3	R	JUL 30	9.0	R
JUL 08	11.0	R	OCT 12	9.4	R	JAN 03, 1991	10.8	R	SEP 02	9.4	R
AUG 19	10.6	R	NOV 03	10.7	R	MAR 22	11.7	R	OCT 07	7.5	R
SEP 21	10.4	R	DEC 08	11.6	R	JUN 21	12.4	R	NOV 04	8.9	R
OCT 06	10.4	R	JAN 12, 1990	11.3	R	SEP 18	13.0	R	DEC 03	8.7	R
NOV 10	9.5	R	FEB 15	11.7	R	JAN 07, 1992	12.8	R	JAN 06, 1994	9.3	R
DEC 15	9.7	R	MAR 05	12.0	R	MAR 24	12.4	R	FEB 04	8.7	R
JAN 20, 1989	10.4	R	APR 10	12.4	R	JUN 18	12.2	R	MAR 04	8.5	R
FEB 17	10.8	R	MAY 16	12.9	R	SEP 24	10.4	R	APR 18	8.1	R
MAR 13	10.6	R	JUN 06	12.8	R	FEB 04, 1993	11.3	R	26	7.43	S
APR 07	10.9	R	JUL 05	13.2	R	MAR 05	10.2	R	MAY 06	8.8	R
MAY 04	11.2	R	AUG 07	13.0	R	APR 16	9.9	R	JUN 03	9.6	R
JUN 15	11.8	R	SEP 17	13.6	R	MAY 07	8.3	R	JUL 11	8.4	R
JUL 12	12.4	R	OCT 05	10.7	R	27	8.0	R	AUG 11, 1995	9.60	S

HIGHEST 7.43 APR 26, 1994
LOWEST 13.6 SEP 17, 1990

SITE ID 324444114365301
LOCAL NUMBER 016S022E24N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 19, 1994	7.70	V

SITE ID 324444114365401
LOCAL NUMBER 016S022E24N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 26, 1994	8.15	R	MAY 19, 1994	8.12	V

HIGHEST 8.12 MAY 19, 1994
LOWEST 8.15 APR 26, 1994

SITE ID 3. .44114375601
LOCAL NUMBER 016S022E26D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC , 1993	10.7 R	MAY 04, 1994	11.99 S

HIGHEST 10.7 DEC , 1993
LOWEST 11.99 MAY 04, 1994

SITE ID 324444114385901
LOCAL NUMBER 016S022E21R001S
About 1 mile northwest of Winterhaven, and 1 mile north of Colorado River, northwest of Yuma, Arizona. Drilled observation water-table well. Diameter 1.25 inches, depth measured 122.5 feet in 1989. Altitude of land-surface datum 128 feet. Water-level records available 1964, 1967, 1975-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1964	9.57	OCT 20, 1978	9.57 S	FEB 03, 1982	10.97 S	MAR 15, 1994	8.73 S
APR 06, 1967	10.58	JAN 11, 1979	12.26	SEP 30	9.80 S	OCT 27	6.77 S
JUL 18, 1975	11.02 S	12	12.29 S	SEP 20, 1983	4.66 S	MAR 31, 1995	8.05 S
NOV 11	10.01 S	APR 10	11.05 S	SEP 18, 1984	6.96 S	OCT 17	7.82 S
JAN 20, 1976	10.81 S	JUL 09	9.60 S	MAR 01, 1985	6.90 S	MAR 20, 1996	8.53 S
APR 19	10.10 S	OCT 09	10.26 S	JUN 14	8.11 S	OCT 16	8.59 S
JUL 19	10.80 S	JAN 07, 1980	10.70 S	NOV 01, 1989	8.03 S	MAR 18, 1997	8.09 S
OCT 18	10.14 S	APR 02	9.20 S	MAR 21, 1990	10.00 S	OCT 21	7.70 S
JAN 14, 1977	11.25 S	JUN 02	7.92 S	OCT 23	7.28 S	MAR 24, 1998	6.24 S
APR 15	11.72 S	JUL 23	6.99 S	MAR 14, 1991	10.36 S	OCT 28	8.01 S
JUL 21	10.71 S	SEP 05	7.48 S	OCT 02	10.76 S	MAR 16, 1999	8.68 V
OCT 06	11.39 S	DEC 04	8.53 S	APR 08, 1992	10.35 S	OCT 25	8.87 V
JAN 05, 1978	12.67 S	FEB 10, 1981	9.49 S	SEP 22	10.09 S	MAR 29, 2000	8.87 V
MAY 03	11.75 S	MAR 10	8.88 S	APR 13, 1993	6.64 S	OCT 24	7.91 V
JUL 31	11.52 S	AUG 26	9.13 S	OCT 20	6.79 S	MAR 27, 2001	8.74 V

HIGHEST 4.66 SEP 20, 1983
LOWEST 12.67 JAN 05, 1978

SITE ID 324444114400101
LOCAL NUMBER 016S022E21N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC , 1993	9.1 R	MAY 06, 1994	10.72 S

HIGHEST 9.1 DEC , 1993
LOWEST 10.72 MAY 06, 1994

SITE ID 324444114514201
LOCAL NUMBER 016S020E28A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAR 21, 1986	61.85	R

SITE ID 324445114441901
LOCAL NUMBER 016S021E22R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN , 1953	111.	R	JUL 17, 1998	100.63	V	MAY 07, 1999	100.30	V			
AUG 09, 1996	102.43	R	DEC 14	99.93	V						

HIGHEST 99.93 DEC 14, 1998
LOWEST 111. JUN , 1953

SITE ID 324445115595901
LOCAL NUMBER 016S009E25M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
NOV 01, 1974	140.00	S

SITE ID 324446115595901
LOCAL NUMBER 016S009E25M002S
In Ocotillo, north of Interstate 8 and east of Imperial Highway. Drilled public-supply well. Diameter 8 inches, depth 336 feet, perforated 216-336 feet. Altitude of land-surface datum 410 feet. Water-level records available 1991 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 02, 1991	136.69	S	MAR 15, 1994	137.10	S	MAR 17, 1997	137.59	S	MAR 29, 2000	137.86	S
OCT 07	137.84	ST	OCT 27	137.81	SS	OCT 21	137.49	S	OCT 23	138.39	S
APR 06, 1992	136.75	S	MAR 29, 1995	137.01	SS	MAR 23, 1998	137.42	S	MAR 27, 2001	138.20	S
OCT 27	137.09	S	OCT 16	137.42	S	OCT 27	137.77	S			
APR 15, 1993	137.24	S	MAR 20, 1996	137.25	S	MAR 22, 1999	137.58	S			
OCT 20	137.32	S	OCT 16	137.79	S	OCT 25	137.90	S			

HIGHEST 136.69 APR 02, 1991
LOWEST 138.39 OCT 23, 2000

SITE ID 3...47114413501
LOCAL NUMBER 016S022E19P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 06, 1994	15.87	S	DEC 17, 1997	14.85	V

HIGHEST 14.85 DEC 17, 1997
LOWEST 15.87 MAY 06, 1994

SITE ID 324447114413502
LOCAL NUMBER 016S022E19P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 15, 1990	10.05	R	DEC 06, 1990	9.25	R	MAR 05, 1993	5.95	R	JAN 06, 1994	7.75	R
MAR 05	9.95	R	JAN 03, 1991	9.55	R	APR 16	5.45	R	FEB 04	8.25	R
APR 10	10.05	R	MAR 22	9.85	R	MAY 07	6.25	R	MAR 04	8.35	R
MAY 16	10.25	R	JUN 21	10.05	R	27	6.25	R	APR 18	8.55	R
JUN 06	10.35	R	SEP 18	9.85	R	JUN 29	7.05	R	MAY 06	8.7	S
JUL 05	10.15	R	JAN 07, 1992	9.65	R	JUL 30	7.55	R	06	8.74	S
AUG 07	9.95	R	MAR 24	9.85	R	SEP 02	7.45	R	JUN 03	8.75	R
SEP 17	9.55	R	JUN 18	10.05	R	OCT 07	7.05	R			
OCT 05	9.25	R	SEP 24	10.05	R	NOV 04	6.85	R			
NOV 07	9.15	R	FEB 04, 1993	7.65	R	DEC 03	6.85	R			

HIGHEST 5.45 APR 16, 1993
LOWEST 10.35 JUN 06, 1990

SITE ID 324447114444501
LOCAL NUMBER 016S021E22P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 12, 1997	134.73	T	JUL 17, 1998	132.95	V	MAY 07, 1999	133.65	V			
MAR 27, 1998	134.55	T	DEC 14	133.68	V						

HIGHEST 132.95 JUL 17, 1998
LOWEST 134.73 DEC 12, 1997

SITE ID 324447115572001
LOCAL NUMBER 016S010E29K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 01, 1975	21.00	S

SITE ID 324451114403201
LOCAL NUMBER 016S022E20Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	6.16	S

SITE ID 324451114443101
LOCAL NUMBER 016S021E22K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP , 1955	124.	R	OCT 19, 1960	124.	R	JAN 29, 1998		TO

HIGHEST	124.	SEP , 1955	OCT 19, 1960
LOWEST	124.	SEP , 1955	OCT 19, 1960

SITE ID 324451114455001
LOCAL NUMBER 016S021E21P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 11, 1961	144.	S	JAN 29, 1998	135.05	S

HIGHEST	135.05	JAN 29, 1998
LOWEST	144.	JUL 11, 1961

SITE ID 3..451114462901
LOCAL NUMBER 016S021E20J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
, 1931	170.	R	OCT 31, 1960		SO

HIGHEST 170. , 1931
LOWEST 170. , 1931

SITE ID 324452114443101
LOCAL NUMBER 016S021E22K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 29, 1998	188.	AR	JAN 29, 1998	188.	AR

HIGHEST --
LOWEST --

SITE ID 324455114405101
LOCAL NUMBER 016S022E20N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	9.1	R	JUL 05, 1990	8.6	R	MAR 24, 1992	8.2	R	OCT 07, 1993	6.1	R
30	8.5	R	AUG 07	8.4	R	JUN 18	8.0	R	NOV 04	5.6	R
OCT 12	8.0	R	SEP 17	8.2	R	SEP 24	8.6	R	DEC 03	5.6	R
NOV 03	8.2	R	OCT 05	6.4	R	FEB 04, 1993	7.4	R	JAN 06, 1994	6.1	R
DEC 08	8.5	R	NOV 07	5.6	R	MAR 05	5.6	R	FEB 04	6.8	R
JAN 12, 1990	8.9	R	DEC 06	7.3	R	APR 16	5.1	R	MAR 04	7.1	R
FEB 15	8.6	R	JAN 03, 1991	7.8	R	MAY 07	5.7	R	APR 18	6.7	R
MAR 05	7.4	R	MAR 22	8.2	R	27	5.6	R	27	5.98	S
APR 10	8.6	R	JUN 21	8.0	R	JUN 29	6.1	R	MAY 06	6.7	R
MAY 16	8.6	R	SEP 18	8.7	R	JUL 30	6.9	R	JUN 03	7.4	R
JUN 06	8.6	R	JAN 07, 1992	8.1	R	SEP 02	6.9	R			

HIGHEST 5.1 APR 16, 1993
LOWEST 9.1 AUG 03, 1989

SITE ID 324455116003801
LOCAL NUMBER 016S009E26F001S
In Ocotillo. Drilled domestic well. Diameter 8 inches, depth 300 feet, perforated 200-300 feet. Altitude of land-surface datum 430 feet. Water-level records available since 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 13, 1998	195.01 V	OCT 25, 1999	195.02 V	OCT 23, 2000	195.28 V		
MAR 22, 1999	194.97 V	MAR 29, 2000	195.16 V	MAR 27, 2001	195.23 V		

HIGHEST 194.97 MAR 22, 1999
LOWEST 195.28 OCT 23, 2000

SITE ID 324458114421401
LOCAL NUMBER 016S021E24J003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	34.29 R	APR 22, 1998	36.76 Z	DEC 11, 1998	34.33 V

HIGHEST 34.29 NOV 08, 1996
LOWEST 36.76 APR 22, 1998

SITE ID 324458114422301
LOCAL NUMBER 016S021E24K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	36.47 R	APR 22, 1998	40.24 Z	DEC 11, 1998	38.52 V	FEB 05, 1999	42.28 V

HIGHEST 36.47 NOV 08, 1996
LOWEST 42.28 FEB 05, 1999

SITE ID 324458114422302
LOCAL NUMBER 016S021E24K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	36.58 R	DEC 11, 1998	38.41 V	MAY 06, 1999	41.35 Z		
APR 22, 1998	40.38 Z	FEB 05, 1999	42.28 V				

HIGHEST 36.58 NOV 08, 1996
LOWEST 42.28 FEB 05, 1999

SITE ID 3[illegible]58115570301
LOCAL NUMBER 016S010E29H001S
About 2.6 miles northeast of Coyote Wells on Highway S80. Augered observation water-table well. Diameter 2 inches, depth measured 38.7 feet in 1975, 36.1 feet in 1985, 35.5 feet in 1991, well point 36.7-38.7 feet. Altitude of land-surface datum 250 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 13, 1975	22.20	NOV 05, 1981	22.53 S	OCT 31, 1989	25.33 S	MAR 19, 1996	26.68 V
JUN 25	22.03	MAR 12, 1982	22.55 S	MAR 20, 1990	25.39 S	OCT 16	26.83 S
DEC 09	22.02	OCT 08	22.74 S	OCT 23	25.58 S	MAR 17, 1997	26.89 S
OCT 13, 1976	22.04	OCT 24, 1984	22.99 S	APR 04, 1991	25.64 S	OCT 20	26.96 S
APR 26, 1977	21.90	APR 26, 1985	23.50 S	OCT 08	21.97 S	MAR 23, 1998	26.98 S
OCT 03	21.76	OCT 30	23.43 S	MAR 17, 1992	23.68 S	OCT 27	27.04 S
APR 26, 1978	21.53	MAR 25, 1986	23.43 S	OCT 28	24.94 S	MAR 22, 1999	26.94 S
OCT 05	21.66	OCT 24	23.93 S	APR 12, 1993	25.32 S	OCT 25	27.02 S
MAR 14, 1979	21.55	MAR 30, 1987	24.00 S	OCT 20	25.72 S	MAR 28, 2000	27.15 S
SEP 13	21.96 S	OCT 22	24.52 S	MAR 14, 1994	25.94 S	OCT 23	27.17 S
APR 30, 1980	22.00 S	MAR 14, 1988	24.52 S	OCT 17	26.23 S	MAR 27, 2001	26.95 S
SEP 25	22.24 S	OCT 18	24.94 S	MAR 29, 1995	26.35 S		
MAY 01, 1981	22.34 S	MAR 14, 1989	25.02 S	OCT 16	26.55 S		

HIGHEST 21.53 APR 26, 1978
LOWEST 27.17 OCT 23, 2000

SITE ID 324459114421901
LOCAL NUMBER 016S021E24J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	32.19 R	APR 22, 1998	35.93 Z	DEC 11, 1998	34.20 V

HIGHEST 32.19 NOV 08, 1996
LOWEST 35.93 APR 22, 1998

SITE ID 324459114421902
LOCAL NUMBER 016S021E24J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	33.57 R	APR 22, 1998	37.32 Z	DEC 11, 1998	34.19 V

HIGHEST 33.57 NOV 08, 1996
LOWEST 37.32 APR 22, 1998

SITE ID 324459114422801
LOCAL NUMBER 016S021E24K003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	41.28 R	APR 22, 1998	ZD	DEC 11, 1998	42.36 V

HIGHEST 41.28 NOV 08, 1996
LOWEST 42.36 DEC 11, 1998

SITE ID 324459114521401
LOCAL NUMBER 016S020E21P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 15, 1961	49.06 S	MAY 11, 1964	50.24 S

HIGHEST 49.06 DEC 15, 1961
LOWEST 50.24 MAY 11, 1964

SITE ID 324459114521701
LOCAL NUMBER 016S020E50A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 19, 1983	40.7 R	JUL 17, 1998	27.24 S	DEC 15, 1998	28.20 V		
APR 19, 1996	31.89 R	AUG 07	26.87 V	MAY 06, 1999	28.03 V		

HIGHEST 26.87 AUG 07, 1998
LOWEST 40.7 DEC 19, 1983

SITE ID 324459114521702
LOCAL NUMBER 016S020E50A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 19, 1996	31.13 R	AUG 07, 1998	25.88 V	MAY 06, 1999	27.02 V		
JUL 17, 1998	26.32 S	DEC 15	27.63 V				

HIGHEST 25.88 AUG 07, 1998
LOWEST 31.13 APR 19, 1996

SITE ID 3.. .00115492101
LOCAL NUMBER 016S011E27F001S
About 3 miles southeast of Plaster City and 1.8 miles southwest of Interstate 8 and Dunaway Road. Augered observation well. Diameter 2 inches, depth measured 134.5 feet in 1975, well point 132.5-134.5 feet. Altitude of land-surface datum 100 feet. Water-level records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 06, 1975	61.35		SEP 24, 1980	98.90	S	MAR 14, 1988	99.04	S	OCT 16, 1995	99.78	V
07	92.95		APR 29, 1981	98.90	S	OCT 18	99.38	S	MAR 19, 1996	99.91	V
08	98.80		NOV 04	98.89	S	MAR 14, 1989	99.29	S	OCT 16	99.87	V
09	98.89		MAR 12, 1982	98.87	S	OCT 31	99.34	S	MAR 17, 1997	100.04	S
14	98.90		OCT 08	99.16	S	MAR 21, 1990	99.49	S	OCT 20	99.96	S
JUN 24	98.90		MAR 30, 1983	99.00	S	OCT 24	99.59	S	MAR 23, 1998	99.90	S
JAN 07, 1976	99.02		OCT 27	98.90	S	APR 05, 1991	99.57	S	OCT 27	99.91	S
SEP 30	99.01		APR 12, 1984	98.94	S	OCT 09	99.68	S	MAR 22, 1999	99.75	S
APR 27, 1977	98.94		OCT 23	99.00	S	MAR 16, 1992	99.62	S	OCT 25	99.90	S
OCT 04	99.00		APR 12, 1985	99.02	S	OCT 28	99.61	S	MAR 29, 2000	100.05	S
APR 25, 1978	97.95		OCT 29	98.92	S	APR 15, 1993	99.72	S	OCT 23	100.12	S
OCT 05	99.09		APR 04, 1986	98.95	S	OCT 21	99.79	S	MAR 27, 2001	99.95	S
MAR 21, 1979	99.09		OCT 22	98.89	S	MAR 15, 1994	99.75	S			
SEP 12	99.05	S	MAR 31, 1987	98.85	S	OCT 17	99.96	S			
APR 30, 1980	98.98	S	OCT 21	98.98	S	MAR 29, 1995	99.83	S			

HIGHEST 61.35 MAY 06, 1975
LOWEST 100.12 OCT 23, 2000

SITE ID 324501114455101
LOCAL NUMBER 016S021E21L001S
In Felicity, 0.1 mile north of Center of the World Drive and 0.6 mile west of Sidewinder Road. Diameter 8 inches, depth reported 305 feet, perforated 200-302 feet. Altitude of land-surface datum 280 feet. Water-level records available since 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 2 , 199	141.24	S	JAN 15, 1998	142.3	TR	OCT 26, 1999	141.24	S	OCT 25, 2000	141.32	S
JAN 15, 1998	142.30	TR	MAR 26, 1999	141.37	S	MAR 30, 2000	140.87	S	MAR 28, 2001	139.92	S

HIGHEST 139.92 MAR 28, 2001
LOWEST 141.37 MAR 26, 1999

SITE ID 324502114412201
LOCAL NUMBER 016S022E19K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	3.35 R	NOV 07, 1990	2.25 R	SEP 24, 1992	3.45 R	NOV 04, 1993	1.65 R
MAR 05	3.25 R	DEC 06	2.45 R	MAR 05, 1993	1.25 R	DEC 03	1.45 R
APR 10	3.45 R	JAN 03, 1991	2.65 R	APR 16	1.45 R	JAN 06, 1994	2.25 R
MAY 16	3.45 R	MAR 22	3.15 R	MAY 07	1.65 R	FEB 04	2.65 R
JUN 06	3.65 R	JUN 21	3.45 R	27	1.65 R	MAR 04	2.75 R
JUL 05	3.55 R	SEP 18	3.35 R	JUN 29	2.25 R	APR 18	2.85 R
AUG 07	3.05 R	JAN 07, 1992	3.15 R	JUL 30	2.45 R	MAY 06	2.75 R
SEP 17	2.85 R	MAR 24	3.25 R	SEP 02	2.45 R	06	3.02 S
OCT 05	2.45 R	JUN 18	3.15 R	OCT 07	1.85 R	JUN 03	2.95 R

HIGHEST 1.25 MAR 05, 1993
LOWEST 3.65 JUN 06, 1990

SITE ID 324503114332602
LOCAL NUMBER C-08-22 07BDC2

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 17, 1994	15.41 S	JUN 17, 1994	15.41 S

HIGHEST 15.41 JUN 17, 1994 JUN 17, 1994
LOWEST 15.41 JUN 17, 1994 JUN 17, 1994

SITE ID 324509114375801
LOCAL NUMBER 016S022E22J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 04, 1994	SO

SITE ID 324509114375802
LOCAL NUMBER 016S022E22J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 04, 1994	11.92 S

SITE ID 3..510114355301
LOCAL NUMBER 016S023E19E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994	6.19	S

SITE ID 324510114355401
LOCAL NUMBER 016S022E24J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994		O

SITE ID 324510114365501
LOCAL NUMBER 016S022E23H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC , 1993	6.4	R	MAY 04, 1994	6.40	S

HIGHEST	6.4	DEC , 1993	MAY 04, 1994
LOWEST	6.4	DEC , 1993	MAY 04, 1994

SITE ID 324510114373001
LOCAL NUMBER 016S022E23F002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 04, 1994		SO

SITE ID 324510114382901
LOCAL NUMBER 016S022E22F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	8.5	R	OCT 12, 1989	5.4	R	DEC 08, 1989	7.2	R	FEB 15, 1990	7.8	R
30	8.2	R	NOV 03	5.9	R	JAN 12, 1990	8.3	R	MAR 05	8.4	R

SITE ID 324510114382901 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	8.6	R	JAN 03, 1991	7.7	R	MAR 05, 1993	6.5	R	DEC 03, 1993	5.6	R
MAY 16	8.0	R	MAR 22	8.6	R	APR 16	5.0	R	JAN 06, 1994	6.4	R
JUN 06	8.7	R	JUN 21	8.5	R	MAY 07	5.4	R	FEB 04	6.9	R
JUL 05	8.3	R	SEP 18	9.2	R	27	5.5	R	MAR 04	7.2	R
AUG 07	7.9	R	JAN 07, 1992	8.9	R	JUN 29	7.3	R	APR 18	6.6	R
SEP 17	8.6	R	MAR 24	8.8	R	JUL 30	8.0	R	MAY 04	6.19	S
OCT 05	7.4	R	JUN 18	8.6	R	SEP 02	7.5	R	06	6.4	R
NOV 07	5.0	R	SEP 24	8.5	R	OCT 07	6.1	R	JUN 03	7.1	R
DEC 06	6.4	R	FEB 04, 1993	8.3	R	NOV 04	4.4	R			

HIGHEST 4.4 NOV 04, 1993
LOWEST 9.2 SEP 18, 1991

SITE ID 324510114390001
LOCAL NUMBER 016S022E21J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994	5.68	S

SITE ID 324510114393101
LOCAL NUMBER 016S022E21L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 27, 1994		SO

SITE ID 324510114393102
LOCAL NUMBER 016S022E21L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 27, 1994	5.45	S

DATE: 06 ?1

SITE ID 3..10114393103
LOCAL NUMBER 016S022E21L003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	7.2	R	JUL 05, 1990	7.2	R	MAR 24, 1992	6.4	R	OCT 07, 1993	4.4	R
30	6.9	R	AUG 07	7.2	R	JUN 18	6.7	R	NOV 04	3.6	R
OCT 12	4.9	R	SEP 17	7.6	R	SEP 24	6.6	R	DEC 03	4.4	R
NOV 03	5.2	R	OCT 05	5.9	R	FEB 04, 1993	6.6	R	JAN 06, 1994	5.2	R
DEC 08	6.2	R	NOV 07	4.5	R	MAR 05	6.2	R	FEB 04	5.9	R
JAN 12, 1990	7.0	R	DEC 06	5.8	R	APR 16	5.5	R	MAR 04	6.1	R
FEB 15	7.3	R	JAN 03, 1991	6.6	R	MAY 07	5.0	R	APR 18	5.4	R
MAR 05	7.3	R	MAR 22	7.5	R	27	5.0	R	MAY 04	5.35	S
APR 10	7.4	R	JUN 21	7.3	R	JUN 29	6.1	R	06	5.2	R
MAY 16	7.0	R	SEP 18	6.8	R	JUL 30	5.9	R	JUN 03	6.0	R
JUN 06	7.6	R	JAN 07, 1992	6.5	R	SEP 02	6.3	R			

HIGHEST 3.6 NOV 04, 1993
LOWEST 7.6 JUN 06, 1990 SEP 17, 1990

SITE ID 324510114400201
LOCAL NUMBER 016S022E20H002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	6.5	R	JUL 05, 1990	6.4	R	MAR 24, 1992	6.1	R	OCT 07, 1993	4.8	R
30	6.2	R	AUG 07	6.6	R	JUN 18	6.5	R	NOV 04	4.3	R
OCT 12	4.5	R	SEP 17	6.8	R	SEP 24	6.6	R	DEC 03	4.4	R
NOV 03	5.1	R	OCT 05	4.8	R	FEB 04, 1993	6.2	R	JAN 06, 1994	5.2	R
DEC 08	5.6	R	NOV 07	3.6	R	MAR 05	5.5	R	FEB 04	5.6	R
JAN 12, 1990	6.4	R	DEC 06	5.3	R	APR 16	4.9	R	MAR 04	5.9	R
FEB 15	6.7	R	JAN 03, 1991	6.2	R	MAY 07	5.1	R	APR 18	5.3	R
MAR 05	6.6	R	MAR 22	7.0	R	27	5.2	R	MAY 04	5.26	S
APR 10	6.8	R	JUN 21	6.9	R	JUN 29	5.6	R	06	5.1	R
MAY 16	6.3	R	SEP 18	6.5	R	JUL 30	5.9	R	JUN 03	6.0	R
JUN 06	7.0	R	JAN 07, 1992	6.3	R	SEP 02	6.0	R			

HIGHEST 3.6 NOV 07, 1990
LOWEST 7.0 JUN 06, 1990 MAR 22, 1991

SITE ID 324510114454001
LOCAL NUMBER 016S021E21G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 19, 1962	167.43	S	NOV 18, 1997	155.72	V	MAR 26, 1998	155.35	S	DEC 10, 1998	154.85	V
JUL 17, 1996	156.49	V	JAN 15, 1998	155.55	T	JUL 17	155.05	V	MAY 10, 1999	154.34	V

HIGHEST 154.34 MAY 10, 1999
LOWEST 167.43 JUN 19, 1962

SITE ID 324510115565601
LOCAL NUMBER 016S010E28D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 01, 1974	23.00 S	MAR 28, 2000	28.49 V

HIGHEST 23.00 DEC 01, 1974
LOWEST 28.49 MAR 28, 2000

SITE ID 324511114322101
LOCAL NUMBER 016S023E22F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 17, 1962	13.50 S	NOV 03, 1966	13.82 V

HIGHEST 13.50 OCT 17, 1962
LOWEST 13.82 NOV 03, 1966

SITE ID 324514114450401
LOCAL NUMBER 016S021E22E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 04, 1997	164.92 R	JAN 27, 1998	TO

HIGHEST 164.92 DEC 04, 1997
LOWEST 164.92 DEC 04, 1997

SITE ID 324516114594101
LOCAL NUMBER 016S019E15Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 21, 1963	41.32 S	JAN 08, 1998	46.65 Z	MAY 01, 1998	46.25 Z	DEC 11, 1998	45.49 V

HIGHEST 41.32 MAY 21, 1963
LOWEST 46.65 JAN 08, 1998

SITE ID ., 17114450601
LOCAL NUMBER 016S021E22D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 27, 1998	163.19 TT	JAN 27, 1998	163.19 T

HIGHEST 163.19 JAN 27, 1998
LOWEST 163.19 JAN 27, 1998

SITE ID 324518114403201
LOCAL NUMBER 016S022E20F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 27, 1994	6.28 S

SITE ID 324518115570701
LOCAL NUMBER 016S010E20R003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAR 01, 1975	33.00 S

SITE ID 324518115591501
LOCAL NUMBER 016S009E24R001S
About 1 mile north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth drilled 105 feet, well point 98-101.5 feet. Altitude of land-surface datum 335 feet. Records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 10, 1976	79.70 Z	MAY 01, 1980	58.89 S	OCT 25, 1983	60.07 S	APR 02, 1987	59.97 S
17	58.00	SEP 25	59.36 S	APR 13, 1984	59.77 S	OCT 22	60.17 S
APR 28, 1977	58.17	APR 30, 1981	59.28 S	20	59.83 S	MAR 17, 1988	60.10 S
OCT 03	58.54	NOV 05	59.58 S	OCT 24	59.71 S	OCT 17	60.38 S
APR 26, 1978	58.19	MAR 11, 1982	59.67 S	APR 26, 1985	59.75 S	MAR 15, 1989	60.33 S
OCT 05	58.74	OCT 06	60.02 S	OCT 30	59.89 S		
MAR 14, 1979	58.52	MAR 31, 1983	59.56 S	APR 03, 1986	59.82 S		
SEP 13	59.00 S	SEP 22	60.23 S	OCT 22	60.04 S		

HIGHEST 58.00 NOV 17, 1976
LOWEST 60.38 OCT 17, 1988

SITE ID 324519114481501
LOCAL NUMBER 016S021E19D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 02, 1960	120.89 S	JAN 08, 1998	SO

HIGHEST 120.89 NOV 02, 1960
LOWEST 120.89 NOV 02, 1960

SITE ID 324520114345101
LOCAL NUMBER C-08-23 12BBB

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 29, 1994	8.62 S	APR 29, 1994	8.62 S	JUN 29, 1994	9.15 V

HIGHEST 8.62 APR 29, 1994 APR 29, 1994
LOWEST 9.15 JUN 29, 1994

SITE ID 324521114410501
LOCAL NUMBER 016S022E19H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC , 1993	3.55 R	MAY 06, 1994	4.34 S

HIGHEST 3.55 DEC , 1993
LOWEST 4.34 MAY 06, 1994

SITE ID 324521114481501
LOCAL NUMBER 016S021E19D002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 15, 1961	124.30 S	MAY 11, 1964	124.65 S	AUG 25, 1998	108.22 S

HIGHEST 108.22 AUG 25, 1998
LOWEST 124.65 MAY 11, 1964

SITE ID [illegible]525114450801
LOCAL NUMBER 016S021E22D003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 26, 1998	167.42	S	OCT 01, 1998	166.95	V

HIGHEST	166.95	OCT 01, 1998
LOWEST	167.42	MAR 26, 1998

SITE ID 324525114500701
LOCAL NUMBER 016S020E23G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 07, 1998	70.44	S	MAY 06, 1999	70.84	V

HIGHEST	70.44	DEC 07, 1998
LOWEST	70.84	MAY 06, 1999

SITE ID 324530116000601
LOCAL NUMBER 016S009E24N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 01, 1975	98.00	S

SITE ID 324536114355301
LOCAL NUMBER 016S023E19D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994	7.63	S

SITE ID 324536114365501
LOCAL NUMBER 016S022E13N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 27, 1994	4.65	S

SITE ID 324536114365502
LOCAL NUMBER 016S022E13N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	7.9	R	AUG 19, 1988	8.4	R	MAR 05, 1990	7.4	R	MAR 05, 1993	7.9	R
FEB 10	7.6	R	SEP 21	8.2	R	APR 10	6.9	R	APR 16	7.0	R
MAR 11	6.9	R	OCT 06	7.9	R	MAY 16	7.3	R	MAY 07	4.5	R
APR 16	7.1	R	NOV 10	7.7	R	JUN 06	7.3	R	27	3.7	R
MAY 13	7.6	R	DEC 15	7.1	R	JUL 05	7.7	R	JUN 29	6.0	R
JUN 19	8.1	R	JAN 20, 1989	7.9	R	AUG 07	6.7	R	JUL 30	6.6	R
JUL 10	7.5	R	FEB 17	7.7	R	SEP 17	8.1	R	SEP 02	6.8	R
AUG 14	7.3	R	MAR 13	6.9	R	OCT 05	6.4	R	OCT 07	5.7	R
SEP 09	6.9	R	APR 07	7.2	R	NOV 07	4.5	R	NOV 04	5.4	R
OCT 09	6.7	R	MAY 04	7.5	R	DEC 06	4.3	R	DEC 03	5.5	R
NOV 13	6.5	R	JUN 15	8.0	R	JAN 03, 1991	6.7	R	JAN 06, 1994	6.7	R
DEC 17	7.1	R	JUL 12	7.9	R	MAR 22	8.0	R	FEB 04	6.9	R
JAN 15, 1988	7.4	R	AUG 03	7.3	R	JUN 21	7.9	R	MAR 04	6.1	R
FEB 18	7.3	R	30	7.7	R	SEP 18	7.7	R	APR 18	5.9	R
MAR 25	7.7	R	OCT 12	3.7	R	JAN 07, 1992	8.2	R	27	4.79	S
APR 07	8.0	R	NOV 03	4.3	R	MAR 24	7.8	R	MAY 06	4.7	R
MAY 18	7.7	R	DEC 08	5.9	R	JUN 18	7.7	R	JUN 03	6.2	R
JUN 21	8.1	R	JAN 12, 1990	7.6	R	SEP 24	10.1	R	JUL 11	7.3	R
JUL 08	8.6	R	FEB 15	8.1	R	FEB 04, 1993	8.1	R			

HIGHEST 3.7 OCT 12, 1989 MAY 27, 1993
LOWEST 10.1 SEP 24, 1992

SITE ID 324536114371901
LOCAL NUMBER 016S022E23B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	9.2	R	FEB 15, 1990	10.2	R	AUG 07, 1990	8.5	R	MAR 22, 1991	9.7	R
30	9.6	R	MAR 05	10.1	R	SEP 17	9.8	R	JUN 21	10.0	R
OCT 12	7.7	R	APR 10	9.3	R	OCT 05	9.4	R	SEP 18	9.5	R
NOV 03	6.4	R	MAY 16	9.4	R	NOV 07	4.2	R	JAN 07, 1992	9.8	R
DEC 08	7.9	R	JUN 06	8.7	R	DEC 06	7.5	R	MAR 24	9.5	R
JAN 12, 1990	9.6	R	JUL 05	9.2	R	JAN 03, 1991	9.1	R	JUN 18	9.6	R

SITE ID 3..36114371901 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 24, 1992	7.7	R	MAY 27, 1993	6.0	R	NOV 04, 1993	7.7	R	APR 18, 1994	8.1	R
FEB 04, 1993	10.2	R	JUN 29	8.3	R	DEC 03	8.0	R	MAY 04	7.39	S
MAR 05	9.9	R	JUL 30	8.8	R	JAN 06, 1994	8.9	R	06	6.6	R
APR 16	8.2	R	SEP 02	9.2	R	FEB 04	9.3	R	JUN 03	8.5	R
MAY 07	6.5	R	OCT 07	7.2	R	MAR 04	8.5	R			

HIGHEST 4.2 NOV 07, 1990
LOWEST 10.2 FEB 15, 1990 FEB 04, 1993

SITE ID 324536114373201
LOCAL NUMBER 016S022E23C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC , 1993	8.00	R	APR 27, 1994	8.31	S

HIGHEST 8.00 DEC , 1993
LOWEST 8.31 APR 27, 1994

SITE ID 324536114375801
LOCAL NUMBER 016S022E15R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	7.1	R	JUL 05, 1990	6.6	R	MAR 24, 1992	7.9	R	OCT 07, 1993	5.4	R
30	7.0	R	AUG 07	6.6	R	JUN 18	7.7	R	NOV 04	4.8	R
OCT 12	4.7	R	SEP 17	7.0	R	SEP 24	6.4	R	DEC 03	5.6	R
NOV 03	4.9	R	OCT 05	6.3	R	FEB 04, 1993	7.7	R	JAN 06, 1994	5.9	R
DEC 08	6.0	R	NOV 07	3.9	R	MAR 05	7.1	R	FEB 04	6.6	R
JAN 12, 1990	7.3	R	DEC 06	5.6	R	APR 16	5.1	R	MAR 04	6.9	R
FEB 15	7.2	R	JAN 03, 1991	6.6	R	MAY 07	4.4	R	APR 18	6.5	R
MAR 05	7.4	R	MAR 22	7.1	R	27	4.8	R	MAY 04	5.95	S
APR 10	7.4	R	JUN 21	6.9	R	JUN 29	6.3	R	06	5.8	R
MAY 16	6.8	R	SEP 18	7.8	R	JUL 30	7.2	R	JUN 03	6.2	R
JUN 06	7.3	R	JAN 07, 1992	7.4	R	SEP 02	7.1	R			

HIGHEST 3.9 NOV 07, 1990
LOWEST 7.9 MAR 24, 1992

SITE ID 324536114390001
LOCAL NUMBER 016S022E21A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	8.8	R	MAR 05, 1990	9.0	R	OCT 05, 1990	7.5	R	JAN 07, 1992	8.9	R
30	8.4	R	APR 10	9.0	R	NOV 07	5.4	R	MAR 24	8.7	R
OCT 12	6.7	R	MAY 16	8.1	R	DEC 06	6.8	R	JUN 18	8.2	R
NOV 03	4.4	R	JUN 06	8.8	R	JAN 03, 1991	7.9	R	SEP 24	7.0	R
DEC 08	7.3	R	JUL 05	8.1	R	MAR 22	8.4	R	APR 27, 1994		SD
JAN 12, 1990	8.6	R	AUG 07	8.3	R	JUN 21	8.8	R			
FEB 15	8.8	R	SEP 17	8.7	R	SEP 18	9.3	R			

HIGHEST 4.4 NOV 03, 1989
LOWEST 9.3 SEP 18, 1991

SITE ID 324536114393001
LOCAL NUMBER 016S022E21B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	7.3	R	JUL 05, 1990	5.5	R	MAR 24, 1992	7.2	R	DEC 03, 1993	5.7	R
30	7.0	R	AUG 07	7.1	R	JUN 18	6.9	R	JAN 06, 1994	6.3	R
OCT 12	5.2	R	SEP 17	7.1	R	SEP 24	6.5	R	FEB 04	6.9	R
NOV 03	5.6	R	OCT 05	5.4	R	APR 16, 1993	6.1	R	MAR 04	7.0	R
DEC 08	6.5	R	NOV 07	4.8	R	MAY 07	6.4	R	APR 18	6.2	R
JAN 12, 1990	7.3	R	DEC 06	6.0	R	27	6.5	R	MAY 04	5.60	S
FEB 15	7.8	R	JAN 03, 1991	6.9	R	JUN 29	7.3	R	06	5.6	R
MAR 05	7.6	R	MAR 22	7.3	R	JUL 30	7.2	R	JUN 03	6.8	R
APR 10	7.8	R	JUN 21	7.8	R	SEP 02	7.3	R			
MAY 16	6.3	R	SEP 18	7.6	R	OCT 07	5.8	R			
JUN 06	7.6	R	JAN 07, 1992	7.5	R	NOV 04	5.0	R			

HIGHEST 4.8 NOV 07, 1990
LOWEST 7.8 FEB 15, 1990 APR 10, 1990 JUN 21, 1991

SITE ID 324536114403302
LOCAL NUMBER 016S022E20C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC , 1993	6.1	R	APR 27, 1994	6.50	S

HIGHEST 6.1 DEC , 1993
LOWEST 6.50 APR 27, 1994

SITE ID 3..37114352601
LOCAL NUMBER 016S023E18P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
OCT 15, 1962	9.44	S

SITE ID 324537114382901
LOCAL NUMBER 016S022E15P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	6.6	R	AUG 19, 1988	7.2	R	MAR 05, 1990	8.2	R	MAR 05, 1993	8.0	R
FEB 10	6.4	R	SEP 21	7.1	R	APR 10	8.4	R	APR 16	6.4	R
MAR 11	6.4	R	OCT 06	6.8	R	MAY 16	8.0	R	MAY 07	6.3	R
APR 16	6.8	R	NOV 10	6.4	R	JUN 06	8.4	R	27	6.7	R
MAY 13	7.0	R	DEC 15	6.2	R	JUL 05	6.8	R	JUN 29	7.9	R
JUN 19	6.8	R	JAN 20, 1989	6.7	R	AUG 07	7.1	R	JUL 30	8.3	R
JUL 10	6.9	R	FEB 17	8.2	R	SEP 17	8.0	R	SEP 02	8.1	R
AUG 14	6.8	R	MAR 13	7.8	R	OCT 05	6.4	R	OCT 07	6.3	R
SEP 09	6.9	R	APR 07	8.1	R	NOV 07	4.6	R	NOV 04	5.6	R
OCT 09	6.5	R	MAY 04	8.2	R	DEC 06	6.5	R	DEC 03	6.2	R
NOV 13	6.0	R	JUN 15	8.4	R	JAN 03, 1991	7.4	R	JAN 06, 1994	7.0	R
DEC 17	5.9	R	JUL 12	7.7	R	MAR 22	8.0	R	FEB 04	7.5	R
JAN 15, 1988	6.5	R	AUG 03	8.2	R	JUN 21	7.8	R	MAR 04	7.7	R
FEB 18	6.8	R	30	8.0	R	SEP 18	8.8	R	APR 18	6.9	R
MAR 25	7.2	R	OCT 12	5.2	R	JAN 07, 1992	8.5	R	27	6.13	S
APR 07	7.5	R	NOV 03	5.4	R	MAR 24	8.7	R	MAY 06	6.5	R
MAY 18	7.2	R	DEC 08	6.9	R	JUN 18	7.9	R	JUN 03	7.2	R
JUN 21	7.5	R	JAN 12, 1990	7.9	R	SEP 24	5.3	R	JUL 11	7.3	R
JUL 08	7.5	R	FEB 15	7.6	R	FEB 04, 1993	8.3	R			

HIGHEST	4.6	NOV 07, 1990
LOWEST	8.8	SEP 18, 1991

SITE ID 324537114400101
LOCAL NUMBER 016S022E16N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 27, 1994	5.8	S

SITE ID 324537114400102
LOCAL NUMBER 016S022E16N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	6.7	R	JUL 05, 1990	6.3	R	MAR 24, 1992	7.0	R	OCT 07, 1993	5.6	R
30	6.1	R	AUG 07	6.4	R	JUN 18	7.1	R	NOV 04	5.1	R
OCT 12	4.4	R	SEP 17	6.1	R	SEP 24	6.8	R	DEC 03	5.2	R
NOV 03	5.3	R	OCT 05	5.4	R	FEB 04, 1993	6.2	R	JAN 06, 1994	5.9	R
DEC 08	5.9	R	NOV 07	4.3	R	MAR 05	6.5	R	FEB 04	6.4	R
JAN 12, 1990	7.0	R	DEC 06	5.4	R	APR 16	5.7	R	MAR 04	6.4	R
FEB 15	7.5	R	JAN 03, 1991	6.2	R	MAY 07	5.9	R	APR 18	5.9	R
MAR 05	7.5	R	MAR 22	6.6	R	27	6.1	R	27	5.76	S
APR 10	7.4	R	JUN 21	7.1	R	JUN 29	6.6	R	MAY 06	5.3	R
MAY 16	7.3	R	SEP 18	7.2	R	JUL 30	6.2	R	JUN 03	6.4	R
JUN 06	7.3	R	JAN 07, 1992	7.1	R	SEP 02	6.7	R			

HIGHEST 4.3 NOV 07, 1990
LOWEST 7.5 FEB 15, 1990 MAR 05, 1990

SITE ID 324540114444001
LOCAL NUMBER 016S021E15Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 08, 1998	172.91	VV	MAY 04, 1999	172.73	V

HIGHEST 172.73 MAY 04, 1999
LOWEST 172.73 MAY 04, 1999

SITE ID 324541114500701
LOCAL NUMBER 016S020E23B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 05, 1961	97.38	S	JUL 17, 1996		W

HIGHEST 97.38 DEC 05, 1961
LOWEST 97.38 DEC 05, 1961

SITE ID 3..343114580301
LOCAL NUMBER 016S019E13E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1995	60.42 R	MAY 01, 1998	52.12 V	DEC 11, 1998	58.25 V		
JAN 07, 1998	59.87 V	AUG 07	56.78 V				

HIGHEST 52.12 MAY 01, 1998
LOWEST 60.42 OCT 23, 1995

SITE ID 324544114472901
LOCAL NUMBER 016S021E18R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 12, 1979	158. R	MAR 26, 1998	135.23 S	DEC 10, 1998	134.67 S		
JAN , 1994	139. R	26	135.23 S				

HIGHEST 134.67 DEC 10, 1998
LOWEST 158. DEC 12, 1979

SITE ID 324544114475201
LOCAL NUMBER 016S021E18P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 31, 1979	151. R	JAN , 1994	138. R	AUG 01, 1994	136.7 R	DEC 10, 1998	125.63 V

HIGHEST 125.63 DEC 10, 1998
LOWEST 151. AUG 31, 1979

SITE ID 324546114405901
LOCAL NUMBER 016S022E17N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	31.78 R	APR 22, 1998	31.36 Z	DEC 11, 1998	30.44 V

HIGHEST 30.44 DEC 11, 1998
LOWEST 31.78 NOV 08, 1996

SITE ID 324548114410101
LOCAL NUMBER 016S022E17N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	46.36 R	APR 22, 1998	45.67 V	DEC 11, 1998	41.52 V

HIGHEST 41.52 DEC 11, 1998
LOWEST 46.36 NOV 08, 1996

SITE ID 324549114355001
LOCAL NUMBER 016S023E18M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 12, 1961	12. R

SITE ID 324549114393101
LOCAL NUMBER 016S022E16L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 15, 1990	8.4 R	NOV 07, 1990	5.6 R	SEP 24, 1992	7.3 R	JAN 06, 1994	7.4 R
MAR 05	8.3 R	DEC 06	6.7 R	MAY 07, 1993	7.3 R	FEB 04	7.9 R
APR 10	8.3 R	JAN 03, 1991	7.5 R	27	7.4 R	MAR 04	7.8 R
MAY 16	8.0 R	MAR 22	8.1 R	JUN 29	8.0 R	APR 18	7.0 R
JUN 06	8.2 R	JUN 21	8.0 R	JUL 30	8.0 R	27	6.95 R
JUL 05	5.3 R	SEP 18	7.9 R	SEP 02	8.0 R	MAY 06	5.8 R
AUG 07	7.5 R	JAN 07, 1992	7.7 R	OCT 07	6.6 R	JUN 03	7.6 R
SEP 17	7.2 R	MAR 24	7.8 R	NOV 04	6.3 R		
OCT 05	5.3 R	JUN 18	7.6 R	DEC 03	6.70 R		

HIGHEST 5.3 JUL 05, 1990 OCT 05, 1990
LOWEST 8.4 FEB 15, 1990

SITE ID 324549114400201
LOCAL NUMBER 016S022E17J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1994	6.81 S	MAY 04, 1994	5.40 S

HIGHEST 5.40 MAY 04, 1994
LOWEST 6.81 APR 27, 1994

SITE ID .. .549114400202
LOCAL NUMBER 016S022E17J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	6.7	R	JUL 05, 1990	6.8	R	MAR 24, 1992	7.1	R	OCT 07, 1993	6.4	R
30	6.5	R	AUG 07	6.9	R	JUN 18	7.2	R	NOV 04	6.0	R
OCT 12	4.7	R	SEP 17	6.2	R	SEP 24	6.6	R	DEC 03	6.2	R
NOV 03	5.6	R	OCT 05	5.9	R	FEB 04, 1993	6.8	R	JAN 06, 1994	6.9	R
DEC 08	6.6	R	NOV 07	5.0	R	MAR 05	7.4	R	FEB 04	7.2	R
JAN 12, 1990	7.2	R	DEC 06	6.1	R	APR 16	7.0	R	MAR 04	7.3	R
FEB 15	7.6	R	JAN 03, 1991	6.9	R	MAY 07	7.1	R	APR 18	6.8	R
MAR 05	7.7	R	MAR 22	7.2	R	27	7.1	R	MAY 04	6.44	S
APR 10	7.4	R	JUN 21	7.1	R	JUN 29	7.3	R	06	6.1	R
MAY 16	7.5	R	SEP 18	7.1	R	JUL 30	6.5	R	JUN 03	7.2	R
JUN 06	7.4	R	JAN 07, 1992	7.4	R	SEP 02	7.3	R			

HIGHEST	4.7	OCT 12, 1989
LOWEST	7.7	MAR 05, 1990

SITE ID 324549114400203
LOCAL NUMBER 016S022E17J003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC , 1993	11.3	R	APR 27, 1994	11.42	S	MAY 04, 1994	11.93	S

HIGHEST	11.3	DEC , 1993
LOWEST	11.93	MAY 04, 1994

SITE ID 324549114403201
LOCAL NUMBER 016S022E17K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC , 1993	9.90	R	APR 27, 1994	8.76	S

HIGHEST	8.76	APR 27, 1994
LOWEST	9.90	DEC , 1993

SITE ID 324549114410301
LOCAL NUMBER 016S022E18J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	51.19 R	APR 22, 1998	50.47 Z	DEC 11, 1998	47.88 V	MAY 07, 1999	50.93 Z

HIGHEST 47.88 DEC 11, 1998
LOWEST 51.19 NOV 08, 1996

SITE ID 324549114443901
LOCAL NUMBER 016S021E15K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
OCT , 1960	185. R

SITE ID 324550114390001
LOCAL NUMBER 016S022E16J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1994	6.90 S	MAY 04, 1994	6.82 S

HIGHEST 6.82 MAY 04, 1994
LOWEST 6.90 APR 27, 1994

SITE ID 324552114410501
LOCAL NUMBER 016S022E18J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	44.20 R	APR 22, 1998	44.85 Z	DEC 11, 1998	44.05 V

HIGHEST 44.05 DEC 11, 1998
LOWEST 44.85 APR 22, 1998

SITE ID . ,55114393101
LOCAL NUMBER 016S022E16L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1964	7.40 S	OCT 28, 1966	9.45 S	JUN 22, 1967	9.86 S	NOV 25, 1968	9.01 S
FEB 18, 1966	9.98 S	NOV 29	9.45 S	JUL 27	9.66 S	MAR 06, 1969	9.15 S
MAY 17	8.50 V	DEC 29	9.58 S	AUG 30	8.95 S	MAY 28	9.30 S
JUN 01	8.68 S	JAN 26, 1967	9.75 S	SEP 28	7.97 S	AUG 21	9.46 S
30	7.93 S	FEB 23	8.98 S	OCT 30	8.98 S	NOV 25	9.45 S
JUL 28	7.53 S	MAR 27	8.87 S	NOV 29	8.52 S	MAR 12, 1970	9.36 S
AUG 30	7.93 V	APR 06	8.46 V	FEB 28, 1968	8.77 S	JUL 02	9.03 S
SEP 29	8.50 S	26	8.81 S	MAY 28	9.17 S	OCT 15	9.60 S
OCT 27	9.06 V	MAY 25	9.66 S	AUG 29	8.35 S	JAN 18, 1971	10.43 S

HIGHEST 7.40 APR 27, 1964
LOWEST 10.43 JAN 18, 1971

SITE ID 324556114393001
LOCAL NUMBER 016S022E16K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 27, 1994	3.98 S

SITE ID 324556114443401
LOCAL NUMBER 016S021E15K003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 28, 1996	191.02 SR	JAN 28, 1998	191.02 SR

HIGHEST --
LOWEST --

SITE ID 324557114443901
LOCAL NUMBER 016S021E15G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUL 27, 1961	189. R	JAN 30, 1998	183.26 TT

HIGHEST 189. JUL 27, 1961
LOWEST 189. JUL 27, 1961

SITE ID 324557114443902
LOCAL NUMBER 016S021E15K004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 30, 1998	183.82 TR	JAN 30, 1998	183.82 TR

HIGHEST --
LOWEST --

SITE ID 324558114443201
LOCAL NUMBER 016S021E15K002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JAN 28, 1998	173.91 TT	JAN 28, 1998	173.9 TT

HIGHEST --
LOWEST --

SITE ID 324558115595201
LOCAL NUMBER 016S009E24D001S
About 2 miles north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth 149 feet, well point 145.5-149 feet. Altitude of land-surface datum 382 feet. Water-level records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 10, 1976	131	MAR 31, 1983	104.97 S	OCT 30, 1989	106.13 S	MAR 19, 1996	107.26 V
APR 28, 1977	103.86	OCT 25	105.10 S	APR 10, 1990	106.22 S	OCT 16	107.32 S
OCT 03	103.93	APR 20, 1984	105.20 S	OCT 23	106.32 S	MAR 17, 1997	107.36 S
APR 27, 1978	104.07	OCT 24	105.27 S	APR 02, 1991	106.39 S	OCT 20	108.48 S
OCT 05	104.16	APR 26, 1985	105.36 S	OCT 07	106.47 S	MAR 23, 1998	107.49 S
MAR 14, 1979	104.20	OCT 29	105.44 S	APR 06, 1992	106.56 S	30	107.59 V
SEP 13	104.28 S	APR 02, 1986	105.52 S	OCT 27	106.67 S	OCT 27	107.60 S
MAY 01, 1980	104.40 S	OCT 23	105.62 S	JAN 12, 1993	106.42 S	MAR 22, 1999	107.69 V
SEP 25	104.48 S	APR 03, 1987	105.67 S	OCT 19	106.80 S	OCT 25	107.68 S
APR 30, 1981	104.58 S	OCT 22	105.81 S	MAR 22, 1994	106.90 S	MAR 27, 2000	107.80 S
NOV 05	104.71 S	MAR 16, 1988	105.86 S	OCT 17	106.99 S	OCT 23	107.90 S
MAR 10, 1982	104.77 S	OCT 17	105.97 S	MAR 29, 1995	107.03 S	MAR 22, 2001	107.89 V
OCT 06	104.89 S	MAR 16, 1989	105.99 S	OCT 16	107.13 S		

HIGHEST 103.86 APR 28, 1977
LOWEST 131 DEC 10, 1976

SITE ID - ,02114352001
LOCAL NUMBER 016S023E18G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 04, 1994	4.73	S

SITE ID 324602114352002
LOCAL NUMBER 016S023E18G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 28, 1994	9.07	S	MAY 04, 1994	8.95	S

HIGHEST 8.95 MAY 04, 1994
LOWEST 9.07 APR 28, 1994

SITE ID 324603114361801
LOCAL NUMBER 016S022E13G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	7.3	R	JUL 05, 1990	7.0	R	MAR 24, 1992	7.8	R	DEC 03, 1993	5.5	R
30	7.1	R	AUG 07	6.9	R	JUN 18	8.1	R	JAN 06, 1994	6.3	R
OCT 12	5.7	R	SEP 17	7.8	R	SEP 24	6.1	R	FEB 04	6.6	R
NOV 03	3.9	R	OCT 05	6.7	R	FEB 04, 1993	7.3	R	MAR 04	6.1	R
DEC 08	5.6	R	NOV 07	5.0	R	MAR 05	7.1	R	APR 18	5.6	R
JAN 12, 1990	7.2	R	DEC 06	5.2	R	APR 16	6.4	R	29	4.26	S
FEB 15	7.5	R	JAN 03, 1991	6.4	R	JUN 29	5.7	R	MAY 06	3.3	R
MAR 05	6.2	R	MAR 22	7.1	R	JUL 30	6.4	R	JUN 03	5.8	R
APR 10	6.9	R	JUN 21	7.4	R	SEP 02	6.7	R			
MAY 16	6.6	R	SEP 18	7.7	R	OCT 07	5.4	R			
JUN 06	5.4	R	JAN 07, 1992	7.8	R	NOV 04	5.1	R			

HIGHEST 3.3 MAY 06, 1994
LOWEST 8.1 JUN 18, 1992

SITE ID 324603114365501
LOCAL NUMBER 016S022E13E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	7.5	R	AUG 19, 1988	8.2	R	MAR 05, 1990	9.1	R	MAR 05, 1993	8.7	R
FEB 10	7.2	R	SEP 21	8.0	R	APR 10	7.5	R	APR 16	7.5	R
MAR 11	7.5	R	OCT 06	7.9	R	MAY 16	7.9	R	MAY 07	6.5	R
APR 16	7.8	R	NOV 10	8.2	R	JUN 06	7.9	R	27	6.2	R
MAY 13	7.9	R	DEC 15	7.6	R	JUL 05	8.2	R	JUN 29	7.7	R
JUN 19	8.1	R	JAN 20, 1989	8.5	R	AUG 07	7.6	R	JUL 30	7.9	R
JUL 10	7.8	R	FEB 17	8.8	R	SEP 17	8.6	R	SEP 02	8.1	R
AUG 14	7.6	R	MAR 13	8.4	R	OCT 05	6.5	R	OCT 07	6.4	R
SEP 09	6.9	R	APR 07	8.7	R	NOV 07	3.9	R	NOV 04	7.2	R
OCT 09	6.5	R	MAY 04	8.6	R	DEC 06	6.2	R	DEC 03	7.7	R
NOV 13	7.1	R	JUN 15	8.6	R	JAN 03, 1991	7.7	R	JAN 06, 1994	8.4	R
DEC 17	7.5	R	JUL 12	8.8	R	MAR 22	8.1	R	FEB 04	8.5	R
JAN 15, 1988	7.8	R	AUG 03	8.3	R	JUN 21	8.4	R	MAR 04	8.0	R
FEB 18	7.5	R	30	8.2	R	SEP 18	7.7	R	APR 18	7.4	R
MAR 25	7.9	R	OCT 12	6.9	R	JAN 07, 1992	8.0	R	29	7.05	S
APR 07	8.1	R	NOV 03	5.5	R	MAR 24	8.1	R	MAY 06	5.9	R
MAY 18	7.5	R	DEC 08	7.5	R	JUN 18	8.0	R	JUN 03	7.7	R
JUN 21	8.0	R	JAN 12, 1990	8.7	R	SEP 24	7.3	R	JUL 11	8.4	R
JUL 08	8.3	R	FEB 15	9.2	R	FEB 04, 1993	9.0	R			

HIGHEST 3.9 NOV 07, 1990
LOWEST 9.2 FEB 15, 1990

SITE ID 324603114374401
LOCAL NUMBER 016S022E14M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	11.11	V

SITE ID 324603114375801
LOCAL NUMBER 016S022E15J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	8.9	R	OCT 06, 1990	8.3	R	SEP 18, 1991	9.8	R	MAR 05, 1993	10.2	R
MAY 16	9.3	R	NOV 07	5.2	R	JAN 07, 1992	9.4	R	APR 16	8.9	R
JUN 06	9.5	R	DEC 06	7.8	R	MAR 24	9.7	R	MAY 07	7.7	R
JUL 05	8.7	R	JAN 03, 1991	8.0	R	JUN 18	8.6	R	27	8.7	R
AUG 07	9.2	R	MAR 22	9.9	R	SEP 24	9.9	R	JUN 29	9.7	R
SEP 17	8.8	R	JUN 21	9.5	R	FEB 04, 1993	10.2	R	JUL 30	10.4	R

SITE ID ..03114375801 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 02, 1993	10.5 R	DEC 03, 1993	9.3 R	MAR 04, 1994	10.4 R	MAY 06, 1994	8.7 R
OCT 07	7.7 R	JAN 06, 1994	8.2 R	APR 18	9.4 R	JUN 03	8.9 R
NOV 04	8.2 R	FEB 04	9.9 R	29	9.10 S		

HIGHEST 5.2 NOV 07, 1990
LOWEST 10.5 SEP 02, 1993

SITE ID 324603115480501
LOCAL NUMBER 016S011E23B001S
About 3.5 miles southeast of Plaster City. Augered observation well. Diameter 1.25 inches, depth measured 114.7 feet in 1974, original depth 123 feet, perforated 121-123 feet. Altitude of land-surface datum 30 feet. Water-level records available available 1964, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 19, 1964		MAR 12, 1982	39.56 S	OCT 18, 1988	40.09 S	MAR 29, 1995	45.78 S
OCT 30, 1974	39.35	OCT 08	39.59 S	MAR 14, 1989	40.06 S	OCT 16	48.62 S
SEP 30, 1976	39.38	MAR 30, 1983	39.67 S	OCT 31	40.39 S	MAR 19, 1996	50.40 V
APR 26, 1977	39.36	OCT 27	40.96 S	MAR 21, 1990	40.35 S	OCT 16	50.15 V
OCT 04	39.38	APR 12, 1984	39.67 S	OCT 24	40.48 S	MAR 17, 1997	43.72 S
APR 25, 1978	39.34	OCT 23	39.88 S	APR 05, 1991	40.93 S	OCT 20	48.54 S
OCT 05	39.45	APR 11, 1985	39.98 S	OCT 09	40.83 S	MAR 23, 1998	49.94 S
MAR 21, 1979	40.03	OCT 29	40.36 S	MAR 16, 1992	41.06 S	OCT 27	50.51 S
SEP 12	39.67 S	APR 04, 1986	40.43 S	OCT 28	46.85 S	MAR 22, 1999	50.32 S
APR 30, 1980	39.65 S	OCT 22	40.32 S	APR 15, 1993	46.29 S	OCT 25	47.25 S
SEP 24	39.55 S	MAR 31, 1987	40.44 S	OCT 21	50.11 S	MAR 29, 2000	48.88 S
APR 30, 1981	39.50 S	OCT 20	40.81 S	MAR 15, 1994	50.44 S	OCT 23	50.73 S
NOV 04	39.62 S	MAR 14, 1988	40.01 S	OCT 17	45.12 S	MAR 27, 2001	50.82 S

HIGHEST 39.34 APR 25, 1978
LOWEST 50.82 MAR 27, 2001

SITE ID 324604114321701
LOCAL NUMBER 016S023E15F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	17.72 S

SITE ID 324604114393001
LOCAL NUMBER 016S022E16G005S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	7.11	S

SITE ID 324604114400101
LOCAL NUMBER 016S022E16E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	12.4	R	JUL 05, 1990	12.9	R	MAR 24, 1992	12.2	R	NOV 04, 1993	12.3	R
30	11.4	R	AUG 07	12.2	R	JUN 18	11.9	R	DEC 03	12.2	R
OCT 12	11.4	R	SEP 17	12.1	R	SEP 24	11.4	R	JAN 06, 1994	12.5	R
NOV 03	11.3	R	OCT 05	11.7	R	FEB 04, 1993	12.8	R	FEB 04	12.9	R
DEC 08	11.4	R	NOV 07	11.1	R	MAR 05	13.0	R	MAR 04	13.1	R
JAN 12, 1990	11.9	R	DEC 06	11.4	R	MAY 07	13.1	R	APR 18	13.0	R
FEB 15	12.8	R	JAN 03, 1991	11.9	R	27	13.2	R	MAY 04	12.82	S
MAR 05	12.9	R	MAR 22	13.0	R	JUN 29	13.3	R	06	12.7	R
APR 10	13.2	R	JUN 21	12.9	R	JUL 30	13.3	R	JUN 03	12.9	R
MAY 16	11.2	R	SEP 18	12.7	R	SEP 02	13.2	R			
JUN 06	13.1	R	JAN 07, 1992	12.3	R	OCT 07	12.3	R			

HIGHEST 11.1 NOV 07, 1990
LOWEST 13.3 JUN 29, 1993 JUL 30, 1993

SITE ID 324605114391501
LOCAL NUMBER 016S022E16G003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	4.99	S

SITE ID 324605114391502
LOCAL NUMBER 016S022E16G004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 19, 1994	3.24	V

SITE ID _ 306114391201
LOCAL NUMBER 016S022E16H002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	3.53	S

SITE ID 324606114391301
LOCAL NUMBER 016S022E16H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	6.34	S

SITE ID 324606114441601
LOCAL NUMBER 016S021E15H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 28, 1998		O	JAN 28, 1998		SO

HIGHEST --
LOWEST --

SITE ID 324607114385601
LOCAL NUMBER 016S022E15E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	7.72	S

SITE ID 324607114480501
LOCAL NUMBER 016S021E18F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 09, 1979	148.	R	MAR 26, 1998	135.57	S	DEC 10, 1998	135.32	S			
JAN , 1994	139.	R	26	136.12	S						

HIGHEST 135.32 DEC 10, 1998
LOWEST 148. MAR 09, 1979

SITE ID 324608115593501
LOCAL NUMBER 016S009E24B001S
About 2 miles north of Ocotillo. Augered observation water-table well. Diameter 2 inches, depth measured 128.4 feet in 1992, original depth 128.8 feet, well point 125-128.5 feet. Altitude of land-surface datum 385 feet. Water-level records available 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 10, 1976	105.35		OCT 06, 1982	106.03	S	MAR 15, 1989	106.85	S	MAR 29, 1995	107.68	S
17	105.34		MAR 29, 1983	106.10	S	OCT 30	106.98	S	OCT 16	107.75	S
APR 28, 1977	105.40		OCT 25	106.16	S	APR 10, 1990	107.07	S	MAR 19, 1996	107.82	V
OCT 03	105.44		APR 18, 1984	106.22	S	OCT 23	107.11	S	OCT 16	107.92	S
APR 27, 1978	105.49		OCT 24	106.29	S	APR 02, 1991	107.17	S	MAR 18, 1997	108.05	V
OCT 05	105.59		APR 26, 1985	106.36	S	OCT 07	107.22	S	OCT 20	108.06	S
MAR 15, 1979	105.62		OCT 29	106.42	S	APR 06, 1992	107.32	S	MAR 30, 1998	108.14	V
SEP 13	105.40	S	APR 02, 1986	106.51	S	OCT 27	107.38	S	OCT 27	108.15	S
MAY 01, 1980	105.74	S	OCT 23	106.58	S	APR 12, 1993	107.72	S	MAR 22, 1999	108.27	V
SEP 25	105.78	S	APR 03, 1987	106.64	S	OCT 19	107.47	S	OCT 25	108.25	S
APR 30, 1981	105.84	S	OCT 22	106.73	S	MAR 14, 1994	107.73	S	MAR 27, 2000	109.39	S
NOV 05	105.90	S	MAR 16, 1988	106.78	S	22	107.55	S	OCT 23	108.44	S
MAR 10, 1982	105.95	S	OCT 17	106.86	S	OCT 17	107.65	S	MAR 22, 2001	108.44	V

HIGHEST 105.34 NOV 17, 1976
LOWEST 109.39 MAR 27, 2000

SITE ID 324609115563001
LOCAL NUMBER 016S010E16Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
FEB 01, 1975	20.00	S

SITE ID 324610114382801
LOCAL NUMBER 016S022E15F002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	8.45	R	JAN 03, 1991	7.15	R	MAR 05, 1993	8.85	R	JAN 06, 1994	8.25	R
MAY 16	7.55	R	MAR 22	7.55	R	APR 16	7.95	R	FEB 04	8.65	R
JUN 06	8.05	R	JUN 21	6.95	R	MAY 07	7.45	R	MAR 04	8.95	R
JUL 05	7.05	R	SEP 18	7.85	R	27	7.85	R	APR 18	7.55	R
AUG 07	7.15	R	JAN 07, 1992	7.55	R	JUN 29	8.05	R	MAY 06	7.47	S
SEP 17	7.15	R	MAR 24	7.75	R	JUL 30	8.55	R	06	7.47	S
OCT 05	6.55	R	JUN 18	7.95	R	SEP 02	8.45	R	JUN 03	7.55	R
NOV 07	5.45	R	SEP 24	6.95	R	NOV 04	7.05	R	JUL 13	7.78	S
DEC 06	6.75	R	FEB 04, 1993	8.45	R	DEC 03	7.75	R			

HIGHEST 5.45 NOV 07, 1990
LOWEST 8.95 MAR 04, 1994

SITE ID . .10114382802
LOCAL NUMBER 016S022E15F003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 06, 1994	7.31	S	JUL 13, 1994	7.98	S

HIGHEST	7.31	MAY 06, 1994
LOWEST	7.98	JUL 13, 1994

SITE ID 324610114391501
LOCAL NUMBER 016S022E16G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	17.09	S

SITE ID 324610114391502
LOCAL NUMBER 016S022E16G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 06, 1994	16.42	S

SITE ID 324611114443101
LOCAL NUMBER 016S021E15G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 30, 1998	220.	R	JAN 30, 1998	220.	R

HIGHEST	220.	JAN 30, 1998	JAN 30, 1998
LOWEST	220.	JAN 30, 1998	JAN 30, 1998

SITE ID 324612115583901
LOCAL NUMBER 016S010E18P001S
About 2.5 miles northeast of Ocotillo and 2 miles northwest of Coyote Wells. Drilled unused water-table well. Diameter 6.6 inches, depth drilled 300 feet, 196.2 feet measured in 1975, 70 feet measured in 1985. Altitude of land-surface datum 340 feet. Records available 1975-85.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 01, 1975	70.00	S	MAR 14, 1979	72.23		MAR 29, 1983	71.29	S	MAR 30, 1987		D
04	69.66		SEP 13	71.84	S	OCT 25	71.30	S	OCT 22		SD
05	70.50		APR 30, 1980	71.59	S	APR 18, 1984	71.24	S	MAR 16, 1988		SD
MAY 15	70.30		SEP 25		O	OCT 24	71.18	S	OCT 17		SD
OCT 15, 1976	69.57		APR 30, 1981	71.49	S	APR 11, 1985		D	MAR 15, 1989		SD
APR 28, 1977	69.65		NOV 05	71.32	S	OCT 29		D			
OCT 03	69.62		MAR 11, 1982	71.24	S	APR 02, 1986		D			
OCT 06, 1978	73.24		OCT 06	71.32	S	OCT 23		D			

HIGHEST 69.57 OCT 15, 1976
LOWEST 73.24 OCT 06, 1978

SITE ID 324614114432301
LOCAL NUMBER 016S021E14B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 02, 1979	237.95	R	JUN 24, 1994	230.45	R	JUL 25, 1996	229.16	R	DEC 07, 1998	227.61	V
04	237.69	R	JUL 19	230.53	R	OCT 17, 1997	217.23	V			
31	237.84	R	JUL 19, 1996	229.31	R	MAR 26, 1998	227.37	V			

HIGHEST 217.23 OCT 17, 1997
LOWEST 237.95 DEC 02, 1979

SITE ID 324615114444301
LOCAL NUMBER 016S021E15C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 26, 1998	205.07	T	DEC 10, 1998	204.69	S

HIGHEST 204.69 DEC 10, 1998
LOWEST 205.07 MAR 26, 1998

SITE ID _ .16114382901
LOCAL NUMBER 016S022E15F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 06, 1990	9.3	R	SEP 18, 1991	7.9	R	JAN 06, 1994	8.6	R	JUN 03, 1994	9.1	R
SEP 17	8.2	R	JAN 07, 1992	7.5	R	FEB 04	8.9	R	JUL 11	8.9	R
DEC 06	6.9	R	MAR 24	8.2	R	MAR 04	9.2	R			
MAR 22, 1991	8.3	R	JUN 18	8.5	R	APR 18	9.2	R			
JUN 21	8.7	R	DEC 03, 1993	8.4	R	MAY 06	9.1	R			

HIGHEST 6.9 DEC 06, 1990
LOWEST 9.3 JUN 06, 1990

SITE ID 324619114382802
LOCAL NUMBER 016S022E15C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 06, 1990	11.9	R	SEP 18, 1991	12.0	R	JAN 06, 1994	12.8	R	JUN 03, 1994	13.1	R
SEP 17	12.1	R	JAN 07, 1992	11.5	R	FEB 04	12.9	R	JUL 11	13.0	R
DEC 06	11.6	R	MAR 24	11.6	R	MAR 04	13.1	R			
MAR 22, 1991	12.2	R	JUN 18	11.8	R	APR 18	13.1	R			
JUN 21	12.4	R	DEC 03, 1993	12.7	R	MAY 06	13.1	R			

HIGHEST 11.5 JAN 07, 1992
LOWEST 13.1 MAR 04, 1994 APR 18, 1994 MAY 06, 1994 JUN 03, 1994

SITE ID 324620115544301
LOCAL NUMBER 016S010E14N001S
About 5 miles northeast of Coyote Wells and about 1.2 miles northeast of Painted Gorge Road and Highway S80. Augered observation well. Diameter 2 inches, depth measured 118.5 feet in 1975, well point 120-122 feet. Altitude of land-surface datum 225 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 13, 1975	96.78		MAR 14, 1979	95.44		MAR 30, 1983	95.44	S	MAR 30, 1987	95.34	S
JUN 23	95.66		SEP 13	95.38	S	OCT 27	95.39	S	OCT 20	95.34	S
DEC 08	92.37		APR 30, 1980	95.33	S	APR 12, 1984	95.35	S	MAR 15, 1988	95.30	S
OCT 13, 1976	95.45		SEP 25	95.34	S	OCT 24	95.42	S	OCT 18	95.33	S
APR 26, 1977	95.28		MAY 01, 1981	95.36	S	APR 26, 1985	95.19	S	MAR 13, 1989	95.40	S
OCT 03	95.40		NOV 05	95.27	S	OCT 30	95.35	S			
APR 25, 1978	95.34		MAR 12, 1982	95.20	S	MAR 25, 1986	95.33	S			
OCT 05	95.45		OCT 08	95.38	S	OCT 24	95.36	S			

HIGHEST 92.37 DEC 08, 1975
LOWEST 96.78 MAY 13, 1975

SITE ID 324622114382901
LOCAL NUMBER 016S022E15C008S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	25.64 R	APR 22, 1998	26.40 Z	DEC 11, 1998	24.59 V

HIGHEST 24.59 DEC 11, 1998
LOWEST 26.40 APR 22, 1998

SITE ID 324624114383201
LOCAL NUMBER 016S022E15C006S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	42.48 R	APR 22, 1998	43.19 V	DEC 11, 1998	41.13 V

HIGHEST 41.13 DEC 11, 1998
LOWEST 43.19 APR 22, 1998

SITE ID 324624114383202
LOCAL NUMBER 016S022E15C007S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	43.19 R	APR 22, 1998	43.87 V	DEC 11, 1998	42.34 V

HIGHEST 42.34 DEC 11, 1998
LOWEST 43.87 APR 22, 1998

SITE ID 324625114383601
LOCAL NUMBER 016S022E15C004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	48.64 R	APR 22, 1998	49.11 Z	DEC 11, 1998	47.23 V	MAY 10, 1999	48.24 Z

HIGHEST 47.23 DEC 11, 1998
LOWEST 49.11 APR 22, 1998

SITE ID 3..625114383602
LOCAL NUMBER 016S022E15C005S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	48.52 R	APR 22, 1998	48.94 Z	DEC 11, 1998	47.01 V

HIGHEST	47.01	DEC 11, 1998
LOWEST	48.94	APR 22, 1998

SITE ID 324627114383801
LOCAL NUMBER 016S022E15C003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 08, 1996	39.00 R	APR 22, 1998	39.21 Z	DEC 11, 1998	35.61 V

HIGHEST	35.61	DEC 11, 1998
LOWEST	39.21	APR 22, 1998

SITE ID 324628114324801
LOCAL NUMBER 016S023E16A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 16, 1994	9.38 S	JUN 16, 1994	9.38 S

HIGHEST	9.38	JUN 16, 1994	JUN 16, 1994
LOWEST	9.38	JUN 16, 1994	JUN 16, 1994

SITE ID 324628114324802
LOCAL NUMBER 016S023E16A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 16, 1994	7.43 S	JUN 16, 1994	7.43 S

HIGHEST	7.43	JUN 16, 1994	JUN 16, 1994
LOWEST	7.43	JUN 16, 1994	JUN 16, 1994

SITE ID 324628114324803
LOCAL NUMBER 016S023E16A003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 16, 1994	SO	JUN 16, 1994	SO

HIGHEST	--		
LOWEST	--		

SITE ID 324628114335001
LOCAL NUMBER 016S023E16D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 16, 1994	12.32 S	JUN 16, 1994	12.32 S

HIGHEST	12.32	JUN 16, 1994	JUN 16, 1994
LOWEST	12.32	JUN 16, 1994	JUN 16, 1994

SITE ID 324628114350401
LOCAL NUMBER 016S023E18A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 18, 1994	11.26 V

SITE ID 324628114355501
LOCAL NUMBER 016S022E13A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 18, 1994	4.37 V

SITE ID _ 328114365601
LOCAL NUMBER 016S022E14A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 17, 1994	7.79 V	MAY 17, 1994	7.79 V

HIGHEST	7.79	MAY 17, 1994	MAY 17, 1994
LOWEST	7.79	MAY 17, 1994	MAY 17, 1994

SITE ID 324629114320101
LOCAL NUMBER 016S023E15B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	13.74 S

SITE ID 324629114320102
LOCAL NUMBER 016S023E15B002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	15.20 S

SITE ID 324629114321701
LOCAL NUMBER 016S023E10P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	SO

SITE ID 324629114372601
LOCAL NUMBER 016S022E11Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 17, 1994	4.35 S	MAY 17, 1994	4.35 V

HIGHEST	4.35	MAY 17, 1994	MAY 17, 1994
LOWEST	4.35	MAY 17, 1994	MAY 17, 1994

SITE ID 324629114372701
LOCAL NUMBER 016S022E11P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 17, 1994	4.03 S	MAY 17, 1994	4.03 V

HIGHEST	4.03	MAY 17, 1994	MAY 17, 1994
LOWEST	4.03	MAY 17, 1994	MAY 17, 1994

SITE ID 324629114375801
LOCAL NUMBER 016S022E11N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 18, 1994	5.69 V	MAY 18, 1994	5.69 V

HIGHEST	5.69	MAY 18, 1994	MAY 18, 1994
LOWEST	5.69	MAY 18, 1994	MAY 18, 1994

SITE ID 324630114501501
LOCAL NUMBER 016S020E14C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 13, 1961	128.88 S	NOV 19, 1997	110.05 V	FEB 27, 1998	109.65 T	DEC 10, 1998	111.64 V
MAY 11, 1964	128.32 S	DEC 12	111.10 T	MAR 23	111.65 T	MAY 11, 1999	111.15 V
DEC 07, 1977	124.17 S	JAN 06, 1998	111.19 V	27	111.90 T		
JUL 17, 1996	112.06 V	15	111.49 T	JUL 17	111.68 V		

HIGHEST	109.65	FEB 27, 1998
LOWEST	128.88	DEC 13, 1961

SITE ID 324632114472401
LOCAL NUMBER 016S021E07R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
FEB 09, 1998	164.34 V	JUL 17, 1998	164.08 V	MAY 11, 1999	163.37 V		
MAR 24	164.22 S	DEC 14	163.39 V				

HIGHEST	163.37	MAY 11, 1999
LOWEST	164.34	FEB 09, 1998

SITE ID ...34114554601
LOCAL NUMBER 016S020E41F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 23, 1995	42.57	R	JAN 09, 1998	41.55	V

HIGHEST	41.55	JAN 09, 1998
LOWEST	42.57	OCT 23, 1995

SITE ID 324641114333501
LOCAL NUMBER 016S023E09N001S
About 2 miles west of the Arizona boundary, 1 mile south of Bard, east of Avenue D, and north of 5th Street. Drilled irrigation water-table well. Diameter 20 inches, depth 235 feet, perforated 124-150, 154-225 feet. Altitude of land-surface datum 137 feet. Water-level records available 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP , 1951	11.	R	MAR 21, 1990	10.47	S	MAR 15, 1994	8.64	S	MAR 24, 1998		P
MAY 24, 1962		P	OCT 23		P	OCT 27	10.68	S	OCT 28		P
OCT	10.50	S	MAR 14, 1991	11.76	S	MAR 30, 1995	9.56	S	MAR 16, 1999		P
01	10.50		OCT 02		P	OCT 17		P	OCT 25	11.02	S
APR 20, 1963		P	APR 08, 1992	10.39	S	MAR 20, 1996	9.10	S	MAR 29, 2000	9.66	S
JUN 03, 1967		P	AUG 26	10.75	S	OCT 16		P	OCT 24	12.18	S
15		P	APR 13, 1993	9.72	S	MAR 18, 1997	9.61	S	MAR 27, 2001	10.66	S
NOV 01, 1989	11.69	S	OCT 20		P	OCT 21	10.96	S			

HIGHEST	8.64	MAR 15, 1994
LOWEST	12.18	OCT 24, 2000

SITE ID 324641114524001
LOCAL NUMBER 016S020E09N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 23, 1995	84.51	R	JAN 06, 1998	82.68	V

HIGHEST	82.68	JAN 06, 1998
LOWEST	84.51	OCT 23, 1995

SITE ID 324642114514101
LOCAL NUMBER 016S020E10N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1995	90.92 R	JAN 07, 1998	89.07 V

HIGHEST	89.07	JAN 07, 1998
LOWEST	90.92	OCT 23, 1995

SITE ID 324647114591601
LOCAL NUMBER 016S019E11D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 02, 1963	43.5 S	JAN 07, 1998	O

HIGHEST	43.5	MAY 02, 1963
LOWEST	43.5	MAY 02, 1963

SITE ID 324651115561901
LOCAL NUMBER 016S010E16B002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 01, 1975	23.00 S

SITE ID 324653114591501
LOCAL NUMBER 016S019E02N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 18, 1961	41.44 S	JAN 08, 1998	W

HIGHEST	41.44	OCT 18, 1961
LOWEST	41.44	OCT 18, 1961

SITE ID 3..654114331901
LOCAL NUMBER 016S023E09L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	6.31	S

SITE ID 324654114333501
LOCAL NUMBER 016S023E09M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	8.29	S

SITE ID 324654114333502
LOCAL NUMBER 016S023E09M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	8.11	S

SITE ID 324654114342301
LOCAL NUMBER 016S023E08L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	10.15	V

SITE ID 324654114345102
LOCAL NUMBER 016S023E08M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	6.0	R	AUG 07, 1990	6.2	R	DEC 06, 1990	6.3	R	SEP 18, 1991	6.7	R
MAY 16	5.0	R	SEP 17	6.6	R	JAN 03, 1991	6.6	R	JAN 07, 1992	6.9	R
JUN 06	5.7	R	OCT 05	5.9	R	MAR 22	6.8	R	MAR 24	7.1	R
JUL 05	6.2	R	NOV 07	5.8	R	JUN 21	6.4	R	JUN 18	7.4	R

SITE ID 324654114345102 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 24, 1992	6.2	R	JUL 30, 1993	5.7	R	JAN 06, 1994	5.1	R	MAY 18, 1994	4.84	V
FEB 04, 1993	6.5	R	SEP 02	6.1	R	FEB 04	5.7	R	JUN 03	4.4	R
MAY 07	5.1	R	OCT 07	4.3	R	MAR 04	5.8	R	JUL 11	4.8	R
27	4.6	R	NOV 04	5.3	R	APR 18	4.2	R			
JUN 29	4.8	R	DEC 03	5.6	R	MAY 06	4.9	R			

HIGHEST 4.2 APR 18, 1994
LOWEST 7.4 JUN 18, 1992

SITE ID 324654114352301
LOCAL NUMBER 016S023E07L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	5.74	V

SITE ID 324654114362601
LOCAL NUMBER 016S022E12L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	3.95	V

SITE ID 324654114372601
LOCAL NUMBER 016S022E11K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	4.18	V

SITE ID - ,55114321601
LOCAL NUMBER 016S023E10G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994	9.49	S

SITE ID 324655114324801
LOCAL NUMBER 016S023E10E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994		SO

SITE ID 324655114324802
LOCAL NUMBER 016S023E10E002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994	5.48	S

SITE ID 324655114355401
LOCAL NUMBER 016S022E07E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	6.75	V

SITE ID 324655114355402
LOCAL NUMBER 016S023E07E002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 18, 1994	3.89	V

SITE ID 324655114365601
LOCAL NUMBER 016S022E12E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 17, 1994	8.79	V	MAY 17, 1994	8.79	V

HIGHEST	8.79	MAY 17, 1994	MAY 17, 1994
LOWEST	8.79	MAY 17, 1994	MAY 17, 1994

SITE ID 324655114373501
LOCAL NUMBER 016S022E11L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 17, 1994	7.06	V	MAY 17, 1994	7.06	V

HIGHEST	7.06	MAY 17, 1994	MAY 17, 1994
LOWEST	7.06	MAY 17, 1994	MAY 17, 1994

SITE ID 324655114591501
LOCAL NUMBER 016S019E02N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 18, 1961	39.8	S	JAN 08, 1998		W

HIGHEST	39.8	OCT 18, 1961
LOWEST	39.8	OCT 18, 1961

SITE ID 324656114345001
LOCAL NUMBER 016S023E08E001S
About 3 miles west of Arizona boundary, 1.5 miles west of Bard, near intersection of Ross and Fisher Roads. Drilled unused water-table well. Diameter 8 inches, depth measured 422 feet in 1989, perforated 110-141 feet. Altitude of land-surface datum 130 feet. Water-level records available 1968, 1979-85, 1989-91. Well destroyed in 1991.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 26, 1968	7.74		AUG 26, 1981	7.79		SEP 18, 1984	7.12	S	MAR 21, 1990	7.26	S
JAN 11, 1979	9.15		FEB 03, 1982	8.07	S	MAR 01, 1985	6.55	S	OCT 23	6.65	S
JUL 23, 1980	7.49		SEP 30	6.99	S	JUN 14	6.12	S	MAR 14, 1991	7.02	S
FEB 10, 1981	7.67		SEP 19, 1983	6.53	S	NOV 01, 1989	6.48	S	OCT 02		W

HIGHEST	6.12	JUN 14, 1985
LOWEST	9.15	JAN 11, 1979

SITE ID 3. 56114451501
LOCAL NUMBER 016S021E09H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 08, 1998	227.66 VV	MAY 04, 1999	227.42 V

HIGHEST 227.42 MAY 04, 1999
LOWEST 227.42 MAY 04, 1999

SITE ID 324700115565201
LOCAL NUMBER 016S010E16D001S
About 1.5 miles northeast of Coyote Wells. Unused well. Diameter 8 inches, depth reported 105 feet. Altitude of land-surface datum 240 feet. Records available 1975 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 23, 1975	46.25	MAR 21, 1979	40.46	OCT 26, 1983	42.18 S	OCT 24, 1986	43.45 S
OCT 13, 1976	40.36	SEP 13	40.88 S	APR 11, 1984	42.24 S	MAR 30, 1987	43.56 S
APR 26, 1977	39.60	APR 30, 1980	40.82 S	OCT 24	42.60 S	OCT 20	43.6 S
OCT 03	39.79	SEP 25	40.74 S	APR 11, 1985	42.76 S	MAR 14, 1988	43.67 S
APR 26, 1978	39.80	MAY 01, 1981	O	OCT 30	42.91 S	OCT 17	43.96 S
OCT 05	40.15	APR 06, 1983	42.26 S	MAR 25, 1986	43.03 S		

HIGHEST 39.60 APR 26, 1977
LOWEST 46.25 JUN 23, 1975

SITE ID 324707114333501
LOCAL NUMBER 016S023E09E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	8.86 S

SITE ID 324708114342101
LOCAL NUMBER 016S023E08F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 14, 1994	6.85 S

SITE ID 324711114544801
LOCAL NUMBER 016S020E07E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1995	86.65 R	JAN 06, 1998	85.62 V

HIGHEST 85.62 JAN 06, 1998
LOWEST 86.65 OCT 23, 1995

SITE ID 324712114365601
LOCAL NUMBER 016S022E11A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 17, 1994	6.58 V	MAY 17, 1994	6.58 V

HIGHEST 6.58 MAY 17, 1994 MAY 17, 1994
LOWEST 6.58 MAY 17, 1994 MAY 17, 1994

SITE ID 324712114365602
LOCAL NUMBER 016S022E11A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 17, 1994	6.94 V

SITE ID 324718114345201
LOCAL NUMBER 016S023E07A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 14, 1994	5.19 S

SITE ID 324.._114352601
LOCAL NUMBER 016S023E07C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
DEC 12, 1961	7.	R

SITE ID 324720114331901
LOCAL NUMBER 016S023E09C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	3.30	S

SITE ID 324720114331902
LOCAL NUMBER 016S023E09C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	3.54	S

SITE ID 324720114333601
LOCAL NUMBER 016S023E09D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994	6.04	S

SITE ID 324720114335701
LOCAL NUMBER 016S023E08A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994	11.01	S

SITE ID 324721114321801
LOCAL NUMBER 016S023E03P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994	7.55	S

SITE ID 324721114321802
LOCAL NUMBER 016S023E03P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994	8.90	S

SITE ID 324721114324801
LOCAL NUMBER 016S023E10D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994		SD

SITE ID 324721114324802
LOCAL NUMBER 016S023E10D002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994		SO

SITE ID 324721114342101
LOCAL NUMBER 016S023E05Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994	8.43	S

SITE ID 3247[illegible]14355501
LOCAL NUMBER 016S022E01R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 13, 1994	10.47 S	JUN 13, 1994	10.47 S

HIGHEST	10.47	JUN 13, 1994	JUN 13, 1994
LOWEST	10.47	JUN 13, 1994	JUN 13, 1994

SITE ID 324721114535801
LOCAL NUMBER 016S020E07A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
OCT 23, 1995	98.99 R

SITE ID 324721115525001
LOCAL NUMBER 016S011E07M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 01, 1975	98.00 S

SITE ID 324724114324601
LOCAL NUMBER 016S023E03N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1964	4.59 V	NOV 04, 1966	4.36 V	APR 06, 1967	3.53 V

HIGHEST	3.53	APR 06, 1967
LOWEST	4.59	APR 27, 1964

SITE ID 324724114362601
LOCAL NUMBER 016S022E01Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 13, 1994	6.86 S	JUN 13, 1994	6.86 S

HIGHEST	6.86	JUN 13, 1994	JUN 13, 1994
LOWEST	6.86	JUN 13, 1994	JUN 13, 1994

SITE ID 324728114365701
LOCAL NUMBER 016S022E02R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 09, 1995	8.75 R	MAY 18, 1999	P

HIGHEST	8.75	AUG 09, 1995
LOWEST	8.75	AUG 09, 1995

SITE ID 324734114345201
LOCAL NUMBER 016S023E05M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 14, 1994	14.48 S

SITE ID 324734114345202
LOCAL NUMBER 016S023E05M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 14, 1994	8.80 S

SITE ID 324‚..114422201
LOCAL NUMBER 016S021E01K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 31, 1979	306.88 R	JUL 17, 1996	300.19 V	JUL 24, 1998	299.64 V		
JUL 14, 1994	300.67 R	MAR 26, 1998	299.78 V	DEC 09	299.63 V		

HIGHEST 299.63 DEC 09, 1998
LOWEST 306.88 DEC 31, 1979

SITE ID 324747114324701
LOCAL NUMBER 016S023E03M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 15, 1994	7.88 S

SITE ID 324747114331901
LOCAL NUMBER 016S023E04G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	6.47 S

SITE ID 324747114331902
LOCAL NUMBER 016S023E04G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 16, 1994	6.61 S

SITE ID 324747114331903
LOCAL NUMBER 016S023E04G003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 16, 1994		SO

SITE ID 324747114335301
LOCAL NUMBER 016S023E05J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994		SO

SITE ID 324747114335302
LOCAL NUMBER 016S023E05J002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994	14.47	S

SITE ID 324747114342101
LOCAL NUMBER 016S023E05K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994	6.52	S

SITE ID 324747114345201
LOCAL NUMBER 016S023E05E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 14, 1994	6.06	S

SITE ID 32474/114355101
LOCAL NUMBER 016S023E06E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 13, 1994	6.62 S

SITE ID 324748114321701
LOCAL NUMBER 016S023E03G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 15, 1994	9.81 S

SITE ID 324748114321702
LOCAL NUMBER 016S023E03G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 15, 1994	SO

SITE ID 324748114360001
LOCAL NUMBER 016S022E01H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 23, 1993	11.88 R	JUN 13, 1994	6.32 S	JUN 13, 1994	6.32 S

HIGHEST	6.32	JUN 13, 1994	JUN 13, 1994
LOWEST	11.88	SEP 23, 1993	

SITE ID 324750114334901
LOCAL NUMBER 016S023E04E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 11, 1961	9.30 S

SITE ID 324752114352101
LOCAL NUMBER 016S023E06G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 27, 1964	4.15 S	OCT 28, 1966	4.27 S	APR 26, 1967	4.70 S	FEB 28, 1968	5.24 S
JAN 01, 1966	3.82 S	NOV 02	3.96 S	MAY 25	4.66 S	MAY 28	4.56 S
FEB 15	4.80 S	29	4.53 S	JUN 22	4.59 S	AUG 29	4.78 S
MAY 17	4.16 S	DEC 29	4.28 S	JUL 27	4.41 S	NOV 25	5.49 S
JUN 30	3.78 S	JAN 26, 1967	4.83 S	AUG 30	4.76 S	MAR 06, 1969	5.18 S
JUL 28	3.72 S	FEB 23	4.97 S	SEP 28	5.27 S	MAY 28	5.48 S
AUG 30	4.42 S	MAR 27	4.60 S	OCT 30	5.36 S	AUG 21	4.04 S
SEP 29	4.79 S	APR 06	4.69 S	NOV 29	5.66 S		

HIGHEST 3.72 JUL 28, 1966
LOWEST 5.66 NOV 29, 1967

SITE ID 324754114324001
LOCAL NUMBER 016S023E03E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR , 1972	9. R

SITE ID 324800114352401
LOCAL NUMBER 016S023E06C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 13, 1994	6.97 S

SITE ID 324800114352402
LOCAL NUMBER 016S023E06C003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 13, 1994	8.98 S

SITE ID 3248...114491401
LOCAL NUMBER 016S020E01F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 08, 1998	208.97	VV	MAY 04, 1999	208.43	V

HIGHEST	208.43	MAY 04, 1999
LOWEST	208.43	MAY 04, 1999

SITE ID 324809114314101
LOCAL NUMBER 016S023E02D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
SEP , 1954	7.5	R

SITE ID 324810114444501
LOCAL NUMBER 016S021E03C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 05, 1998		SO	OCT 01, 1998		VO

HIGHEST	--
LOWEST	--

SITE ID 324812114324601
LOCAL NUMBER 016S023E03D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
DEC 11, 1961	6.	R

SITE ID 324812114353401
LOCAL NUMBER 016S023E06C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR , 1963	17.76 S	MAR 27, 1967	17.16 S	MAR 06, 1969	17.76 S	JUL 21, 1972	17.40 S
FEB 15, 1966	18.32 S	APR 26	17.18 S	MAY 28	17.63 S	OCT 30	16.43 S
MAY 17	17.14 S	MAY 25	17.35 S	AUG 21	17.31 S	JAN 08, 1973	16.95 S
JUN 01	16.85 S	JUN 22	17.14 S	NOV 25	18.11 S	APR 27	16.48 S
30	15.99 S	JUL 27	16.66 S	MAR 12, 1970	18.28 S	JUL	16.84 S
JUL 28	16.80 S	AUG 30	17.40 S	JUL 02	17.23 S	OCT 30	16.63 S
AUG 30	17.23 S	SEP 28	17.54 S	OCT 15	17.77 S	JAN 10, 1974	17.10 S
OCT 03	17.36 S	OCT 30	17.73 S	JAN 18, 1971	18.32 S	APR 25	16.57 S
28	16.73 S	NOV 29	17.96 S	APR 07	17.38 S	29	16.36 S
NOV 29	17.00 S	FEB 28, 1968	18.05 S	JUL 08	17.62 S	OCT 10	16.61 S
DEC 29	16.79 S	MAY 28	17.83 S	OCT 29	17.52 S	JAN 24, 1975	16.37 S
JAN 26, 1967	17.31 S	AUG 29	17.75 S	JAN 28, 1972	17.93 S		
FEB 23	17.40 S	NOV 25	17.98 S	APR 25	16.67 S		

HIGHEST 15.99 JUN 30, 1966
LOWEST 18.32 FEB 15, 1966 JAN 18, 1971

SITE ID 324815114315501
LOCAL NUMBER 015S023E34R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 15, 1994	12.89 S

SITE ID 324815114321601
LOCAL NUMBER 015S023E34Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1994	7.57 S	JUN 15, 1994	7.57 S

HIGHEST 7.57 JUN 15, 1994 JUN 15, 1994
LOWEST 7.57 JUN 15, 1994 JUN 15, 1994

DATE: 06

SITE ID 3248..114324801
LOCAL NUMBER 015S023E34N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 14, 1994	7.74	S	JUN 14, 1994	7.74	S

HIGHEST 7.74 JUN 14, 1994 JUN 14, 1994
LOWEST 7.74 JUN 14, 1994 JUN 14, 1994

SITE ID 324815114335201
LOCAL NUMBER 016S023E05A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994		SD

SITE ID 324815114335202
LOCAL NUMBER 016S023E05A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	12.1	R	AUG 19, 1988	13.0	R	MAR 05, 1990	12.3	R	MAR 05, 1993	13.0	R
FEB 10	11.8	R	SEP 21	12.5	R	APR 10	12.2	R	APR 16	12.6	R
MAR 11	12.6	R	OCT 06	12.3	R	MAY 16	11.3	R	MAY 07	11.7	R
APR 16	12.9	R	NOV 10	12.6	R	JUN 06	10.8	R	27	11.1	R
MAY 13	13.1	R	DEC 15	12.5	R	JUL 05	10.5	R	JUN 29	10.9	R
JUN 19	13.6	R	JAN 20, 1989	13.0	R	AUG 07	11.0	R	JUL 30	11.2	R
JUL 10	11.3	R	FEB 17	13.3	R	SEP 17	11.9	R	SEP 02	11.1	R
AUG 14	11.1	R	MAR 13	13.1	R	OCT 05	12.2	R	OCT 07	10.4	R
SEP 09	12.0	R	APR 07	13.1	R	NOV 07	11.9	R	NOV 04	10.8	R
OCT 09	11.5	R	MAY 04	13.3	R	DEC 06	11.9	R	DEC 03	11.2	R
NOV 13	12.2	R	JUN 15	11.8	R	JAN 03, 1991	12.3	R	JAN 06, 1994	12.1	R
DEC 17	12.3	R	JUL 12	11.8	R	MAR 22	13.0	R	FEB 04	12.4	R
JAN 15, 1988	12.5	R	AUG 03	11.3	R	JUN 21	12.9	R	MAR 04	12.7	R
FEB 18	12.7	R	30	12.1	R	SEP 18	12.3	R	APR 18	12.1	R
MAR 25	12.9	R	OCT 12	12.0	R	JAN 07, 1992	12.5	R	28	11.4	S
APR 07	13.0	R	NOV 03	11.6	R	MAR 24	12.9	R	MAY 06	10.8	R
MAY 18	12.8	R	DEC 08	11.9	R	JUN 18	12.6	R	JUN 03	11.4	R
JUN 21	13.1	R	JAN 12, 1990	12.7	R	SEP 24	12.7	R	JUL 13	10.88	S
JUL 08	13.3	R	FEB 15	12.8	R	FEB 04, 1993	13.4	R			

HIGHEST 10.4 OCT 07, 1993
LOWEST 13.6 JUN 19, 1987

SITE ID 324815114343101
LOCAL NUMBER 015S023E32P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
MAY 19, 1994	5.65 T

SITE ID 324816114352601
LOCAL NUMBER 015S023E31P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 24, 1993	9.12 R	JUN 15, 1994	13.90 S	JUN 15, 1994	13.90 S	MAY 04, 1999	13.00 Z

HIGHEST 9.12 SEP 24, 1993
LOWEST 13.90 JUN 15, 1994 JUN 15, 1994

SITE ID 324827114324901
LOCAL NUMBER 015S023E33R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 14, 1994	SD	JUN 14, 1994	SD

HIGHEST --
LOWEST --

SITE ID 324827114324902
LOCAL NUMBER 015S023E33R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 14, 1994	13.14 S	JUN 14, 1994	13.14 S

HIGHEST 13.14 JUN 14, 1994 JUN 14, 1994
LOWEST 13.14 JUN 14, 1994 JUN 14, 1994

SITE ID 3248..114324903
LOCAL NUMBER 015S023E34N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 14, 1994	7.42	S	JUN 14, 1994	7.42	S

HIGHEST	7.42	JUN 14, 1994	JUN 14, 1994
LOWEST	7.42	JUN 14, 1994	JUN 14, 1994

SITE ID 324828114314601
LOCAL NUMBER 015S023E35M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 15, 1994	11.85	S

SITE ID 324828114314602
LOCAL NUMBER 015S023E35M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 15, 1994	11.22	S	JUN 15, 1994	11.22	S

HIGHEST	11.22	JUN 15, 1994	JUN 15, 1994
LOWEST	11.22	JUN 15, 1994	JUN 15, 1994

SITE ID 324828114332001
LOCAL NUMBER 015S023E33L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 14, 1994	8.69	S	JUN 14, 1994	8.69	S

HIGHEST	8.69	JUN 14, 1994	JUN 14, 1994
LOWEST	8.69	JUN 14, 1994	JUN 14, 1994

SITE ID 324828114340601
LOCAL NUMBER 015S023E32R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUL 12, 1989	7.9	R	JUL 05, 1990	6.9	R	JUN 18, 1992	10.7	R	JAN 06, 1994	8.2	R
AUG 03	8.1	R	AUG 07	7.7	R	SEP 24	10.6	R	FEB 04	8.7	R
30	6.4	R	SEP 17	8.3	R	MAR 05, 1993	8.6	R	MAR 04	8.5	R
OCT 12	7.6	R	OCT 05	8.0	R	APR 16	7.7	R	APR 18	7.3	R
NOV 03	7.0	R	NOV 07	7.8	R	MAY 07	6.0	R	MAY 06	6.2	R
DEC 08	7.8	R	DEC 06	8.3	R	27	6.5	R	19	7.03	T
JAN 12, 1990	8.4	R	JAN 03, 1991	8.5	R	JUN 29	6.0	R	19	7.03	T
FEB 15	8.0	R	MAR 22	8.8	R	JUL 30	6.8	R	JUN 03	7.4	R
MAR 05	8.5	R	JUN 21	9.1	R	SEP 02	7.4	R	14	7.13	T
APR 10	8.3	R	SEP 18	8.5	R	OCT 07	6.3	R	JUL 11	7.4	R
MAY 16	6.5	R	JAN 07, 1992	8.8	R	NOV 04	6.4	R			
JUN 06	5.9	R	MAR 24	9.1	R	DEC 03	7.4	R			

HIGHEST 5.9 JUN 06, 1990
LOWEST 10.7 JUN 18, 1992

SITE ID 324829114323301
LOCAL NUMBER 015S023E34M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 15, 1994		SO	JUN 15, 1994		SO

HIGHEST --
LOWEST --

SITE ID 324829114335001
LOCAL NUMBER 015S023E33M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	6.2	R	DEC 17, 1987	5.9	R	NOV 10, 1988	7.0	R	NOV 03, 1989	6.0	R
FEB 10	6.0	R	JAN 15, 1988	6.5	R	DEC 15	6.6	R	DEC 08	5.8	R
MAR 11	6.4	R	FEB 18	6.7	R	JAN 20, 1989	7.1	R	JAN 12, 1990	6.0	R
APR 16	6.7	R	MAR 25	7.2	R	FEB 17	7.7	R	SEP 18, 1991	5.7	R
MAY 13	7.0	R	APR 07	7.4	R	MAR 13	7.6	R	JAN 07, 1992	6.0	R
JUN 19	7.2	R	MAY 18	7.2	R	APR 07	7.8	R	MAR 24	6.4	R
JUL 10	6.8	R	JUN 21	7.6	R	MAY 04	8.0	R	JUN 18	6.3	R
AUG 14	6.6	R	JUL 08	7.7	R	JUN 15	6.6	R	SEP 24	6.4	R
SEP 09	6.8	R	AUG 19	7.4	R	JUL 12	5.7	R	FEB 04, 1993	6.4	R
OCT 09	6.2	R	SEP 21	6.8	R	AUG 30	5.7	R	MAR 05	6.4	R
NOV 13	5.7	R	OCT 06	6.6	R	OCT 12	6.0	R	APR 16	5.7	R

SITE ID 324[illegible]114335001 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 07, 1993	6.4	R	SEP 02, 1993	5.6	R	JAN 06, 1994	5.9	R	APR 28, 1994	6.35	S
27	6.1	R	OCT 07	5.2	R	FEB 04	6.2	R	MAY 06	6.2	R
JUN 29	5.7	R	NOV 04	5.2	R	MAR 04	6.5	R	JUN 03	5.8	R
JUL 30	5.5	R	DEC 03	5.6	R	APR 18	6.4	R	JUL 11	5.6	R

HIGHEST 5.2 OCT 07, 1993 NOV 04, 1993
LOWEST 8.0 MAY 04, 1989

SITE ID 324834114444001
LOCAL NUMBER 015S020E34K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUL 14, 1998		VD

SITE ID 324839114343801
LOCAL NUMBER 015S023E32L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 03, 1989	9.15	R	JUL 05, 1990	8.85	R	MAR 24, 1992	10.05	R	FEB 04, 1994	11.25	R
30	9.15	R	AUG 07	8.75	R	JUN 18	9.85	R	MAR 04	11.25	R
OCT 12	9.15	R	SEP 17	8.45	R	SEP 24	9.75	R	APR 18	10.75	R
NOV 03	8.85	R	OCT 05	8.75	R	MAY 07, 1993	9.45	R	MAY 06	10.85	R
DEC 08	9.15	R	NOV 07	9.45	R	27	9.75	R	19	11.09	T
JAN 12, 1990	9.45	R	DEC 06	9.75	R	JUN 29	9.85	R	19	11.09	V
FEB 15	9.35	R	JAN 03, 1991	9.95	R	JUL 30	9.65	R	JUN 03	11.05	R
MAR 05	9.45	R	MAR 22	10.35	R	SEP 02	9.85	R	JUL 11	10.85	R
APR 10	9.45	R	JUN 21	10.05	R	OCT 07	9.65	R			
MAY 16	9.15	R	SEP 18	9.45	R	DEC 03	10.75	R			
JUN 06	8.95	R	JAN 07, 1992	9.75	R	JAN 06, 1994	11.25	R			

HIGHEST 8.45 SEP 17, 1990
LOWEST 11.25 JAN 06, 1994 FEB 04, 1994 MAR 04, 1994

SITE ID 324839114533301
LOCAL NUMBER 015S020E32N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 23, 1995	144.71 R	MAR 27, 1998	143.44 V	MAY 11, 1999	142.77 V		
JAN 06, 1998	143.43 V	DEC 10	142.84 V				

HIGHEST 142.77 MAY 11, 1999
LOWEST 144.71 OCT 23, 1995

SITE ID 324841114321701
LOCAL NUMBER 015S023E34G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1994	7.90 S	JUN 15, 1994	7.90 S

HIGHEST 7.90 JUN 15, 1994 JUN 15, 1994
LOWEST 7.90 JUN 15, 1994 JUN 15, 1994

SITE ID 324841114342101
LOCAL NUMBER 015S023E32G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 14, 1994	7.76 S	JUN 14, 1994	7.76 S

HIGHEST 7.76 JUN 14, 1994 JUN 14, 1994
LOWEST 7.76 JUN 14, 1994 JUN 14, 1994

SITE ID 324842114335001
LOCAL NUMBER 015S023E33E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 05, 1990	7.7 R	NOV 07, 1990	7.1 R	JUN 18, 1992	8.0 R	SEP 02, 1993	7.1 R
APR 10	7.6 R	DEC 06	7.4 R	SEP 24	8.1 R	OCT 07	7.1 R
MAY 16	6.3 R	JAN 03, 1991	7.7 R	MAR 05, 1993	8.7 R	NOV 04	7.2 R
JUN 06	6.0 R	MAR 22	7.6 R	APR 16	7.5 R	DEC 03	7.8 R
JUL 05	5.8 R	JUN 21	8.0 R	MAY 07	7.3 R	JAN 06, 1994	8.1 R
AUG 07	6.5 R	SEP 18	7.4 R	27	6.5 R	FEB 04	8.1 R
SEP 17	7.2 R	JAN 07, 1992	8.1 R	JUN 29	6.6 R	MAR 04	8.5 R
OCT 05	7.3 R	MAR 24	8.3 R	JUL 30	6.4 R	APR 18	7.7 R

SITE ID 324...114335001 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 28, 1994	7.41 S	MAY 06, 1994	6.9 R	JUN 03, 1994	7.2 R		

HIGHEST 5.8 JUL 05, 1990
LOWEST 8.7 MAR 05, 1993

SITE ID 324851115505901
LOCAL NUMBER 015S011E32R001S
About 1.5 miles north of Plaster City. Augered observation water-table well. Diameter 1.25 inches, depth 152 feet, depth measured 145.8 feet in 1974, perforated 138-140 feet. Altitude of land-surface datum 65 feet. Water-level records available 1964, 1974, 1976 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 19, 1964		MAR 12, 1982	51.05 S	OCT 17, 1988	48.12 S	MAR 29, 1995	46.47 S
OCT 29, 1974	52.09	OCT 06	51.06 S	MAR 13, 1989	47.94 S	OCT 16	46.22 S
OCT 01, 1976	52.07	MAR 30, 1983	50.82 S	OCT 31	47.85 S	MAR 19, 1996	46.19 V
APR 26, 1977	51.96	OCT 26	50.34 S	MAR 20, 1990	47.78 S	OCT 16	46.00 V
OCT 04	51.95	APR 13, 1984	49.90 S	OCT 23	47.74 S	MAR 17, 1997	46.02 V
APR 25, 1978	51.82	OCT 23	49.64 S	APR 04, 1991	47.74 S	OCT 20	45.87 V
OCT 05	51.75	APR 11, 1985	49.40 S	OCT 08	47.50 S	MAR 23, 1998	45.78 V
MAR 15, 1979	51.57	OCT 29	49.21 S	MAR 17, 1992	47.39 S	OCT 27	45.80 V
SEP 12	51.53 S	APR 03, 1986	49.03 S	OCT 28	47.27 S	MAR 22, 1999	45.64 V
APR 30, 1980	51.41 S	OCT 24	48.87 S	APR 12, 1993	46.99 S	OCT 25	45.68 V
SEP 24	51.37 S	MAR 30, 1987	48.34 S	OCT 20	46.85 S	MAR 28, 2000	45.52 V
APR 30, 1981	51.26 S	OCT 20	48.39 S	MAR 14, 1994	46.74 S	OCT 23	45.63 V
NOV 04	51.12 S	MAR 15, 1988	48.33 S	OCT 17	46.53 S	MAR 27, 2001	45.55 V

HIGHEST 45.52 MAR 28, 2000
LOWEST 52.09 OCT 29, 1974

SITE ID 324854114314701
LOCAL NUMBER 015S023E34A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 15, 1994	SO	JUN 15, 1994	SO

HIGHEST --
LOWEST --

SITE ID 324854114324901
LOCAL NUMBER 015S023E33H003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	7.45	R	JAN 03, 1991	8.55	R	MAR 05, 1993	8.05	R	DEC 03, 1993	7.55	R
MAY 16	7.05	R	MAR 22	8.35	R	APR 16	7.85	R	JAN 06, 1994	8.15	R
JUN 06	6.55	R	JUN 21	8.25	R	MAY 07	7.45	R	FEB 04	8.25	R
JUL 05	7.25	R	SEP 18	8.45	R	27	7.45	R	MAR 04	8.05	R
AUG 07	6.85	R	JAN 07, 1992	8.35	R	JUN 29	7.95	R	APR 18	7.55	R
SEP 17	6.65	R	MAR 24	8.55	R	JUL 30	8.25	R	28	7.16	S
OCT 05	6.85	R	JUN 18	8.15	R	SEP 02	8.05	R	MAY 06	7.15	R
NOV 07	6.85	R	SEP 24	8.35	R	OCT 07	7.85	R	JUN 03	7.55	R
DEC 06	7.95	R	FEB 04, 1993	8.25	R	NOV 04	7.35	R			

HIGHEST 6.55 JUN 06, 1990
LOWEST 8.55 JAN 03, 1991 MAR 24, 1992

SITE ID 324854114335001
LOCAL NUMBER 015S023E33D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 17, 1987	7.3	R	AUG 19, 1988	7.0	R	MAR 05, 1990	6.6	R	MAR 05, 1993	7.6	R
FEB 10	7.0	R	SEP 21	6.5	R	APR 10	6.5	R	APR 16	6.9	R
MAR 11	6.6	R	OCT 06	6.3	R	MAY 16	6.2	R	MAY 07	6.6	R
APR 16	6.8	R	NOV 10	6.9	R	JUN 06	6.3	R	27	6.4	R
MAY 13	7.0	R	DEC 15	6.3	R	JUL 05	6.0	R	JUN 29	6.7	R
JUN 19	7.3	R	JAN 20, 1989	7.2	R	AUG 07	5.6	R	JUL 30	6.9	R
JUL 10	6.0	R	FEB 17	7.8	R	SEP 17	6.0	R	SEP 02	6.8	R
AUG 14	5.9	R	MAR 13	7.7	R	OCT 05	6.4	R	OCT 07	6.7	R
SEP 09	6.2	R	APR 07	7.9	R	NOV 07	6.1	R	NOV 04	6.7	R
OCT 09	5.6	R	MAY 04	8.2	R	DEC 06	6.8	R	DEC 03	6.9	R
NOV 13	5.7	R	JUN 15	7.1	R	JAN 03, 1991	7.0	R	JAN 06, 1994	7.4	R
DEC 17	6.2	R	JUL 12	6.0	R	MAR 22	6.9	R	FEB 04	7.7	R
JAN 15, 1988	6.4	R	AUG 03	6.4	R	JUN 21	6.8	R	MAR 04	7.7	R
FEB 18	6.6	R	30	6.4	R	SEP 18	6.5	R	APR 18	7.5	R
MAR 25	6.8	R	OCT 12	6.5	R	JAN 07, 1992	7.1	R	28	7.17	R
APR 07	6.9	R	NOV 03	5.5	R	MAR 24	7.3	R	MAY 06	7.0	R
MAY 18	6.7	R	DEC 08	6.3	R	JUN 18	7.2	R	JUN 03	6.8	R
JUN 21	6.9	R	JAN 12, 1990	6.7	R	SEP 24	7.5	R			
JUL 08	7.3	R	FEB 15	6.9	R	FEB 04, 1993	7.1	R			

HIGHEST 5.5 NOV 03, 1989
LOWEST 8.2 MAY 04, 1989

SITE ID 324854114342101
LOCAL NUMBER 015S023E32B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 19, 1987	4.4	R	AUG 30, 1989	3.9	R	SEP 18, 1991	5.0	R	DEC 03, 1993	5.5	R
SEP 09	3.6	R	DEC 08	3.9	R	JAN 07, 1992	5.3	R	MAR 04, 1994	5.8	R
MAR 25, 1988	4.7	R	MAR 05, 1990	4.2	R	MAR 24	5.5	R	MAY 19	5.13	V
JUN 21	5.5	R	JUN 06	3.8	R	JUN 18	5.0	R	19	5.13	V
SEP 21	5.2	R	SEP 17	3.1	R	SEP 24	4.8	R	JUN 03	5.8	R
DEC 15	4.8	R	DEC 06	4.7	R	MAR 05, 1993	5.6	R			
MAR 13, 1989	5.1	R	MAR 22, 1991	4.9	R	MAY 27	5.0	R			
JUN 15	3.8	R	JUN 21	4.0	R	SEP 02	5.1	R			

HIGHEST 3.1 SEP 17, 1990
LOWEST 5.8 MAR 04, 1994 JUN 03, 1994

SITE ID 324904114335201
LOCAL NUMBER 015S023E32A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 09, 1993	15.41	R	APR 28, 1994	10.19	S

HIGHEST 10.19 APR 28, 1994
LOWEST 15.41 SEP 09, 1993

SITE ID 324907114314601
LOCAL NUMBER 015S023E35D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 15, 1994	11.09	S	JUN 15, 1994	11.09	S

HIGHEST 11.09 JUN 15, 1994 JUN 15, 1994
LOWEST 11.09 JUN 15, 1994 JUN 15, 1994

SITE ID 324907114335102
LOCAL NUMBER 015S023E29R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 10, 1990	9.65	R	JUN 06, 1990	9.25	R	DEC 06, 1990	9.95	R	JUN 21, 1991	9.85	R
MAY 16	8.95	R	SEP 17	8.35	R	MAR 22, 1991	10.55	R	SEP 18	10.05	R

SITE ID 324907114335102 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 07, 1992	10.25	R	SEP 24, 1992	10.05	R	DEC 03, 1993	11.35	R	MAY 19, 1994	10.63	V
MAR 24	10.45	R	MAR 05, 1993	11.45	R	MAR 04, 1994	11.75	R	JUN 03	11.25	R
JUN 18	9.85	R	MAY 27	10.75	R	MAY 19	10.63	V			

HIGHEST 8.35 SEP 17, 1990
LOWEST 11.75 MAR 04, 1994

SITE ID 324908114321701
LOCAL NUMBER 015S023E27Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 15, 1994	7.50	S	JUN 15, 1994	7.50	S

HIGHEST 7.50 JUN 15, 1994 JUN 15, 1994
LOWEST 7.50 JUN 15, 1994 JUN 15, 1994

SITE ID 324908114324901
LOCAL NUMBER 015S023E27N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1994	5.8	S

SITE ID 324908114324902
LOCAL NUMBER 015S023E27N002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 04, 1959	6.6	R	OCT 09, 1987	6.1	R	AUG 19, 1988	4.6	R	JUL 12, 1989	5.9	R
JAN 17, 1987	6.4	R	NOV 13	5.6	R	SEP 21	4.4	R	AUG 03	5.9	R
FEB 10	6.1	R	DEC 17	3.5	R	OCT 06	4.2	R	30	6.1	R
MAR 11	6.5	R	JAN 15, 1988	4.0	R	NOV 10	4.6	R	OCT 12	5.7	R
APR 16	6.7	R	FEB 18	3.9	R	DEC 15	4.0	R	NOV 03	4.8	R
MAY 13	6.9	R	MAR 25	4.4	R	JAN 20, 1989	4.8	R	DEC 08	6.1	R
JUN 19	7.1	R	APR 07	4.6	R	FEB 17	5.6	R	JAN 12, 1990	6.3	R
JUL 10	5.9	R	MAY 18	4.4	R	MAR 13	6.0	R	FEB 15	6.3	R
AUG 14	5.8	R	JUN 21	4.6	R	APR 07	6.4	R	MAR 05	5.6	R
SEP 09	6.5	R	JUL 08	5.0	R	JUN 15	5.0	R	APR 10	5.5	R

SITE ID 3249[illegible]114324902 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAY 16, 1990	4.7	R	MAR 22, 1991	5.9	R	APR 16, 1993	5.3	R	JAN 06, 1994	6.7	R
JUN 06	4.8	R	JUN 21	5.5	R	MAY 07	6.1	R	FEB 04	6.7	R
JUL 05	5.1	R	SEP 18	6.8	R	27	5.4	R	MAR 04	6.9	R
AUG 07	5.1	R	JAN 07, 1992	6.6	R	JUN 29	7.2	R	APR 18	5.8	R
SEP 17	4.6	R	MAR 24	6.9	R	JUL 30	7.0	R	28	5.65	S
OCT 05	5.1	R	JUN 18	5.8	R	SEP 02	7.0	R	MAY 06	5.8	R
NOV 07	5.2	R	SEP 24	7.3	R	OCT 07	6.7	R	JUN 03	5.8	R
DEC 06	5.1	R	FEB 04, 1993	6.0	R	NOV 04	6.3	R			
JAN 03, 1991	6.3	R	MAR 05	5.8	R	DEC 03	6.4	R			

HIGHEST 3.5 DEC 17, 1987
LOWEST 7.3 SEP 24, 1992

SITE ID 324909114335301
LOCAL NUMBER 015S023E29R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 19, 1987	1.3	R	MAR 13, 1989	1.7	R	DEC 06, 1990	4.5	R	JUN 18, 1992	5.1	R
SEP 09	.6	R	AUG 30	3.9	R	MAR 22, 1991	5.4	R	SEP 24	5.3	R
MAR 25, 1988	1.6	R	DEC 08	4.4	R	JUN 21	4.5	R	APR 28, 1994	12.89	S
JUN 21	2.0	R	MAR 05, 1990	5.4	R	SEP 18	4.3	R			
SEP 21	1.8	R	JUN 06	4.1	R	JAN 07, 1992	4.6	R			
DEC 15	1.5	R	SEP 17	3.0	R	MAR 24	5.5	R			

HIGHEST .6 SEP 09, 1987
LOWEST 12.89 APR 28, 1994

SITE ID 324913114335101
LOCAL NUMBER 015S023E28N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 19, 1987	2.95	R	MAR 13, 1989	3.35	R	DEC 06, 1990	6.15	R	JUN 18, 1992	6.75	R
SEP 09	2.25	R	AUG 30	5.55	R	MAR 22, 1991	7.05	R	SEP 24	6.95	R
MAR 25, 1988	3.25	R	DEC 08	6.05	R	JUN 21	6.15	R	MAY 19, 1994		VD
JUN 21	3.65	R	MAR 05, 1990	7.05	R	SEP 18	5.95	R			
SEP 21	3.45	R	JUN 06	5.75	R	JAN 07, 1992	6.25	R			
DEC 15	3.15	R	SEP 17	4.65	R	MAR 24	7.15	R			

HIGHEST 2.25 SEP 09, 1987
LOWEST 7.15 MAR 24, 1992

SITE ID 324915114314601
LOCAL NUMBER 015S023E26N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 15, 1994	8.47	S	JUN 15, 1994	8.47	S

HIGHEST	8.47	JUN 15, 1994	JUN 15, 1994
LOWEST	8.47	JUN 15, 1994	JUN 15, 1994

SITE ID 324916114332001
LOCAL NUMBER 015S023E28P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 19, 1987	3.8	R	AUG 30, 1989	6.8	R	SEP 18, 1991	8.2	R	JAN 06, 1994		RD
SEP 09	4.7	R	DEC 08	7.6	R	JAN 07, 1992	8.6	R	FEB 04		RD
MAR 25, 1988	4.3	R	MAR 05, 1990	9.2	R	MAR 24	9.1	R	MAR 04		RD
JUN 21	4.8	R	JUN 06	8.6	R	JUN 18	8.6	R	APR 18		RD
SEP 21	4.5	R	SEP 17	4.6	R	SEP 24	8.8	R	28		SD
DEC 15	4.1	R	DEC 06	6.7	R	MAR 05, 1993	9.2	R	MAY 06		RD
MAR 13, 1989	4.3	R	MAR 22, 1991	9.3	R	MAY 27	10.4	R	JUN 03		RD
JUN 15	5.5	R	JUN 21	9.0	R	DEC 03		RD	JUL 11		RD

HIGHEST	3.8	JUN 19, 1987
LOWEST	10.4	MAY 27, 1993

SITE ID 324920114492201
LOCAL NUMBER 015S020E25N001S
About 1 mile northeast of Ogilby, southeast of American Girl Mine Road. Drilled unused water-table well. Diameter 8 inches, depth 473 feet. Altitude of land-surface datum 400 feet. Records available 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 11, 1979	285.53		AUG 26, 1981	284.35	S	SEP 20, 1983	283.88	S	JUN 14, 1985	282.87	S
JUL 23, 1980	284.81	S	FEB 03, 1982	284.09	S	SEP 18, 1984	283.34	S	NOV 01, 1989	283.17	S
FEB 11, 1981	284.80	S	SEP 30	284.13	S	MAR 01, 1985	283.13	S			

HIGHEST	282.87	JUN 14, 1985
LOWEST	285.53	JAN 11, 1979

SITE ID 324922114323501
LOCAL NUMBER 015S023E27M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 24, 1993	14.03 R	MAY 18, 1994	7.80 V	MAY 18, 1994	7.80 V

HIGHEST 7.80 MAY 18, 1994 MAY 18, 1994
LOWEST 14.03 SEP 24, 1993

SITE ID 324922114325101
LOCAL NUMBER 015S023E28J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 24, 1993	9.75 R	APR 28, 1994	13.45 S	MAY 04, 1999	11.90 Z

HIGHEST 9.75 SEP 24, 1993
LOWEST 13.45 APR 28, 1994

SITE ID 324925114321401
LOCAL NUMBER 015S023E27K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 24, 1993	19.36 R	MAY 18, 1994	18.70 V	MAY 18, 1994	18.70 V	MAY 04, 1999	17.83 Z

HIGHEST 17.83 MAY 04, 1999
LOWEST 19.36 SEP 24, 1993

SITE ID 324925114493601
LOCAL NUMBER 015S020E26R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
, 1996	273 R	NOV 13, 1997	274.68 V

HIGHEST 273 , 1996
LOWEST 274.68 NOV 13, 1997

SITE ID 324925114493701
LOCAL NUMBER 015S020E26R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 16, 1988	280.7 R	, 1996	275. R	NOV 13, 1997	274.73 V

HIGHEST 274.73 NOV 13, 1997
LOWEST 280.7 AUG 16, 1988

SITE ID 324929114374501
LOCAL NUMBER 015S022E26M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN , 1989	248. R

SITE ID 324930114374501
LOCAL NUMBER 015S022E26M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 02, 1989	241.43 R	JUL 15, 1994	242.02 R	MAR 31, 1998	241.06 V		
JUL 13, 1994	241.86 R	JUL 17, 1996	241.37 V	DEC 09	240.66 V		

HIGHEST 240.66 DEC 09, 1998
LOWEST 242.02 JUL 15, 1994

SITE ID 324931114375001
LOCAL NUMBER 015S022E26M003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN , 1989	249. R	JUL 17, 1996	246.66 V	MAR 31, 1998	246.35 V	DEC 09, 1998	245.93 V

HIGHEST 245.93 DEC 09, 1998
LOWEST 249. JUN , 1989

SITE ID 324…114491401
LOCAL NUMBER 015S020E25L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
NOV 18, 1997	307.81	T

SITE ID 324947114491401
LOCAL NUMBER 015S020E25L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
FEB 27, 1998	308.00	T	DEC 10, 1998	307.66	V

HIGHEST 307.66 DEC 10, 1998
LOWEST 308.00 FEB 27, 1998

SITE ID 325001114404201
LOCAL NUMBER 015S022E20P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
DEC 08, 1998	358.92	VV	FEB 05, 1999	358.82	VV	MAY 04, 1999	358.71	V

HIGHEST 358.71 MAY 04, 1999
LOWEST 358.71 MAY 04, 1999

SITE ID 325044114484601
LOCAL NUMBER 015S020E24H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
NOV 13, 1997	391.28	T	DEC 10, 1998	390.98	V

HIGHEST 390.98 DEC 10, 1998
LOWEST 391.28 NOV 13, 1997

SITE ID 325107114534601
LOCAL NUMBER 015S020E19A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
SEP 15, 1977	257.	R

SITE ID 325107114534701
LOCAL NUMBER 015S020E19A002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 28, 1977	255.	R	NOV 21, 1997	250.37	V	DEC 08, 1998	250.12	V			
JUL 22, 1994	246.94	R	MAR 31, 1998	250.25	V						

HIGHEST 246.94 JUL 22, 1994
LOWEST 255. SEP 28, 1977

SITE ID 325114115335201
LOCAL NUMBER 015S014E18C001S
In Imperial, east of Imperial Avenue, and about 0.5 mile north of Barioni Boulevard. Drilled unused water-table well. Diameter 8 inches, depth 500 feet in 1958, 379.02 feet in 1978, 378.5 feet in 1989, perforated 140-440 feet. Altitude of land-surface datum -64.97 feet. Water-level records available 1958, 1961, 1978-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 25, 1958	6.30		MAR 07, 1979	7.96		JUN 22, 1980	6.76		DEC 07, 1981	7.51	
MAY 09	6.50		APR 06	7.78		JUL 24	6.94		JAN 07, 1982	7.64	
FEB 16, 1961	6.29		MAY 03	7.63		AUG 21	7.03		FEB 03	7.66	
JUN 16	6.29		JUN 01	7.64		SEP 19	6.93		04	7.64	
FEB 13, 1978	7.57		12	7.69		OCT 17	6.90		MAR 05	7.61	
MAR 14	7.62		27	7.69		NOV 19	6.99		19	7.57	
APR 12	7.48		JUL 24	7.65		DEC 17	7.09		31	7.62	
20	7.48		AUG 23	7.70		JAN 16, 1981	7.19		APR 28	7.52	
MAY 08	7.35		SEP 19	7.60		FEB 12	7.32		MAY 25	7.57	
JUN 06	7.37		OCT 16	2.61		MAR 10	7.32		JUN 22	7.78	
JUL 05	7.50		22	4.15		APR 07	7.24		JUL 23	7.85	
AUG 02	7.54		NOV 14	5.39		29	7.27		AUG 24	7.70	
29	7.54		DEC 13	5.99		MAY 28	7.19		SEP 20	7.54	
SEP 26	7.56		JAN 10, 1980	6.30		JUN 22	7.29		OCT 20	7.50	
OCT 24	7.57		FEB 06	6.45		JUL 22	7.38		NOV 22	7.48	
NOV 21	7.59		MAR 06	6.60		AUG 17	7.31		DEC 22	7.33	
DEC 19	7.67		APR 02	6.47		SEP 17	7.32		JAN 18, 1983	7.44	S
JAN 17, 1979	7.74		29	6.38		OCT 14	7.28		FEB 17	7.46	S
FEB 08	7.93		MAY 27	6.60		NOV 12	7.44		MAR 15	7.47	S

SITE ID 3251..115335201 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 20, 1983	7.37 S	MAY 01, 1984	7.36 S	JUN 20, 1985	7.68	MAR 30, 1995	7.83 S
MAY 19	7.36 S	29	7.41 S	JUL 24	7.77 S	OCT 17	7.76 S
JUN 16	7.40 S	JUN 27	7.50 S	SEP 30	7.73 S	MAR 20, 1996	7.99 S
22	7.42 S	JUL 19	7.59 S	NOV 02, 1989	8.20 S	OCT 17	7.81 S
JUL 19	7.52 S	AUG 16	7.58 S	MAR 20, 1990	8.24 S	MAR 18, 1997	8.01 S
AUG 17	7.49 S	SEP 14	7.51 S	OCT 31	7.99 S	OCT 21	7.69 S
SEP 15	7.50 S	OCT 16	7.45 S	MAR 13, 1991	8.01 S	MAR 23, 1998	7.88 S
OCT 14	7.45	NOV 20	7.48 S	OCT 02	7.69 S	OCT 27	7.81 S
NOV 09	7.51	DEC 18	7.62 S	MAR 16, 1992	8.14 S	MAR 23, 1999	8.13 S
DEC 16	7.60	JAN 17, 1985	7.70 S	SEP 22	8.15 S	OCT 25	8.00 S
JAN 09, 1984	7.70	FEB 19	7.66	APR 12, 1993	8.07 S	MAR 29, 2000	8.02 S
FEB 07	7.61	MAR 19	7.63	OCT 19	7.92 S	OCT 25	8.24 S
MAR 06	7.56	APR 19	7.59	MAR 14, 1994	8.11 S	MAR 27, 2001	8.52 S
APR 03	7.50 S	MAY 19	7.56	OCT 26	7.49 S		

HIGHEST 2.61 OCT 16, 1979
LOWEST 8.52 MAR 27, 2001

SITE ID 325118114284901
LOCAL NUMBER 015S024E20L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 10, 1999	14.84 V

SITE ID 325123114293401
LOCAL NUMBER 015S024E19G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 02, 1994	SO	JUN 24, 1999	SO

HIGHEST --
LOWEST --

SITE ID 325123114293402
LOCAL NUMBER 015S024E19G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 15, 1993	9.78 R	SEP 28, 1993	11.08 R	AUG 02, 1994	8.11 S	JUN 24, 1999	7.08 S
JUN 22	10.98 R	DEC 22	11.38 R	JUN 24, 1999	7.08 S		

HIGHEST 7.08 JUN 24, 1999 JUN 24, 1999
LOWEST 11.38 DEC 22, 1993

SITE ID 325128114294901
LOCAL NUMBER 015S024E19F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 02, 1994	3.29 S	AUG 02, 1994	13.40 S

HIGHEST 3.29 AUG 02, 1994
LOWEST 13.40 AUG 02, 1994

SITE ID 325128114294902
LOCAL NUMBER 015S024E19F002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 15, 1993	22.2 R	SEP 28, 1993	23.5 R	AUG 02, 1994	23.79 S		
JUN 22	22.9 R	DEC 22	21.2 R				

HIGHEST 21.2 DEC 22, 1993
LOWEST 23.79 AUG 02, 1994

SITE ID 325147114291901
LOCAL NUMBER 015S024E18R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 15, 1993	8.12 R	DEC 22, 1993	RD	JUN 24, 1999	4.31 S		
SEP 28	RD	AUG 02, 1994	5.94 S	24	4.31 S		

HIGHEST 4.31 JUN 24, 1999 JUN 24, 1999
LOWEST 8.12 MAR 15, 1993

SITE ID 3251..14293801
LOCAL NUMBER 015S024E18Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 15, 1993	18.4	R	SEP 28, 1993	19.9	R	AUG 02, 1994	18.52	S			
JUN 22	19.0	R	DEC 22	20.3	R						

HIGHEST 18.4 MAR 15, 1993
LOWEST 20.3 DEC 22, 1993

SITE ID 325159114295101
LOCAL NUMBER 015S024E18L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 06, 1967	31.4	R	JUN 24, 1999	27.52	S

HIGHEST 27.52 JUN 24, 1999
LOWEST 31.4 MAR 06, 1967

SITE ID 325205114285601
LOCAL NUMBER 015S024E17M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 15, 1993	4.1	R	DEC 22, 1993	4.1	R	JUN 24, 1999	1.78	S			
SEP 28	3.9	R	AUG 03, 1994	2.26	S	24	1.80	S			

HIGHEST 1.78 JUN 24, 1999
LOWEST 4.1 MAR 15, 1993 DEC 22, 1993

SITE ID 325205114292301
LOCAL NUMBER 015S024E18J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 15, 1993	21.92	R	JUN 22, 1993	22.72	R	SEP 28, 1993	23.52	R

HIGHEST 21.92 MAR 15, 1993
LOWEST 23.52 SEP 28, 1993

SITE ID 325216114292801
LOCAL NUMBER 015S024E18G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 10, 1999	31.17 VS

SITE ID 325216114292901
LOCAL NUMBER 015S024E18G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 10, 1999	32.40 VR	JUN 10, 1999	32.40 VR

HIGHEST --
LOWEST --

SITE ID 325219114290601
LOCAL NUMBER 015S024E17E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 15, 1993	14.88 R	SEP 28, 1993	16.48 R	AUG 02, 1994	16.27 S	JUN 24, 1999	14.76 S
JUN 22	15.18 R	DEC 22	16.68 R	JUN 24, 1999	14.75 S		

HIGHEST 14.75 JUN 24, 1999
LOWEST 16.68 DEC 22, 1993

SITE ID 325229114405501
LOCAL NUMBER 015S022E08D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
DEC 09, 1998	VD

SITE ID 3252..114305401
LOCAL NUMBER 015S023E12P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 28, 1999	122.55 S

SITE ID 325248114302101
LOCAL NUMBER 015S023E12R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 08, 1999	SO

SITE ID 325248114302102
LOCAL NUMBER 015S023E12R002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 08, 1999	77.96 V

SITE ID 325249114294901
LOCAL NUMBER 015S024E18C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 02, 1994	SO	AUG 02, 1994	SO

HIGHEST --
LOWEST --

SITE ID 325249114294902
LOCAL NUMBER 015S024E18C002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAR 15, 1993	73.50 R	SEP 28, 1993	74.70 R	AUG 02, 1994	76.2 S		
JUN 22	74.50 R	DEC 22	75.30 R	02	79.25 S		

HIGHEST 73.50 MAR 15, 1993
LOWEST 79.25 AUG 02, 1994

SITE ID 325250114514501
LOCAL NUMBER 015S020E09A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 19, 1949	380.	R	JUN 19, 1962	404.80	S	JAN 16, 1998		W

HIGHEST 380. JAN 19, 1949
LOWEST 404.80 JUN 19, 1962

SITE ID 325255114514301
LOCAL NUMBER 015S020E04R001S
About 5 miles northwest of Ogilby, about 0.04 mile north of Gold Rock Ranch. Drilled domestic water-table well. Diameter 14 inches, depth 720 feet. Altitude of land-surface datum 505 feet. Records available 1981-85.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
AUG 26, 1981	388.80	S	SEP 30, 1982	388.38	S	SEP 18, 1984	391.67	SR			
FEB 03, 1982	388.57	S	SEP 20, 1983	388.74	SR	MAR 01, 1985	387.08	SR			

HIGHEST 388.38 SEP 30, 1982
LOWEST 388.80 AUG 26, 1981

SITE ID 325311114303201
LOCAL NUMBER 015S023E12G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUL 08, 1999	95.73	S

SITE ID 325312114290901
LOCAL NUMBER 015S024E07H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 31, 1966	13.9	R	JUL 02, 1999	5.00	SX	JUL 02, 1999	5.00	SX

HIGHEST 13.9 MAR 31, 1966
LOWEST 13.9 MAR 31, 1966

SITE ID 3253...14300102
LOCAL NUMBER 015S024E07D002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JUN 11, 1965	134.0	R	JUN 25, 1999	117.01	V

HIGHEST	117.01	JUN 25, 1999
LOWEST	134.0	JUN 11, 1965

SITE ID 325323114290801
LOCAL NUMBER 015S024E08D001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 06, 1966	26.1	R	JUL 02, 1999	19.3	S	JUL 02, 1999	19.3	S

HIGHEST	19.3	JUL 02, 1999	JUL 02, 1999
LOWEST	26.1	APR 06, 1966	

SITE ID 325348114293501
LOCAL NUMBER 015S024E06K001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUL 15, 1999		SO

SITE ID 325348114555701
LOCAL NUMBER 014S019E35R001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 01, 1998	303.50	V	APR 10, 1998	303.46	V	JUL 17, 1998	303.44	V	DEC 08, 1998	303.49	V

HIGHEST	303.44	JUL 17, 1998
LOWEST	303.50	APR 01, 1998

SITE ID 325348115310101
LOCAL NUMBER 014S014E34D001S S-154 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 23, 1989		F

SITE ID 325348115310102
LOCAL NUMBER 014S014E34D002S S-154 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAY 23, 1989		F

SITE ID 325348115310103
LOCAL NUMBER 014S014E34D003S S-154 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM (READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	+.21	V	MAY 23, 1989	+.07	S

HIGHEST +.21 APR 14, 1989
LOWEST +.07 MAY 23, 1989

SITE ID 325348115310104
LOCAL NUMBER 014S014E34D004S S-154 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1989	3.33	V	MAY 23, 1989	3.39	S

HIGHEST 3.33 APR 14, 1989
LOWEST 3.39 MAY 23, 1989

SITE ID 3253..115310105
LOCAL NUMBER 014S014E34D005S S-154 A

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	3.58 V	MAY 23, 1989	3.61 S

HIGHEST 3.58 APR 14, 1989
LOWEST 3.61 MAY 23, 1989

SITE ID 325350114304501
LOCAL NUMBER 015S023E01L001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 09, 1999	162.43 S

SITE ID 325350114304502
LOCAL NUMBER 015S023E01L002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 09, 1999	SO

SITE ID 325351114301901
LOCAL NUMBER 015S023E01J001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 25, 1999	150.64 V

SITE ID 325354114290301
LOCAL NUMBER 015S024E05M003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
MAY 10, 1966	23.7 R	JUL 21, 1999	20.78 S	JUL 21, 1999	20.78 S

HIGHEST 20.78 JUL 21, 1999 JUL 21, 1999
LOWEST 23.7 MAY 10, 1966

SITE ID 325354115310001
LOCAL NUMBER 014S014E27N01SLYS S-154

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	8.65 V	MAY 23, 1989	6.55 S	JUL 19, 1989	2.77 S

HIGHEST 2.77 JUL 19, 1989
LOWEST 8.65 APR 14, 1989

SITE ID 325354115310002
LOCAL NUMBER 014S014E27N02SLYS S-154

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	8.70 V	MAY 23, 1989	6.61 S	JUL 19, 1989	5.37 S

HIGHEST 5.37 JUL 19, 1989
LOWEST 8.70 APR 14, 1989

SITE ID 325354115310003
LOCAL NUMBER 014S014E27N03SLYS S-154

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 14, 1989	8.74 V	MAY 23, 1989	6.54 S	JUL 19, 1989	7.18 S

HIGHEST 6.54 MAY 23, 1989
LOWEST 8.74 APR 14, 1989

SITE ID 325358114313101
LOCAL NUMBER 015S023E02G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUL 09, 1999	227.64 S

SITE ID 3254...14295301
LOCAL NUMBER 015S024E06F002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN 07, 1999	120.34 VT	JUN 07, 1999	120.34 VT

HIGHEST --
LOWEST --

SITE ID 325404114294101
LOCAL NUMBER 015S024E06F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 07, 1999	110.55 V

SITE ID 325408114301601
LOCAL NUMBER 015S024E01H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 25, 1964	RD	JUL 01, 1999	SD

HIGHEST --
LOWEST --

SITE ID 325409114304501
LOCAL NUMBER 015S023E01C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
JUN 25, 1999	172.95 V

SITE ID 325437114300601
LOCAL NUMBER 014S024E31M002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 25, 1999		SO

SITE ID 325438114300501
LOCAL NUMBER 014S024E31M001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 25, 1999	46.36	V

SITE ID 325449114310601
LOCAL NUMBER 014S023E36E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 09, 1967	175.72	R	JUN 07, 1999	176.34	V

HIGHEST 175.72 MAR 09, 1967
LOWEST 176.34 JUN 07, 1999

SITE ID 325450114293701
LOCAL NUMBER 014S024E31G002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
APR 28, 1966	75.4	R

SITE ID 325457114291401
LOCAL NUMBER 014S024E31H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUN 04, 1999		SD

SITE ID 325...114520101
LOCAL NUMBER 014S020E21A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
NOV 14, 1997	483.26 V

SITE ID 325627114510201
LOCAL NUMBER 014S020E15Q002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 19, 1997	540.18 V	SEP 19, 1997	540.18 V	MAR 31, 1998	540.16 V	DEC 10, 1998	540.76 V

HIGHEST	540.16	MAR 31, 1998
LOWEST	540.76	DEC 10, 1998

SITE ID 325627114510301
LOCAL NUMBER 014S020E15Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
NOV 14, 1997	541.02 V

SITE ID 325800114485701
LOCAL NUMBER 014S020E12A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
SEP 18, 1997	655. V	SEP 18, 1997	655. V

HIGHEST	655.	SEP 18, 1997	SEP 18, 1997
LOWEST	655.	SEP 18, 1997	SEP 18, 1997

SITE ID 325813114514001
LOCAL NUMBER 014S020E03N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
SEP 28, 1995	634.6	R	DEC , 1995	631.5	R	NOV 05, 1996	634.7	R	SEP 16, 1997	636.2	R
OCT 25	631.4	R	MAY 20, 1996	634.8	R	APR 22, 1997	634.5	R	NOV 14	629.8	T

HIGHEST 629.8 NOV 14, 1997
LOWEST 636.2 SEP 16, 1997

SITE ID 325819115111201
LOCAL NUMBER 013S017E35P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
OCT 15, 1961	13.75		MAR 24, 1998		VO

HIGHEST 13.75 OCT 15, 1961
LOWEST 13.75 OCT 15, 1961

SITE ID 325822115111501
LOCAL NUMBER 013S017E35P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
MAR 01, 1962	17.80		MAR 24, 1998	21.19	V

HIGHEST 17.80 MAR 01, 1962
LOWEST 21.19 MAR 24, 1998

SITE ID 325825115102001
LOCAL NUMBER 013S017E36P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
JUL 22, 1992	114.	R

SITE ID 3259..114583501
LOCAL NUMBER 013S019E33P004S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1986	462.57	R	MAR 28, 1988	472.0	R	NOV 17, 1997	473.2	TR			
NOV 13, 1987	463.8	R	APR 07	475.	R						

HIGHEST 462.57 APR 14, 1986
LOWEST 475. APR 07, 1988

SITE ID 325909114583801
LOCAL NUMBER 013S019E33P003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1986	457.98	R	MAR 13, 1998	466.76	V

HIGHEST 457.98 APR 14, 1986
LOWEST 466.76 MAR 13, 1998

SITE ID 325912114583001
LOCAL NUMBER 013S019E33P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 19, 1985	462.10	R	APR 14, 1986	467.10	R	MAR 13, 1998	475.91	V

HIGHEST 462.10 APR 19, 1985
LOWEST 475.91 MAR 13, 1998

SITE ID 325914114583801
LOCAL NUMBER 013S019E33P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1986	472.5	A	JUN 30, 1987	470.5	R	JAN 22, 1988	473.4	R	JUL 25, 1988	478.1	R
JAN 19, 1987	470.1	R	JUL 24	469.8	R	FEB 29	474.1	R	SEP 28	475.5	R
FEB 18	471.0	R	SEP 23	477.1	R	MAR 28	476.7	R	MAR 13, 1998	476.30	V
MAR 12	470.	R	OCT 25	478.6	R	APR 07	478.	R			
MAY 07	469.3	R	NOV 12	469.9	R	JUN 12	465.	R			

HIGHEST 465. JUN 12, 1988
LOWEST 478.6 OCT 25, 1987

SITE ID 325916114582601
LOCAL NUMBER 013S019E33Q002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1986	475.93	R	MAY 07, 1987	478.2	R	OCT 25, 1987	477.9	R	JUN 13, 1988	470.	R
JAN 19, 1987	479.1	R	JUN 30	478.0	R	NOV 12	475.9	R	SEP 28	469.6	R
FEB 18	480.9	R	JUL 24	478.8	R	JAN 22, 1988	470.0	R			
MAR 12	478.	R	SEP 23	477.2	R	FEB 29	469.1	R			

HIGHEST 469.1 FEB 29, 1988
LOWEST 480.9 FEB 18, 1987

SITE ID 325919114584501
LOCAL NUMBER 013S019E33N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1986	464.95	R	JUN 18, 1999	475.19	V

HIGHEST 464.95 APR 14, 1986
LOWEST 475.19 JUN 18, 1999

SITE ID 325954115042701
LOCAL NUMBER 013S018E37B001S UNSURV

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
MAR 24, 1998	224.00	V

SITE ID 325955115042601
LOCAL NUMBER 013S018E33A001S
In Glamis, 0.2 mile north of Highway 78. Drilled unused water-table well. Diameter 6 inches, depth 681 feet, perforated 520-680 ft. Altitude of land-surface datum 335 feet. Water-level records available 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
APR 14, 1972	227.	R	FEB 02, 1982	193.57	S	JUN 13, 1985	230.54	S	OCT 08, 1991	227.33	V
JAN 10, 1979	196.11	S	JAN 26, 1983	194.49	S	NOV 02, 1989	226.69	S	MAR 17, 1992	227.22	S
JUL 23, 1980	194.50	S	SEP 21	222.72	SR	APR 20, 1990	221.23	S	SEP 23	220.1	V
FEB 11, 1981	198.90	S	SEP 17, 1984	227.84	SR	OCT 31	227.10	S	SEP 23, 1993	223.93	V
AUG 26	193.45	S	FEB 28, 1985	230.87	S	APR 05, 1991	227.30	V	OCT 21	224.06	V

) 32595511504260. _ONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

'E	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
1994	223.93 V	MAR 20, 1996	224.17 V	MAR 24, 1998	224.41 V	OCT 26, 1999	224.73 V
	224.08 V	OCT 17	224.15 V	24	224.00 V	MAR 30, 2000	225.40 V
1995	224.11 V	MAR 18, 1997	225.09 V	OCT 28	224.61 V	OCT 24	225.31 V
	223.83 V	OCT 21	224.88 V	MAR 23, 1999	224.51 V	MAR 28, 2001	224.73 V

HIGHEST 193.45 AUG 26, 1981
LOWEST 230.87 FEB 28, 1985

: 330006114373101
!UMBER 013S022E35H001S UNSURV

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

'E	WATER LEVEL MS
1999	38.21 V

) 330701116003501
!UMBER 012S009E23D001S
3 miles northwest of Westmorland, 0.5 mile south of Highway 78, and about 0.75 mile north of San Felipe
Drilled unused water-table well in alluvium. Diameter 14 inches, depth 580 feet. Altitude of
ırface datum -15 feet. Water-level records available 1953-58, 1961-68, 1978, 1980-85, 1989 to 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

'E	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
1953	64.17	MAR 15, 1962	135.61 P	NOV 08, 1968	114.81 S	OCT 02, 1991	171.66 S
1954	65.79	NOV 01	141.08 P	DEC 27, 1978	142.58 S	MAR 16, 1992	168.21 S
	64.56	MAR 14, 1963	142.55 P	JUL 22, 1980	168.50 S	SEP 24	165.74 S
1955	129.00 P	OCT 31	142.88 P	FEB 11, 1981	159.91 S	APR 12, 1993	177.01 SS
	64.87	MAR 20, 1964	87.87	FEB 04, 1982	167.27 SS	OCT 19	173.23 V
1956	64.43	MAR 19, 1965	95.40	SEP 27, 1983	153.43 S	MAR 28, 1996	197.30 SS
	133.52 P	AUG 12	110.05 S	SEP 17, 1984	152.11 S	OCT 08	204.34 S
1957	65.00	OCT 25	108.26 S	MAR 20, 1985	162.03 SS	MAR 06, 1997	203.39 VS
	70.18	MAR 04, 1966	109.27 S	JUN 14	156.16 S	OCT 09	205.83 V
1958	66.76	OCT 26	109.65 S	NOV 03, 1989	166.37 ST	MAR 24, 1998	202.35 V
	72.48	MAR 23, 1967	111.38 S	MAR 22, 1990	174.35 SS	OCT 28	210.40 V
1961	79.08 R	OCT 24	112.29 S	OCT 24	179.19 SS	MAR 23, 1999	211.90 V
	134.71 P	MAR 12, 1968	114.39 S	MAR 11, 1991	169.03 S	OCT 26	O

HIGHEST 64.17 DEC 15, 1953
LOWEST 211.90 MAR 23, 1999

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SITE ID 330701116003502
LOCAL NUMBER 012S009E23D002S
About 23 miles northwest of Westmorland, 0.5 mile south of Highway 78 and 0.75 mile north of San Felipe Creek. Drilled irrigation water-table well in alluvium. Diameter 14 to 12.75 inches, depth 673 feet, 14 inch casing 0-265 feet, 12.75 inch casing 265-273 feet, prforated 265-673 feet. Altitude of land-surface datum -15 feet. Records available 1978, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
DEC 27, 1978	142.55 S	JUL 22, 1980	168.06 S

HIGHEST 142.55 DEC 27, 1978
LOWEST 168.06 JUL 22, 1980

SITE ID 330842115174701
LOCAL NUMBER 012S016E09A001S
About 14 miles east of Calipatria on Niland-Glamis Road. Drilled irrigation water-table well. Diameter 12 inches, depth 1,000 feet, perforated 150-1,000 feet. Altitude of land-surface datum 220 feet. Water-level records available 1979, 1981-85, 1990 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 02, 1979	126.33 S	APR 20, 1990	137.50 ST	MAR 15, 1994	140.62 S	MAR 24, 1998	143.59 V
MAR 04, 1981	134.83 S	OCT 31	136.17 S	OCT 26	140.63 S	OCT 28	143.83 V
AUG 26	133.55 S	APR 05, 1991	139.20 V	MAR 30, 1995	142.01 V	MAR 23, 1999	144.01 V
FEB 02, 1982	133.23 S	OCT 08	138.90 V	OCT 17	142.58 V	OCT 26	144.77 V
JAN 26, 1983	133.60 S	MAR 18, 1992	139.11 S	MAR 20, 1996	142.78 V	MAR 30, 2000	144.90 V
SEP 17, 1984	133.88 S	SEP 23	137.75 S	OCT 17	143.07 V	OCT 24	145.00 V
FEB 28, 1985	135.10 S	SEP 23, 1993	138.23 S	MAR 18, 1997	143.27 V	MAR 28, 2001	145.23 V
JUN 13	134.94 S	OCT 21	O	OCT 21	143.39 V		

HIGHEST 126.33 AUG 02, 1979
LOWEST 145.23 MAR 28, 2001

SITE ID 331127115331601
LOCAL NUMBER 011S014E30C01SLYS S-417

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	7.59	MAY 22, 1989	7.88 S	JUL 19, 1989	8.10 S

HIGHEST 7.59 APR 17, 1989
LOWEST 8.10 JUL 19, 1989

SITE ID 3311..115331602
LOCAL NUMBER 011S014E30C02SLYS S-417

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	6.21 V	MAY 22, 1989	7.37 S	JUL 19, 1989	7.57 S

HIGHEST 6.21 APR 17, 1989
LOWEST 7.57 JUL 19, 1989

SITE ID 331127115331603
LOCAL NUMBER 011S014E30C03SLYS S-417

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	6.09 V	MAY 22, 1989	7.39 S	JUL 19, 1989	7.65 S

HIGHEST 6.09 APR 17, 1989
LOWEST 7.65 JUL 19, 1989

SITE ID 331127115331604
LOCAL NUMBER 011S014E30C04SLYS S-417

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	VD	MAY 22, 1989	6.30 S	JUL 19, 1989	6.32 S

HIGHEST 6.30 MAY 22, 1989
LOWEST 6.32 JUL 19, 1989

SITE ID 331128115334401
LOCAL NUMBER 011S014E19N001S S-417 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	F	MAY 22, 1989	F

HIGHEST --
LOWEST --

SITE ID 331128115334402
LOCAL NUMBER 011S014E19N002S S-417 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
APR 17, 1989	F

SITE ID 331128115334403
LOCAL NUMBER 011S014E19N003S S-417 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM (READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	2.15 V	MAY 22, 1989	+.27 SS

HIGHEST 2.15 APR 17, 1989
LOWEST 2.15 APR 17, 1989

SITE ID 331128115334404
LOCAL NUMBER 011S014E19N004S S-417 AT

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
APR 17, 1989	5.45 V	MAY 22, 1989	9.07 S

HIGHEST 5.45 APR 17, 1989
LOWEST 9.07 MAY 22, 1989

SITE ID 331144115231501
LOCAL NUMBER 011S015E23M001S
About 8 miles southeast of Niland in East Mesa area, near Siphon 3 on Coachella Canal. Drilled domestic well. Diameter 12 inches, depth 550 feet in 1958. Altitude of land-surface datum 120 feet. Water-level records available 1953-58, 1961-68, 1978-79, 1980-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
JUN , 1963	25.00 R	SEP 17, 1984	35.70 S	SEP 23, 1993	43.61 S	MAR 18, 1997	46.04 V
JAN 10, 1979	20.68	JUN 13, 1985	36.74 S	OCT 21	43.68 S	OCT 21	46.23 V
JUL 23, 1980	22.32 S	NOV 02, 1989	40.91 S	MAR 15, 1994	44.69 S	MAR 24, 1998	46.26 V
FEB 11, 1981	24.44 S	APR 20, 1990	41.30 S	OCT 26	44.29 S	OCT 28	O
AUG 26	28.59 S	OCT 31	41.89 S	MAR 30, 1995	44.41 V	MAR 23, 1999	O
FEB 02, 1982	30.57 S	OCT 08, 1991	42.46 S	OCT 17	45.41 V	OCT 26	O
JAN 26, 1983	33.44 S	MAR 18, 1992	42.70 S	MAR 20, 1996	45.57 V	29	46.94 S
SEP 21	34.73 S	SEP 23	43.07 S	OCT 17	45.85 V	MAR 30, 2000	46.92 S

SITE ID 3311...15231501 CONTINUED--

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
OCT 24, 2000	47.20 S	MAR 28, 2001	47.10 V				

HIGHEST 20.68 JAN 10, 1979
LOWEST 47.20 OCT 24, 2000

SITE ID 331603114550601
LOCAL NUMBER 010S019E25R001S
About 6 miles northwest of Highway 78 and west of Midway Road. Drilled water-table well. Diameter 8 inches, depth 304 ft. Altitude of land-surface datum 820 feet. Water-level records available 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 01, 1979	194.47 S	JUN 13, 1985	195.43 SS	OCT 20, 1993	196.42 S	MAR 24, 1998	196.00 V
JUL 23, 1980	194.41 S	NOV 30, 1989	196.37 S	MAR 15, 1994	198.30 S	OCT 28	195.81 V
JAN 22, 1981	194.23 S	MAR 26, 1990	196.23 S	OCT 27	196.14 S	MAR 23, 1999	195.78 V
AUG 27	194.25 S	OCT 23	196.25 S	MAR 31, 1995	195.81 V	OCT 26	195.63 V
FEB 03, 1982	194.38 S	MAR 14, 1991	195.96 S	OCT 17	196.01 V	MAR 30, 2000	195.62 V
SEP 30	194.89 S	OCT 02	196.22 S	MAR 20, 1996	196.15 V	OCT 24	195.44 V
SEP 20, 1983	194.92 ST	MAR 17, 1992	195.93 S	OCT 17	196.08 V	MAR 28, 2001	195.17 V
SEP 18, 1984	195.28 SS	SEP 22	196.34 S	MAR 18, 1997	196.18 V		
FEB 28, 1985	195.18 SS	SEP 23, 1993	196.44 S	OCT 21	196.27 V		

HIGHEST 194.23 JAN 22, 1981
LOWEST 198.30 MAR 15, 1994

SITE ID 331652114474101
LOCAL NUMBER 010S021E29E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	50.00 S

SITE ID 331659114481001
LOCAL NUMBER 010S021E30C001S
In Milpitas Wash, west of Ogilby Road. Drilled observation water-table well. Diameter 1.25 inches, depth 70.1 feet. Altitude of land-surface datum 485 feet. Water-level records available 1972, 1979-85, 1989 to current year.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
AUG 24, 1972	42.42	FEB 28, 1985	33.59 S	SEP 22, 1992	36.28 S	MAR 18, 1997	41.65 S
AUG 01, 1979	36.04	JUN 13	35.32 S	SEP 23, 1993	36.92 S	OCT 21	41.38 S
JUL 23, 1980	37.11 S	NOV 30, 1989	40.36 S	OCT 20	37.22 S	MAR 24, 1998	40.71 S
JAN 22, 1981	38.27 S	MAR 26, 1990	40.53 S	MAR 15, 1994	38.45 S	OCT 28	41.55 S
AUG 27	39.22 S	OCT 23	40.66 S	OCT 27	39.64 S	MAR 23, 1999	41.86 S
FEB 03, 1982	39.62 S	MAR 14, 1991	40.75 S	MAR 31, 1995	38.84 S	OCT 26	42.57 S
SEP 30	39.77 S	APR 05	42.04 S	OCT 17	39.89 S	MAR 30, 2000	43.10 S
SEP 20, 1983	39.50 S	OCT 02	40.03 S	MAR 20, 1996	40.51 S	OCT 24	43.00 S
SEP 18, 1984	29.90 S	MAR 17, 1992	39.77 S	OCT 17	41.20 S	MAR 28, 2001	42.91 S

HIGHEST 29.90 SEP 18, 1984
LOWEST 43.10 MAR 30, 2000

SITE ID 331811114435201
LOCAL NUMBER 010S021E14P002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 30, 2000	14.08 SX	NOV 30, 2000	14.08 SX

HIGHEST --
LOWEST --

SITE ID 331811114435202
LOCAL NUMBER 010S021E14P003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS	DATE	WATER LEVEL MS
NOV 30, 2000	12.84 SX	NOV 30, 2000	12.84 SX

HIGHEST --
LOWEST --

SITE ID 3320...14421201
LOCAL NUMBER 010S021E01A001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	7.00 S

SITE ID 332110114421401
LOCAL NUMBER 009S021E36G001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	9.00 S

SITE ID 332110114423001
LOCAL NUMBER 009S021E36F001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	6.00 S

SITE ID 332136114421301
LOCAL NUMBER 009S021E25Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	6.00 S

SITE ID 332136114424601
LOCAL NUMBER 009S021E25N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL MS
AUG 01, 1972	6.00 S

SITE ID 332204114421101
LOCAL NUMBER 009S021E25H001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	8.00	S

SITE ID 332204114435501
LOCAL NUMBER 009S021E25E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	5.00	S

SITE ID 332230114431601
LOCAL NUMBER 009S021E24N001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	4.00	S

SITE ID 332230114434701
LOCAL NUMBER 009S021E23Q001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	6.00	S

SITE ID 332256114431601
LOCAL NUMBER 009S021E24E001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	6.00	S

SITE ID 3323...14434701
LOCAL NUMBER 009S021E23C001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	6.00	S

SITE ID 332335114434901
LOCAL NUMBER 009S021E14P001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	8.00	S

SITE ID 332402114434701
LOCAL NUMBER 009S021E14B001S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS
AUG 01, 1972	9.00	S

SITE ID 332413114433501
LOCAL NUMBER 009S021E14B002S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 04, 1983	7.	R	JAN 25, 2000	10.30	SX	JAN 25, 2000	10.30	SX

HIGHEST 7. JAN 04, 1983
LOWEST 7. JAN 04, 1983

SITE ID 332414114433601
LOCAL NUMBER 009S021E14B003S

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
JAN 06, 1983	7.	R	JAN 25, 2000	9.10	SX	JAN 25, 2000	9.10	SX

HIGHEST 7. JAN 06, 1983
LOWEST 7. JAN 06, 1983

Appendix B2 Ocotillo/Coyote Wells
Groundwater Basin Hydrology and Groundwater Modeling Study

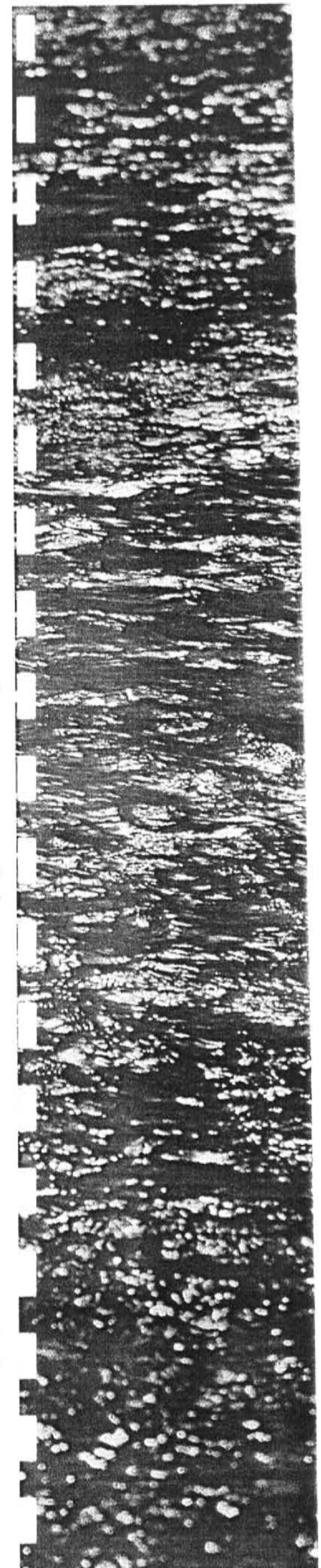
OCOTILLO/COYOTE WELLS HYDROLOGY AND GROUNDWATER MODELING STUDY

Prepared for

U.S. GYPSUM COMPANY

Prepared by

Bookman-Edmonston
A Division of GEI Consultants, Inc.



OCOTILLO/COYOTE WELLS HYDROLOGY AND GROUNDWATER MODELING STUDY

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OCOTILLO/COYOTE WELLS BASIN
HYDROLOGY AND GROUNDWATER MODELING STUDY

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SECTION 1 ORGANIZATIONAL INFORMATION

The U.S. Gypsum Company has historically obtained all of the water supply for its Plaster City Plant operations from the Ocotillo/Coyote Wells Groundwater Basin (Basin). U.S. Gypsum's modernization/expansion requires an increase in water use. An evaluation of the Basin's capability to provide needed water and a determination of the effect of the withdrawal on the groundwater Basin is required. In 1996 Bookman-Edmonston (B-E, now a division of GEI Consultants, Inc.) prepared a report entitled Ocotillo/Coyote Wells Basin Hydrology and Groundwater Modeling Study. This report updates the 1996 B-E report using several years of more recent data, updated modeling techniques (from updated MODFLOW software), faster computers, which allow for faster computations, and additional geology inputs.

1.1 1996 REPORT REVIEW

The Groundwater Modeling prepared by B-E on behalf of U.S. Gypsum in 1996 was presented in the March 1996 B-E report (1996 B-E Report). The model was based primarily on an existing United States Geological Survey (USGS) model developed by Skrivan and published in 1977. From the time of the Skrivian model to the B-E 1996 model there was considerably more data for model calibration; and computer modeling techniques, speed, and capacity had improved so that model revisions had greatly reduced grid spacing.

The 1996 B-E Report included the following Sections

1. Introduction.
2. Findings and Conclusions: the principal finding was that the safe yield was approximately 1,000 acre-feet per year, and there would not be a degradation of water quality if pumping were increased to 1200 acre feet per year (from a base rate of 300 AF/yr) for up to 30 years.
3. Review of Available Reports and Previous Studies: in which there is a summary of several reports on the Basin hydrology.
4. Data Availability: in which the primary source of data is the USGS, which started an Imperial County sponsored well measurement program in the mid-1970's including the drilling of a number as observation wells. About 23 wells are measured semi-annually.

5. Hydrologic Conditions: in which water level and water quality data are described and water level contour maps developed.

6. Land and Water Use: which estimates the annual groundwater extractions from the Ocotillo Basin.

7. Hydrologic Balance: in which the hydrologic equation of inflow and outflow is described.

8. Groundwater Flow Model Development and Calibration: in which the model is run for the calibration period of 1975 to 1995.

9. Solute Transport Model: in which the model is extended to represent model movement of saline waters overtime. Solute transport runs were made at up to six times the Basin-wide 1995 pumping rate of 400 AF/yr for a one hundred year period in an effort to stress the model. These studies showed virtually no increases in salinity under extreme pumping conditions.

10. Future Groundwater Impacts: in which predictive runs were made of the model with pumping up to three times the Basin-wide 1995 pumping amounts.

Appendices to the Report included data on wells, water level data and water quality data, as well as a land surface and well reference point elevation surveys and a glossary of terms.

The 1996 B-E Report was published and provided to Imperial County Board of Supervisors, staff, U.S. EPA, and others.

1.2 NEW MODEL DEVELOPMENT

U.S. Gypsum's modernization/expansion requires the preparation of an EIR/EIS to evaluate, among other things, the potential impacts on Basin hydrology. Hydrologists retained by the EIR/EIS preparer, Resource Design Technology, Inc. (RDT), and representatives of the USGS led by Peter Martin, reviewed the available reports and studies on the Basin including the 1996 B-E Report and a 1995 Montgomery Watson Report. This review, coupled with calibration issues in the southern part of the Basin, led to the conclusion that additional studies were needed to more accurately assess Basin hydrology. One concern was that the 1977 model showed transmissivity and storage coefficient values in the downstream area of the Basin, that were contrary to observed conditions in the Basin. Concerns were also expressed about the geologic model used in the 1977 model, particularly to the continuity of the Elsinore and Laguna Salada faults.

In order to address these concerns, B-E in cooperation with the County, USGS and hydrologists retained by RDT, conducted further studies and assessment of the Basin to address the transmissivity and storage coefficient issue, a pumping test was conducted on one of the U.S. Gypsum wells. This test occurred during a plant shutdown for maintenance during Thanksgiving 2002. This pumping test generated useful data including pumping and recovery measurements to help evaluate Basin conditions. Additional geologic field investigations were conducted by B-E and the Basin was remapped. Computer techniques, such as digital elevation modeling, were used to enhance the topography, which greatly aided in the understanding of the Basins geologic structure.

With the additional data and updated geology a new model was developed. The model features a two-layer model divided between the younger alluvial material and the tighter Tertiary deposits. The model grid space was reduced to 1/8 mile from 1/4 mile and some boundary conditions were changed. The Elsinore–Laguna Salada faults prominent in the 1977 and 1996 models were reduced. Various iterations of the model were developed and reviewed by Andrew Kopania and Peter Martin. The finial model presented herein was recalibrated on various occasions to closely track empirical data and to result in a model that simulates actual Basin hydrology.

People contacted or involved in Model Development

Resource Design Technology
- Dave Brown
- Andrew Kopania

U.S. Gypsum
- Frank May
- Gregory Cork
- Scott Seely

Bookman Edmonston
- Richard Rhone
- Weizu Yu
- Ronald Schnabel
- Marta Espinoza

USGS
- Peter Martin
- Greg Lines

San Diego State University
Dr. Rockwell
Imperial County
Jurg Heuberger
BLM
Kevin Marty

The balance of this report: 1) Presents the current Ocotillo/Coyote Wells Basin Hydrology and Groundwater Modeling Study, 2)presents the most recent information on geologic and hydrogeologic conditions in the Basin, 3) discusses the newly developed groundwater model, and 4) presents the groundwater model results for a baseline case and for several alternative scenarios.

The Ocotillo/Coyote Wells Groundwater Basin is currently characterized as an unconfined aquifer with a saturated thickness of approximately 400 feet and a depth to groundwater on the order of 100 feet. The amount of water in storage in the Basin is estimated at 1,200,000 acre-feet. The Basin is comprised of 2 layers of water (a shallow, low TDS water layer and a deeper, higher TDS water layer). The principal source of recharge to the Basin is runoff from the Coyote and Jacumba Mountains. Groundwater from the Coyote and Jacumba Mountains flows southeasterly through the Basin towards Mexico and east through Tertiary deposits. Table 2-1 presents the hydrologic balance estimated from model calibration results. The numbers in Table 2-1 with asterisks, are based on model calibration efforts (as discussed in Section 5) and are not measured values.

Table 2-1
Hydrologic Balance From Model Calibration Results
(Values in acre-feet per year)

Groundwater Inflow			
	Recharge to Basin		*1,077**
Groundwater Outflow			
	Net Pumpage (2001)		
		US Gypsum	434
		Urban Water Use*	122
		Subtotal	556
	Underflow from Basin		
		To Mexico	*515**
		To the East	*475**
		Subtotal	*990**
	Total		*1,546**
Computed Change in Storage			*(469*)*
Total Groundwater in Storage in Acre-Feet			1,200,000

Numbers based on model calibration results, not estimates of the Basin hydrological balance.

Groundwater levels in the Ocotillo area of the Basin have lowered by approximately 5 to 8 feet from 1975 to 2001 based on measured values. The lower levels are a localized effect, and are the result of local pumping. Groundwater elevations in the Yuha Estates area (near the former McDougal wells) declined from 1975 until 1982, but are currently recovering at rate of about ¾ feet per year.

Ocotillo/Coyote Wells Groundwater Basin generally contains good quality groundwater with TDS concentrations from of 300 to 400 mg/l and it is therefore potable. The source of this good quality groundwater is from the Recent Alluvium. The communities Ocotillo, Nomirage, and Yuha Estates overlay areas of Recent Alluvium. Groundwater quality in these communities provides good quality drinking water that can be used without treatment.

Groundwater quality east of the Laguna Salada fault, and east of the projected southern extension of the Elsinore Fault is poor, has TDS concentrations over 15,000 mg/l in some wells. Sources of this poor quality appear to be Tertiary marine deposits. The communities of Painted George and West Texas overlay Tertiary Marine deposits, and the groundwater quality in these communities is not suitable for drinking without treatment.

Several shallow wells (50 feet or less below ground surface) in the Ocotillo/Coyote Wells Groundwater Basin have TDS concentrations from 600-4000 mg/l. These wells indicate that poor quality groundwater overlies good quality groundwater in a few locations. These shallow wells are not necessarily an indication that poor quality water has moved from east to west; or from the marine Tertiary deposits into the Recent Alluvium. Since high TDS concentrations were found in shallow wells prior to most development in this region, it is assumed to be naturally occurring. The shallow, high TDS groundwater is most likely a result of evaporation of the shallow water table, which concentrates the naturally occurring TDS.

Except for two wells out of 10 assessed, groundwater quality in the Ocotillo/Coyote Wells Groundwater Basin has remained constant since monitoring began in the mid 1970s. Well number 16S/10E-30R1 (Plate 1) showed TDS concentrations increasing from 1978 to 1990 and then decreasing from 1990 to 1995. Well number 16S/9E-25K2, which exported water to Mexico from 1967 to about 1984, showed two periods of increasing and decreasing TDS levels. The TDS fluctuation observed in this well correlates with increased pumping for water export to Mexico.

A groundwater flow model has been developed to estimate the impacts of future groundwater pumping on groundwater elevations and water quality (see sections). The purpose of the model was to predict changes in groundwater elevations and flow directions that may cause water quality problems in the Basin. The groundwater flow model predicts changes in groundwater elevations based on groundwater extraction from wells, recharge to the groundwater basin, trasmissivity and storage coefficient.

Based on the groundwater model presented in Section 5, and on the model scenarios results in Section 6, the Ocotillo/Coyote Wells Groundwater Basin is not likely to experience water quality degradation as a result of the proposed increased pumping by US Gypsum. Also based on the model results, upconing (the intrusion of poor quality groundwater underlying good quality groundwater caused by pumping the good quality water) is not considered to be a threat to the groundwater quality in the Ocotillo Basin. Additionally, when evaluating groundwater flow directions at various pumping rates, groundwater flow from west to east is unlikely to reverse. These findings agree with groundwater model results by Williams (1986, upconing) and Mark (1987, flow direction reversal) for current conditions in the Ocotillo/Coyote Wells Basin.

Based on the groundwater model results, groundwater levels in the Ocotillo area are predicted to decline gradually to the year 2082 by a maximum of 24 feet lower than the baseline scenario as a result of the increased pumping by US Gypsum to 767 ac-ft/yr. While the groundwater levels are predicted to decline, the water quality is not expected to be adversely impacted.

While the model is the best scientific effort to predicting Basin impacts, it is only a model. To ensure no adverse impacts result by the increased pumping, US Gypsum is proposing a groundwater monitoring program.

SECTION 3 GEOLOGY AND HYDROGEOLOGY

This section describes the geologic and hydrogeologic conditions of the Ocotillo/Coyote Wells Groundwater Basin, and provides a generalized geologic and hydrogeologic discussion of basin conditions as determined by previous studies and recent work. As the understanding of the Basin's geology and hydrogeology has advanced from the earlier regional geologic mapping by Dibblee (1954) and the large area hydrogeologic studies by Loelta and others (1975) to the more detailed investigations by Jansen (1983), Mark (1987), Williams (1987) and others, this study progresses the groundwater model beyond the earlier groundwater model developed by Skrivan (1977) to a more detailed and more accurate model. The geologic and hydrogeologic discussions in this section are the foundation for the groundwater flow model presented in Section 5.

3.1 GENERALIZED GEOLOGY

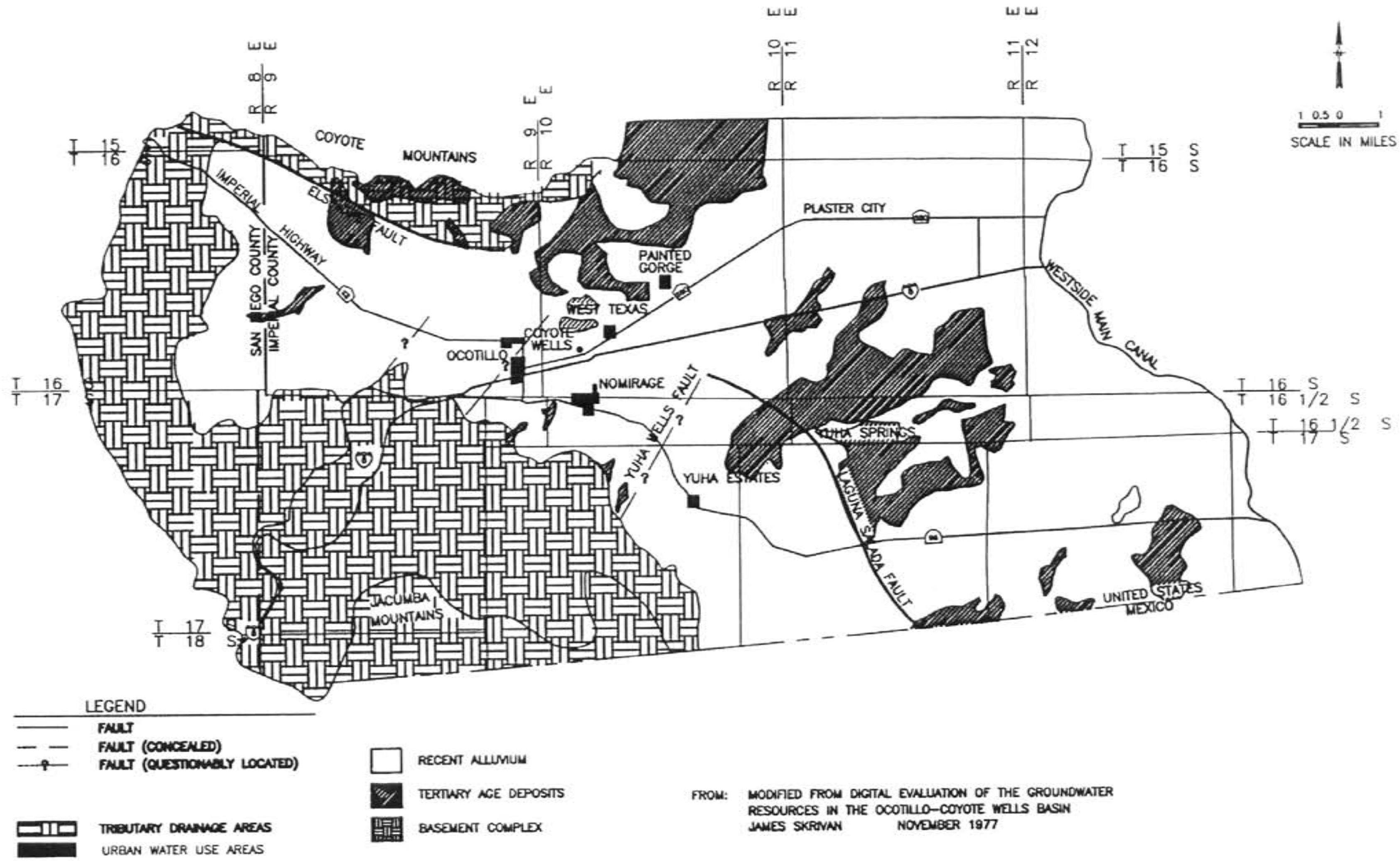
The study area is located within the Imperial County Groundwater Basin in the southwest portion of Imperial County, approximately 25 miles west of El Centro. For the purposes of this study, six general lithologic units have been identified in the study area. These units are, from oldest to youngest, the basement complex, Imperial Formation, Palm Springs Formation, Older Quaternary alluvium, terrace deposits, and Recent alluvium. The general geology of the basin is shown on Figure 3-1, and each of these units is discussed below along with the general structural geology of the basin.

Basement Complex

The basement complex consists of igneous, metamorphic, and volcanic rocks, which occur in the surrounding hills and mountains, the Miocene sedimentary rocks of the Split Mountain Formation in the Jacumba Mountains, and the Canebrake Conglomerate in the Coyote Mountains. The basement complex is considered non-water bearing for the purpose of this report.

Imperial Formation

The Late Miocene to Pliocene Imperial Formation is dominantly marine, and has been extensively studied due to its abundant fossil content and numerous outcrops. From exposures at the base of the Coyote Mountains it dips beneath the Ocotillo/Coyote Wells Basin and is exposed in the badlands type topography of the Yuha Basin area. Outcrops of Imperial Formation occur southeast and east of the Coyote Mountains and at a few minor locations at the base of the Jacumba Mountains foothills.



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Ocotillo/Coyote Wells Groundwater Study

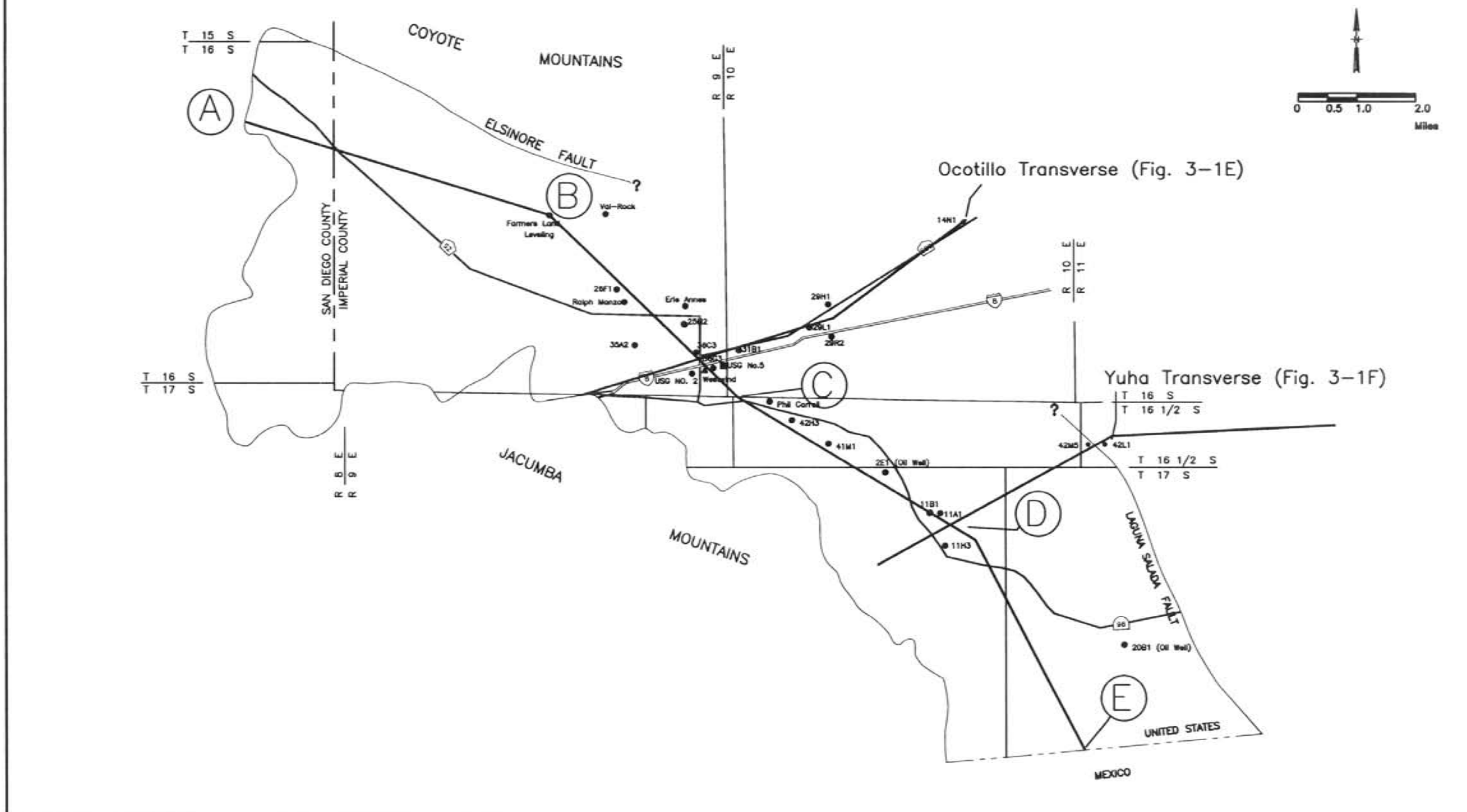
Generalized Geology

U.S. Gypsum Company

10/13/03

FIGURE 3-1

111320 1



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Ocotillo/Coyote Wells Groundwater Study

Cross-Sections

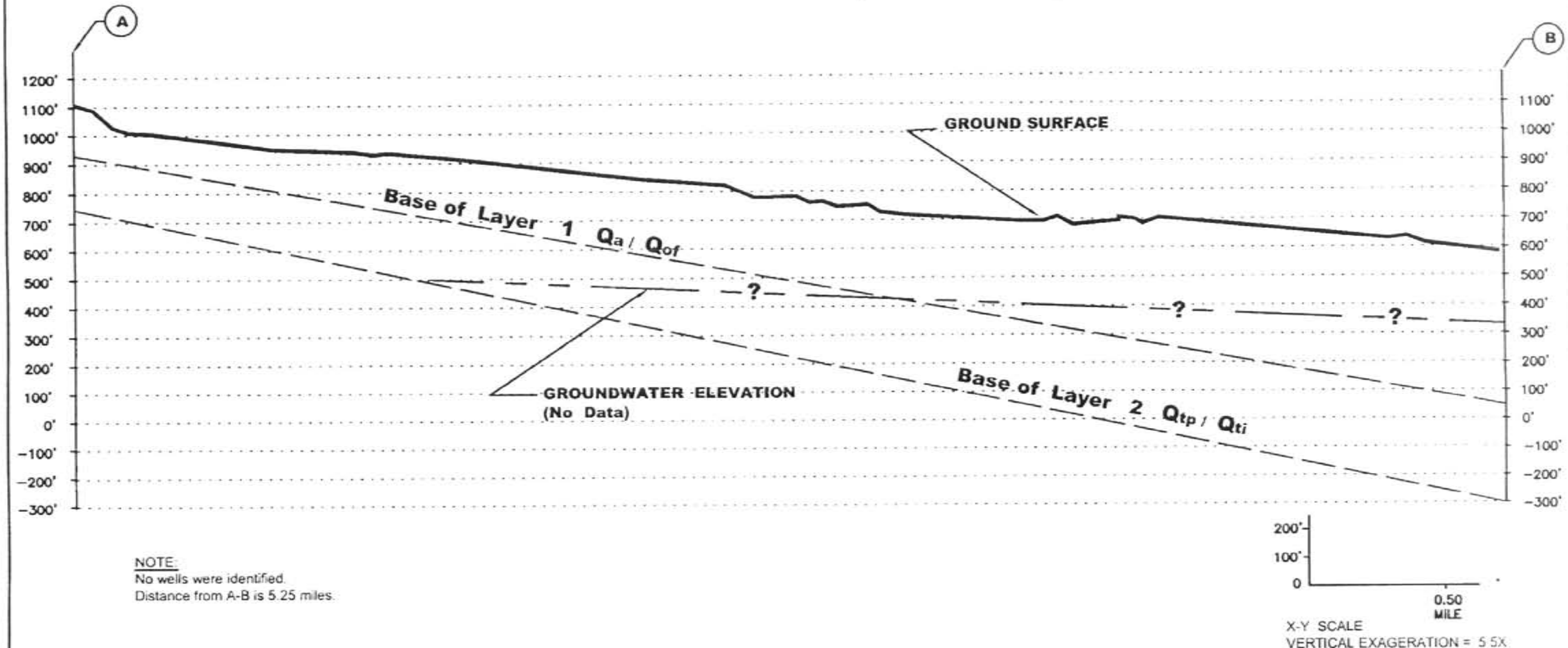
U.S. Gypsum Company

9/24/03

FIGURE 3-1A

PROJECT NUMBER 111320

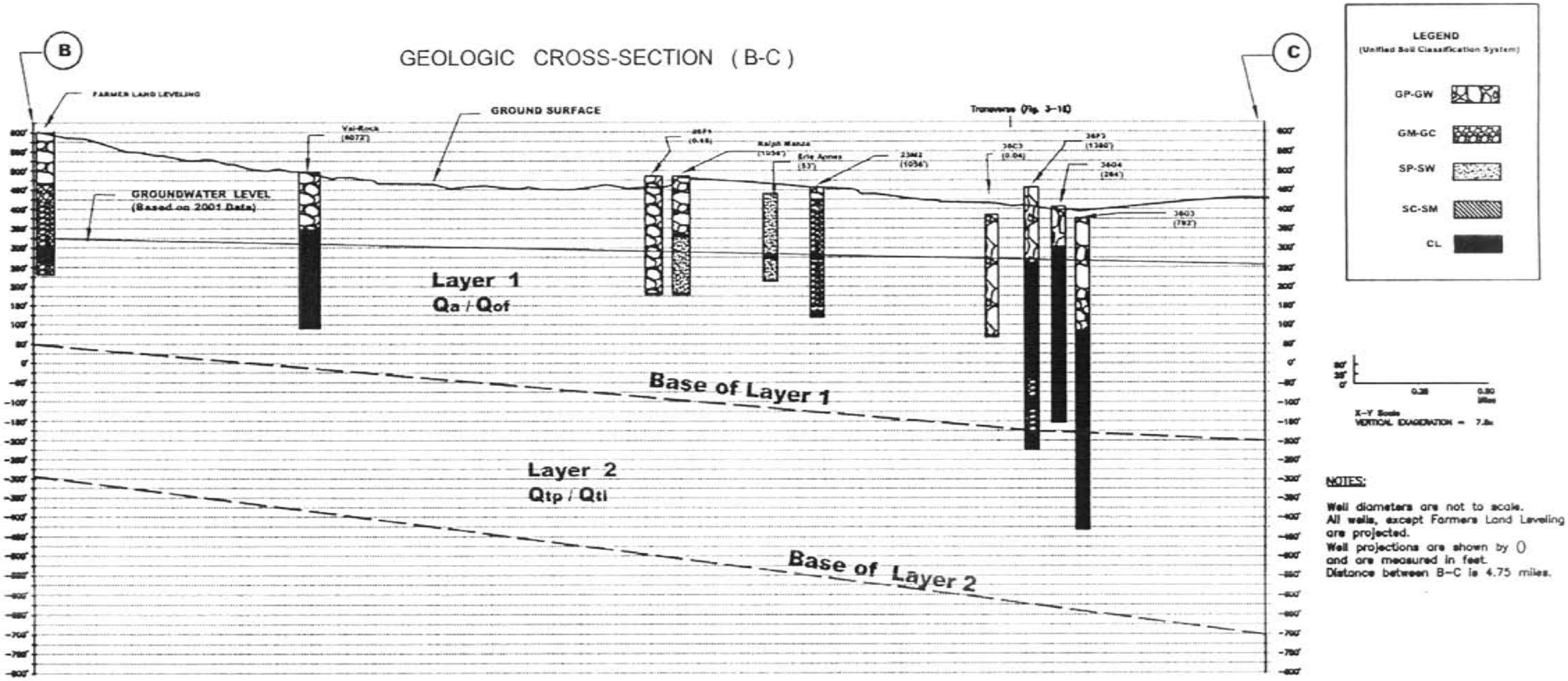
GEOLOGIC CROSS-SECTION (SECTION A - B)



NOTE:
No wells were identified.
Distance from A-B is 5.25 miles.

Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Geological Cross-Section U.S. Gypsum Company	9/24/03 FIGURE 3-1B

PROJECT NUMBER 111320



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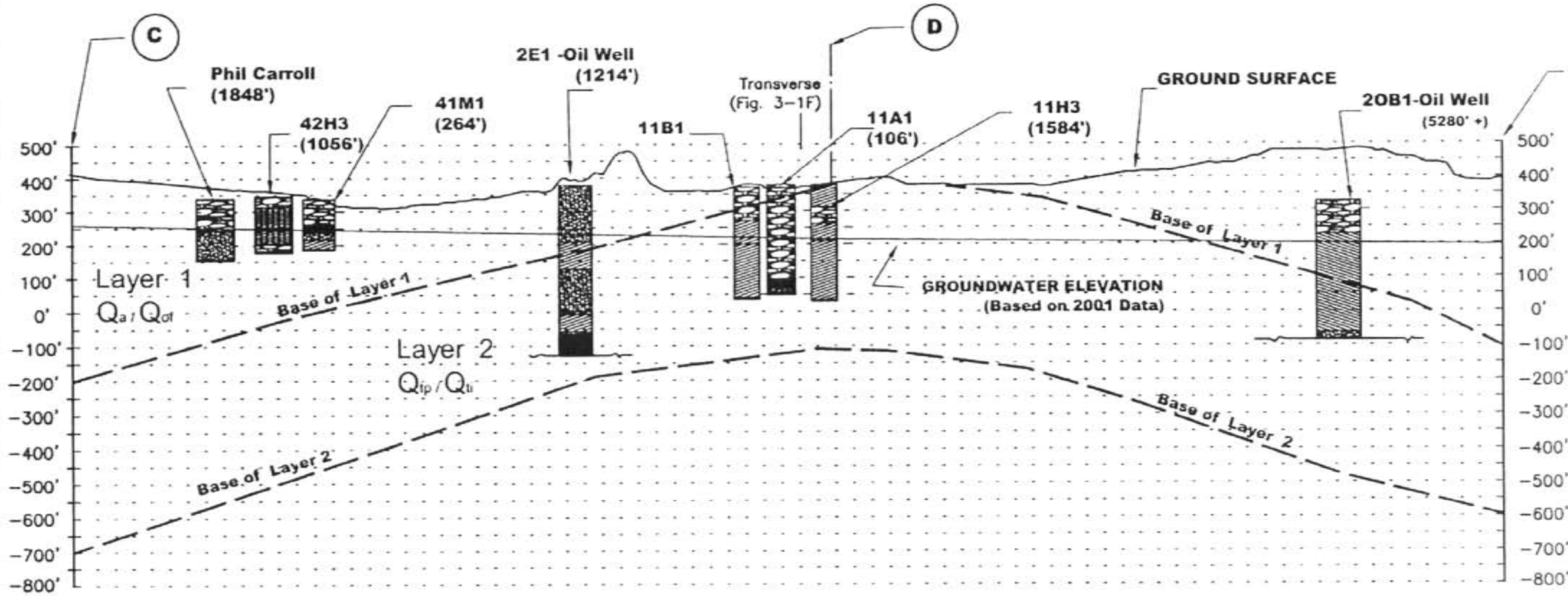
Ocotillo/Coyote Wells Groundwater Study
Geologic Cross-Section
U.S. Gypsum Company

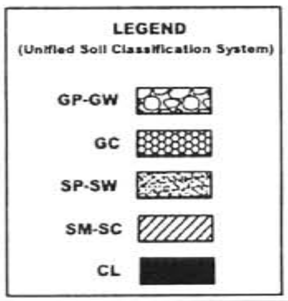
9/24/03

FIGURE 3-1C

PROJECT NUMBER 111320

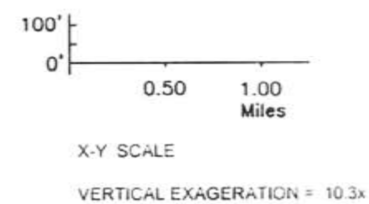
GEOLOGIC CROSS-SECTIONS (SECTIONS C - E)





NOTES:

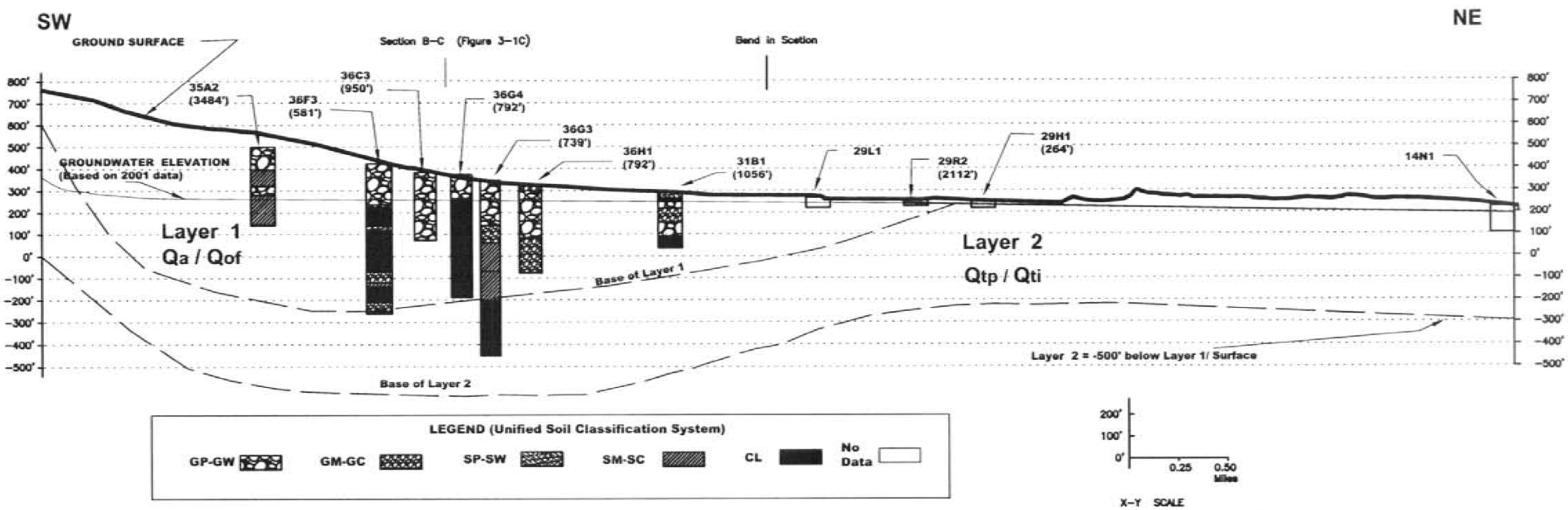
Well diameters are not to scale.
All wells except 11B1 are projected.
Projections are shown ( ) and are measured in feet.
Distance between C-E is 8.50 miles.



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Geologic Cross-Section U.S. Gypsum Company	9/24/03 FIGURE 3-1D

PROJECT NUMBER 111320

OCOTILLO GEOLOGIC CROSS-SECTION (TRANSVERSE)



X-Y SCALE
VERTICAL EXAGERATION = 5.9x

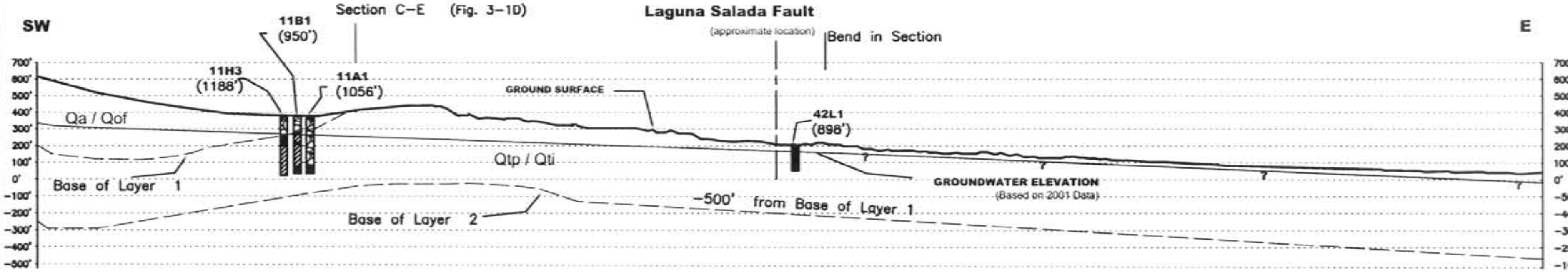
NOTES:

Well diameters are not to scale.
All wells except wells 29L1 and 14N1 are projected.
Well projections are shown by ( ) and are measured in feet.
Distance between C-E equals 7.50 miles.

Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Geologic Cross-Section (Ocotillo-Transverse) U.S. Gypsum Company	9/24/03 FIGURE 3-1E

PROJECT NUMBER 33890

YUHA GEOLOGIC CROSS-SECTION (TRANSVERSE)



LEGEND (Unified Soil Classification System)

GP-GW GM-GC SM-SC CL

NOTES:

Well diameters are not to scale.
All wells are projected.
Projections are shown in ( ) and are measured in feet.
Cross–section's distance equals 5.50 miles.

X-Y SCALE

VERTICAL EXAGERATION = 5.9x

Bookman-Edmonston, A Division of GEI Consultants, Inc	Ocotillo/Coyote Wells Groundwater Geological Cross-Section (Yuha-Transverse) U.S. Gypsum Company	9/24/03 FIGURE 3-1F

PROJECT NUMBER 111320

The Imperial Formation has an exposed thickness of over 1,500 feet in Yuha Basin (Streiff, 1971), and is generally described as a series of interbedded gray and yellow-weathering claystone, buff sandstone, and dark calcareous, oyster shell reefs with a coarse sandy basal member containing mollusks and corals. The Palm Springs Formation gradationally overlies the Imperial Formation.

Groundwater with high TDS concentrations was deposited along with these sediments. These connate waters are the main source of poor quality groundwater in the study area. Wells drilled into the Imperial Formation have low yields and produce poor quality water. A pumping test conducted by Jansen (1983) on well 16S/10E-16Q1 produced a transmissivity of 34 ft^2/day (Mark 1987, subsequently determined this to be in the Imperial Formation). Skrivan (1977, p. 25) states that a 1975 well test located 3 miles northeast of Ocotillo produced a transmissivity of 270 ft^2/day. Skrivan (1977) does not indicate the well number or the type of formation that the well is completed in, but the formation is either the Palm Springs or Imperial Formation in this area. Similarly, pumping tests conducted by Jansen (1983, p. 49) in alluvium near or over shallow material of either Palm Springs or Imperial Formation produced transmissivity values ranging from 383 ft^2/day (shallow alluvium over Imperial Formation) to 613 and 957 ft^2/day (alluvium near contact with Palm Springs Formation). Mark (1987, p. 50) estimated a hydraulic conductivity of 75 ft^2/day for a well in Yuha Estates (17S/10E-11G1) based on the Thiem equation. No data on any pumping test was found that would help estimate the specific yields of either the Imperial or the Palm Springs formations.

Palm Springs Formation

The Palm Springs Formation is composed of many thousands of feet of fluvial and deltaic sand, silt, and clay deposits. These terrestrial sediments were deposited by the ancestral Colorado River and are early Pleistocene based on an extensive collection of vertebrate fossils. The Palm Springs Formation is most extensively exposed southeast of the Coyote Mountains and in the Yuha Basin. Large outcrops also occur in the Jacumba foothills south of Ocotillo.

The lower part of the Palm Springs Formation contains probable brackish-water deposits, and a few species of Elphidium, Ostracoda, Chara, and Rotalia beccarii have been reported in the Palm Springs Formation by Tarbet and Holman (1944). The Palm Springs Formation thins to the west and grades laterally into the Canebrake Conglomerate in the Coyote Mountains.

No pumping test data was found on the Palm Springs Formation, but the material transmissivity and specific yield characteristic are believed to be similar to that of the

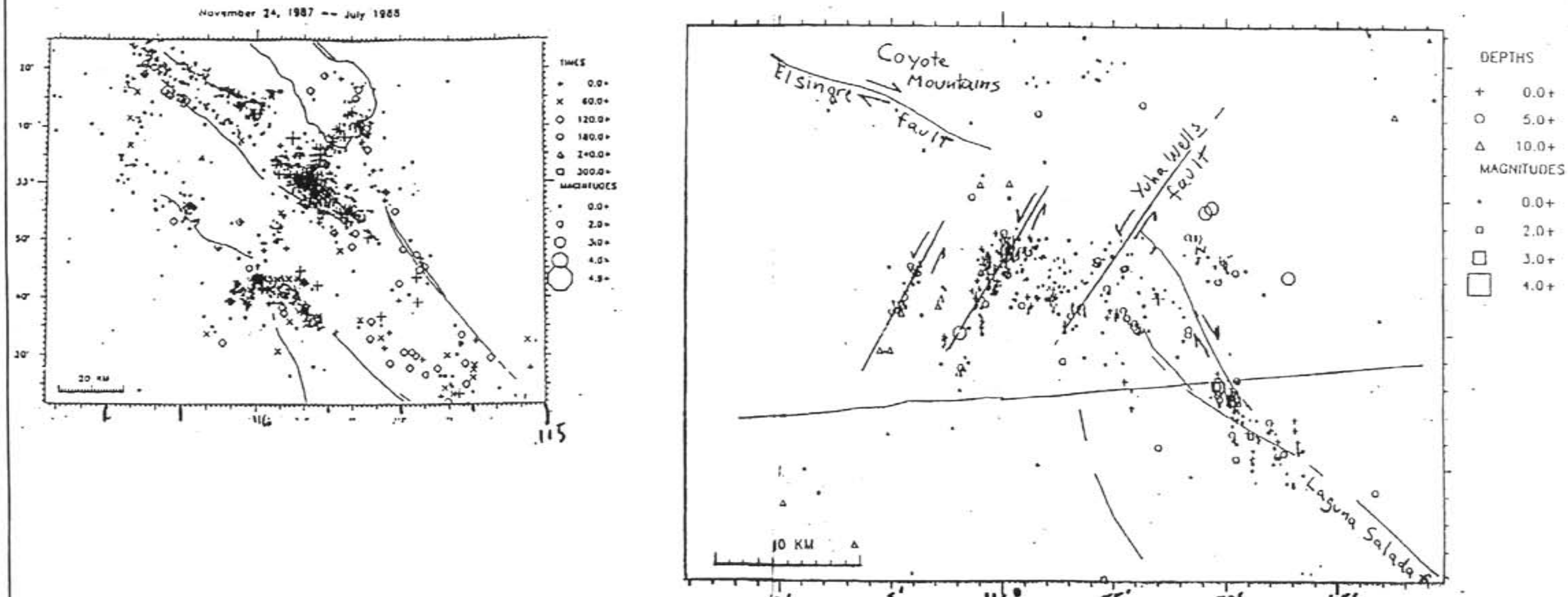


Figure [illegible]. Seismicity of the southern California region from the November 24 Superstition Hills sequence through July, 1988. Note the abundant earthquake epicenters along the southern Elsinore-Laguna Salada fault trend. The lower diagram shows a detail of the southern Elsinore-Laguna Salada fault area. Note the northeast-trending seismicity trend at the north end of the Laguna Salada fault, at lea t one of which corresponds to a northeast-trending left-lateral fault.

Bookman-Edmonston A Division of GEI Consultants, Inc.	Seismicity of the Ocotillo-Coyote Wells Basin Showing northeast-trending left-lateral faults. Reproduced with permission from unpublished work by Thomas Rockwell (2003)	11/18/03 FIGURE 3-2

PROJECT NUMBER 33890

Imperial Formation. However, local variations in hydrological properties could be significant depending on the depositional facies involved.

Older Quaternary Alluvium and Terrace Deposits

Loelta and others (1975) recognize two older alluvium deposits in the Ocotillo/Coyote Wells Basin. Older Quaternary alluvium composed of poorly consolidated older alluvial fan and sand is distinguished by a surface of desert varnish and occurs near the Jacumba foothills and constitutes much of the area northwest and west of Yuha Estates. Terrace deposits are a thin pediment gravel and sand, formed mostly on the Palm Springs Formation, which occur as less than 50-foot thick deposits over much of the eastern part of the basin. The terrace deposits appear to grade latterly into older Quaternary alluvium deposits. Both older Quaternary alluvium and terrace deposits appear to be highly permeable and probably have hydrological parameters similar to Recent alluvium.

Recent Alluvium

Recent alluvium is present in the basin floor and locally in large canyons of the surrounding mountains. It covers the Ocotillo and Coyote Wells area and is restricted in narrower washes towards the east where erosion has cut into the older formations. The Recent alluvium appears to be thicker in the Ocotillo and Coyote Wells area and to the west. Recent alluvium also appears to thicken to the south of Yuha Estates to a maximum near the US-Mexico Border.

Skrivan (1977, p. 25) reports a transmissivity value of 6,700 ft^2/day for an unspecified well test near Ocotillo. B-E obtained similar transmissivity values of 5,800 ft^2/day and 6,700 ft^2/day from two well draw-down tests conducted on US Gypsum Well #6 using the Neuman Method (Appendix A). Test results produced specific yield values of 8.3 and 10.6 percent for the alluvial material.

Structural Geology

The following sections describe the major structural features of the Ocotillo/Coyote Wells Basin. The Basin's geologic structure is an important factor on the control of groundwater flow. Several authors have interpreted the structure of the Ocotillo/Coyote Wells Basin, and their general findings have been included with recent work by B-E to produce the generalized geologic cross-sections shown on Figures 3-1A through 3-1F. These cross-sections were constructed utilizing drilling records and the information described below.

Faults

Early work on the structure of the Ocotillo/Coyote Wells Groundwater Basin generally concluded that the Elsinore fault and Laguna Salada faults were continuous under the alluvium. However, recent work by Dr. Thomas Rockwell, Ph. D. of San Diego State University shows that the Elsinore fault and Laguna Salada faults may not be continuous, but rather offset by zones of northeast-trending left-lateral faults (Figure 3-2). These left-lateral fault zones relieve stresses imposed by movement of the right-lateral Elsinore fault to the Laguna Salada fault by left-lateral strike-slip movement and rotation. The Yuha Wells fault is one of these left-lateral fault zones for which corresponding surface movement had been found (Rockwell, personal communications 2003). Jansen (1983) and Mark (1987) conclude that there is no evidence for an Elsinore - Laguna Salada fault hydraulic barrier to the east between the southern end of the Elsinore fault and the northern end of the Laguna Salada fault. Both Jansen (1983) and Mark (1987) attribute the steeper hydrologic gradient east of the proposed Elsinore fault - Laguna Salada fault continuation to decreased permeability of the Palm Springs and Imperial formations relative to the alluvial material on the west. Williams (1987) also concludes that the steeper hydrologic gradient is due to decreased permeability of the Palm Springs and Imperial formations, but suggests that the Elsinore - Laguna Salada fault may have uplifted the Palm Springs and Imperial formations on the east side of the fault. B-E's work concurs with Jansen (1983) and Mark (1987), and suggests that the steeper hydrologic gradient east of the proposed Elsinore - Laguna Salada fault continuation is caused by a decrease in the permeability of the Palm Springs and Imperial formations. The steep hydraulic gradient in the Yuha Wells area is accepted as related to the Laguna Salada fault.

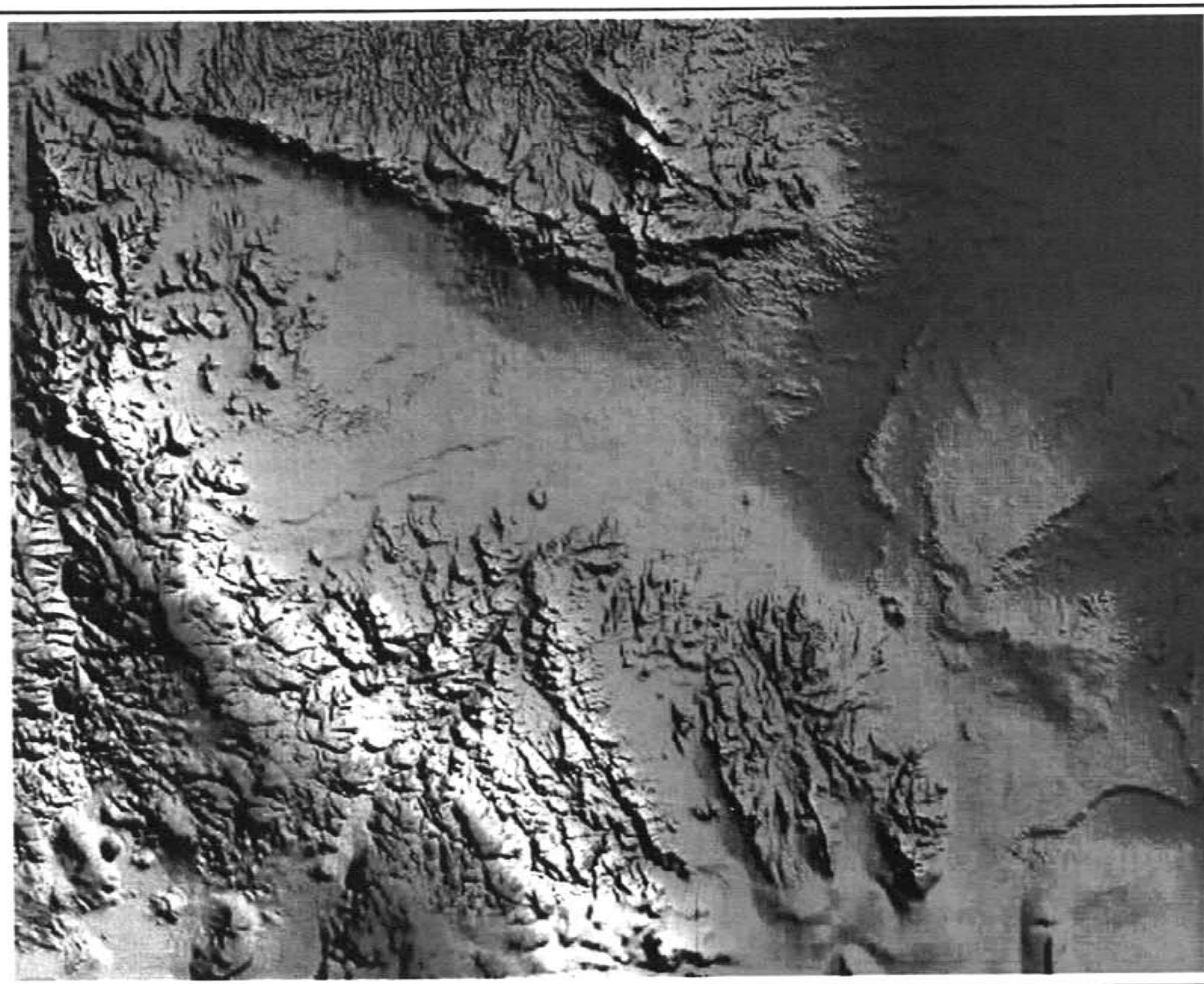
Other subsurface faults probably exist in the Ocotillo/Coyote Wells Groundwater Basin. Several faults have been postulated based on geophysical methods. These faults may have an effect on groundwater flow and have been included in the model. Mark (1987) studied the subsurface geology in the Ocotillo/Nomirage area with electrical resistivity surveys and concluded that numerous faults have produced a complex subsurface in which the Palm Springs Formation is juxtaposed against Recent alluvium in the Ocotillo/Nomirage area. Faulting probably produced the juxtaposition of the Palm Springs Formation and Recent alluvium. Well driller logs also suggest that subsurface features have produced an uplifted Palm Springs Formation relative to the Recent alluvium. Well 16S/9E-36G4 shows zones of yellow clay that could be related to the Palm Springs Formation as shallow as 205 feet below surface. Wells 16S/9E-36G3 and 16S/9E-36F3 may have intercepted the Palm Springs Formation at depths of 573 and 634 feet, respectively. Other wells in the Ocotillo area do not appear to have encountered the Palm Springs Formation. Mark (1987) concludes that the Palm Springs Formation in the vicinity of the Nomirage area affects groundwater flow and chemistry. This water quality affect is also seen in the Yuha Estates area where, as described above, the Palm Springs Formation appears to be the source of some of the groundwater in that area. Thus, in general terms the top of the Palm Springs Formation appears to be shallower to the east, and constitutes most of the subsurface geology east of the Nomirage area and, except for isolated areas, occurs at depths of 550 feet or greater in the Ocotillo area.

Folds

In addition to the Elsinore fault and Laguna Salada faults, the Ocotillo/Coyote Wells Basin contains a large northeast-southwest trending anticline. Jansen (1983) notes the occurrence of the anticline, but did not make any conclusions as to its possible importance to groundwater flow. The anticline is clearly visible on examination of exposed strata at De Anza Overlook in the SW ¼ SW ¼ SW ¼ of Section 6 T17S/R11E and at other locations in the exposed rim of the badlands type topography of the Yuha Basin area. At this site, the 5 to 10 degree south dipping limb of the anticline and the gently (< 5°) dipping northern limb of the anticline are marked by the contact between the Palm Springs Formation and overlying terrace deposits. Further examination of the Palm Springs – terrace deposits contact west of the De Anza Overlook shows that the anticline is plunging to the southwest, and that the terrace deposits is in many places eroded revealing the underlying Palm Springs Formation. The apex of the anticline is approximately located in the area of Yuha Estates. Anticlines similar to this one are commonly found adjacent to strike-slip faults in California.

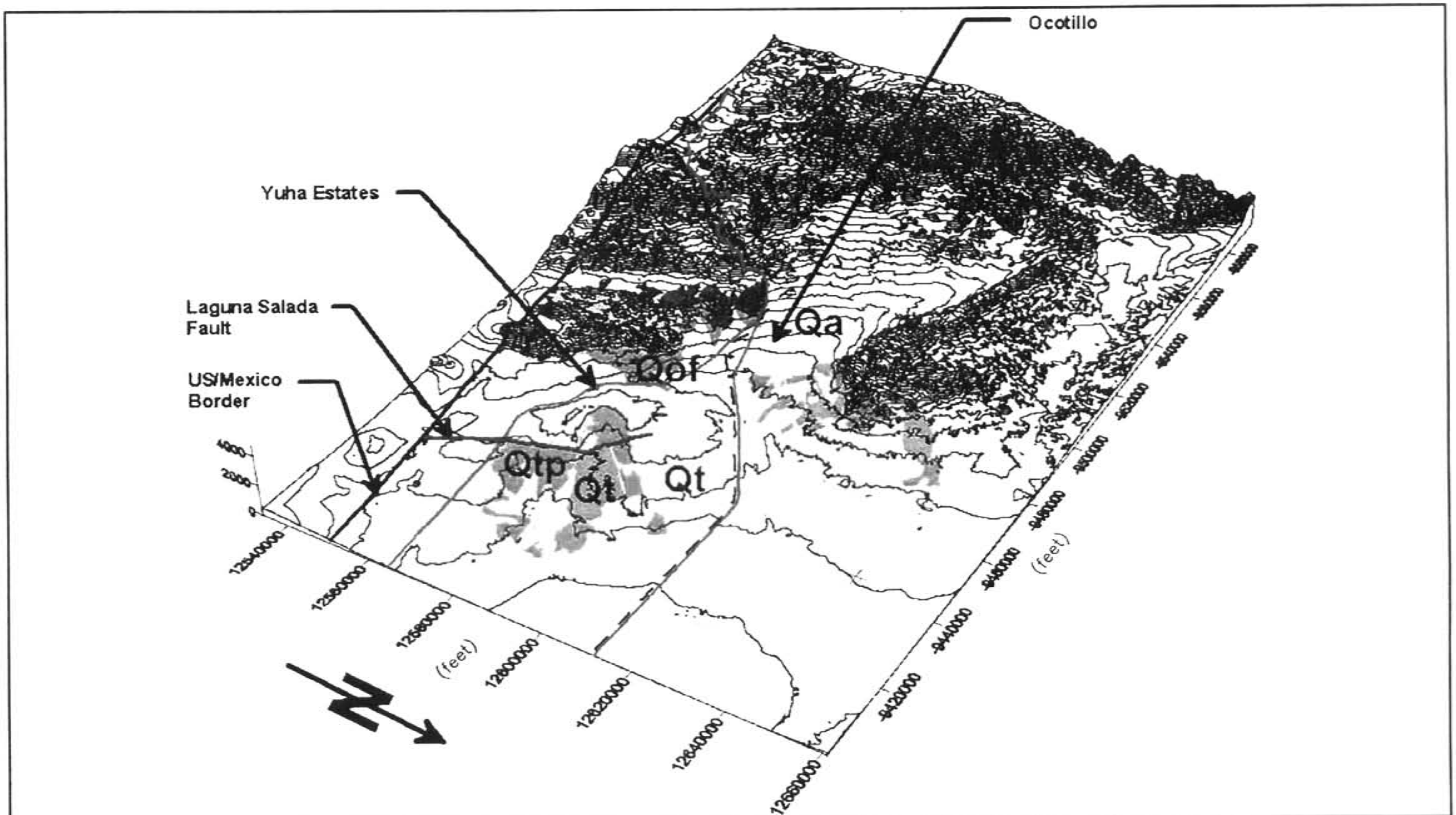
In addition to a structural subsurface high, wells in the Yuha Estates area are located on a pronounced topographic high. This topographic high is observable in the relief digital elevation model (DEM) in Figure 3-3, and on the DEM model in Figure 3-4. This topographic feature has produced a surface drainage divide in the Yuha Estates area in which surface waters north of Yuha Estates drain northeast and surface water south of Yuha Estates drains to the south or into depressions to the south.

Based on the geology discussed above and on driller logs from wells 17S/10E-11A1, 17S/10E-11H3 and 17S/10E-11G2 the wells in the Yuha Estates area were drilled on a topographic high near the apex of a northeast-southwest trending anticline which plunges under the Yuha Estates area just to the east of Yuha Estates. The terrace deposits, which cover most of the small hills to the east of Yuha Estates, are probably less than 50 feet thick. The Palm Springs Formation, which is exposed just to the east, underlies the terrace deposits. Driller logs suggest that alluvium covering the terrace deposits and Palm Springs Formation is only about 270 to 330 feet thick, and well logs show that most well perforations are at least partially within the Palm Springs Formation. As discussed above, transmissivity values for alluvial materials close to the



Bookman-Edmonston A Division of GEI Consultants, Inc.	Digital Elevation Model of the Ocotillo-Coyote Well Basin Note the uplifted area in the left-corner. This area is a northeast-southwest trending anticline which plunges to the southwest.	11/18/03 FIGURE 3-3

PROJECT NUMBER 33890



Bookman-Edmonston A Division of GEI Consultants, Inc.	3-D View of Ocotillo-Coyote Well Basin. Note the relationship of Yuha Estates to the anticline. Note the Imperial Formation (Ti), Palm Springs Formation (Qtp), Terrace deposits (Qt), Quaternary alluvium (Qa).	11/18/03 FIGURE 3-4

PROJECT NUMBER 33890

Palm Springs Formation, and the transmissivity values within the Palm Springs Formation are generally low (from 383 ft^2/day to 957 ft^2/day).

3.2 GROUNDWATER CONDITIONS

Based on the geology discussed above, groundwater conditions were determined by Bookman-Edmonston to reflect the current understanding of Ocotillo/Coyote Wells Groundwater Basin hydrology. Groundwater level and quality data, and their subsequent discussions in Bookman-Edmonston (1996), have not been modified or changed.

The Ocotillo/Coyote Wells Basin is an unconfined aquifer consisting of an upper layer (layer 1) of higher permeability material overlaying an older layer (layer 2) of less permeable material. The higher permeability material is composed of Recent alluvium, older Quaternary alluvium and terrace deposits, whereas less permeable material consists of the Palm Springs and Imperial formations. Layer 1 thins to the east in the Basin where outcrops of Palm Springs or Imperial formation are covered by a thin layer of terrace deposits. In the eastern part of the Basin, layer 1 is absent for modeling purposes, as no saturated thickness of layer 1 is present (Figure 5-1). Well log lithologic descriptions and geologic mapping suggests that layer 1 is thickest in the Ocotillo area, and at the extreme southern part of the basin near the U.S.- Mexico Border.

Two northeast-southwest groundwater flow barriers occur in the Ocotillo/Coyote Wells Basin. These flow barriers are related to the northeast-trending left-lateral faults described above. The groundwater flow model (Section 5) required these barriers to produce the groundwater gradient change observed in well data southeast of Ocotillo, and the slow groundwater recovery rates in the Yuha Estates area wells. The model parameters used to characterize these groundwater flow barriers are discussed in Section 5.2.

The amount of water in storage in the Ocotillo/Coyote Wells Basin is estimated to be about 1.2 M acre-feet. This estimate is based on contours of groundwater elevation, the assumed elevations of the bottom of layers (shown in Figures 5-4 and 5-5), and the storage coefficient of 2 and 10 percent used in the model.

With the exception of the town of Ocotillo and communities of Nomirage, Yuha Estates, West Texas, and Painted Gorge, the basin is an undeveloped desert. The U. S. Bureau of Land Management owns a great deal of the land over the Ocotillo/Coyote Wells Groundwater Basin. Below is a description of both land and water use within the study area.

4.1 LAND USE

The Department of Water Resources conducted a land use survey in 1989. Data from this survey was plotted on USGS 7 1/2 minute quadrangle mapping based upon aerial photographs and field inspection. The entire basin is native vegetation excepting the town of Ocotillo and the communities of Nomirage, West Texas, and Yuha Estates. The communities of Painted Gorge and Coyote Wells were not shown on this land use map. Coyote Wells consists of a motorhome and a trailer located behind an abandoned service station-grocery store. Presented in Table 6-1 is a summary of the 1989 land use in the area.

Table 4-1
1989 Land Use

Community	Acres
Ocotillo	
Commercial	8
Residential	115
Suburban Residential	2
Flowers or Nursery	1
Total	126
Nomirage	
Suburban Residential	139
West Texas	
Suburban Residential	3
Yuha Estates	
Suburban Residential	2

4.2 WATER USE

In addition to water use by the communities indicated previously, between 1974 and 1978 water withdrawn from Well 16S/9E-25K2 was exported from the Basin for industrial use and for sale to Mexico. Below are U.S. Gypsum's historic water use and estimated water use from sand and gravel operations, urban water use, agricultural water use, and export to Mexico.

U.S. Gypsum

In 1925, the Pacific Portland Cement Co. drilled a well at Plaster City. The well produced poor quality water and was abandoned. A well was then drilled in the Ocotillo area to supply water to the Plaster City Facility. This well produced good quality water. U.S. Gypsum purchased the Plaster City facility about 1946 and has since drilled six production wells in the Ocotillo area. Three of the wells have been abandoned over time. Water from the three existing production wells is transported to Plaster City by pipeline. The location of U. S. Gypsum well numbers 4, 5, and new 6 are shown on Plate 1. The new No. 6 well was drilled in 1999 and is located 37 feet from the old well No. 6 well.

U.S. Gypsum provided estimates of Plaster City water use to the USGS for the years 1925 through 1975 for preparation of the report by Skrivan (1977). Skrivan (1977) estimated that U.S. Gypsum's groundwater pumpage had increased from approximately 150 acre-feet per year in 1925 to approximately 600 acre-feet in 1975. Table 4-2 presents a summary of U.S. Gypsum well production for years 1976 through 2002.

Table 4-2
Historical U. S. Gypsum Well Production

Year	Well Production (ac-ft/y)
1976	413
1977	472
1978	491
1979	496
1980	469
1981	261
1982	456
1983	472
1984	472
1985	489
1986	521
1987	512
1988	519
1989	492
1990	476
1991	428
1992	380
1993	363
1994	379
1995	327
1996	367
1997	332
1998	333
1999	372
2000	324
2001	434
2002	533

Sand and Gravel Operations

The 1995 Ocotillo/Nomirage Community Area Plan (ONCAP) identifies Val-Rock and Farmers Land Leveling as water users of 6 and 8 acre-feet per year, respectively. Several other sand and gravel operations are located throughout the area, including Caltrans, Imperial County Public Works, and Granite Construction. However, no estimates of water use were presented in the ONCAP for these operations.

Table 4-3
Population and Applied Water Use
Population

Community	1975 [b]	1980 [b]	1990 [a]	1995 [b]	2010 [b]	2025 [b]
Painted Gorge	31	33	38	41	50	62
Ocotillo [c]	258	277	319	342	421	519
West Texas	8	9	10	11	13	16
Nomirage	67	72	83	89	110	135
Yuha Estates	8	9	10	11	13	16
Total	372	400	460	494	607	748

(a) - Population based on 1990 census

(b) - Population based upon annual population growth of 1.4% from 1980 to 1990

(c) Population of Ocotillo in summer months (population estimated to more than double during winter months).

APPLIED WATER USE
(Acre-Feet per Year)

Community	1975	1980	1990	1995	2010	2025
Painted Gorge [a]	2.1	2.2	2.6	2.7	3.4	4.2
Ocotillo [b]	72.3	77.6	89.3	95.8	118.0	145.3
West Texas [a]	0.5	0.6	0.7	0.7	0.9	1.1
Nomirage [c]	7.5	8.1	9.3	10.0	12.3	15.1
Yuha Estates [c]	0.9	1.0	1.1	1.2	1.5	1.8
Total	83.3	89.5	103.0	110.4	136.1	167.5

(a) - Water use rate of 60 gpd/capita

(b) - Water use rate of 200 gpd/capita

(c) - Water use rate of 100 gpd/capita

Urban Water Use

The Ocotillo/Nomirage community area encompasses approximately 108,000 acres which includes the townsite of Ocotillo, and the communities of Nomirage, Painted Gorge, West Texas and Yuha Estates. The locations of each of these communities is presented in Figure 3-1. According to the ONCAP, the Ocotillo/Nomirage community area has 366 dwelling units and a population of 460. The entire planning area is dependent upon groundwater and is not served by a sanitation or sewer treatment facility.

The communities of Nomirage and Yuha Estates rely exclusively upon individual water wells for their water supply. Coyote Valley Mutual Water Company (CVMWC), Ocotillo Mutual Water Company (OMWC), and Shell Canyon Water Company (SCWC) are located in Ocotillo and serve most of Ocotillo. CVMWC serves 125 connections, OMWC serves 80 connections, and SCWC serves 16 connections. The remainder of Ocotillo relies upon individual water wells for their water supply. Westwind Water Company is also located in Ocotillo and provides water by privately owned trucks to Painted Gorge, West Texas, and construction sites in the area. Groundwater underlying Painted Gorge is unsuitable for drinking and all water must be trucked in. Groundwater underlying West Texas is suitable for bathing and landscape irrigation, but drinking water must be trucked in.

From population data available in the literature, and from the 1980, 1990 and 2000 population census information, estimates of population in each community within the study area were made for years 1980 and 1990. During the 1980 to 1990 period, the population increased by approximately 1.4 percent annually, but from 1990 to 2000 the population decreased by 1.1 percent totally (from 460 to 455). However, for water use estimates an assumption of a 1.4 percent constant annual population increase was computed. Table 4-3 provides a summary of population estimated for selected years from 1975 through 2025. With the exception of Ocotillo, the population of each of these communities is relatively constant throughout the year. The population of Ocotillo is estimated to more than double during winter months.

A water use rate of 200 gallons per day per capita was computed for Ocotillo based upon population and water use records from CVMWC and OMWC. The residences in Ocotillo are typically landscaped with trees, shrubs and desert vegetation which use drip (or other low volume) irrigation. Residences which are vacated during the summer still require landscape irrigation which causes the per capita water use rate to increase. A water use rate of 100 gpd/capita was assumed for Nomirage and Yuha Estates. These communities have a lower per capita water use rate because they have less irrigated landscaping than in Ocotillo and less seasonal population variation. A water use rate of 60 gpd/capita was assumed for Painted Gorge and West Texas based upon estimated Westwind Water Company water use. Water use rates in these areas are expected to be lower than other areas because water must be trucked in and there is little or no irrigated landscape. Water use was computed for each community based upon estimated population and water use rates. Computed water use estimates for selected years during the 1975 through 2025 period are presented in Table 4-3.

Agricultural Water Use

It is a goal of ONCAP to eliminate commercial agriculture from the area. In field inspections of the project area in February 2003, no commercial agricultural land use was observed. This is consistent with the DWR 1989 land use, which indicated only one acre of flowers or nursery in the study area.

Estimates of historical agricultural use for this area was not found in the literature, however, Imperial County Health Department records indicate that the SCWC provided an average water use of 29,000 gallons per day (32 af/yr) to agriculture in 1981.

Export to Mexico

Water has historically been pumped from wells in Ocotillo and Yuha Estates for export to Mexico. The largest and most recent exporter of water to Mexico was the McDougal Water Company. The McDougal Water Company operated one well in Ocotillo and one in Yuha Estates.

The McDougal Ocotillo well (well no. 16S/9E-25K2) was drilled by Thomas Clifford in 1958. This well originally served approximately 10 residents in Ocotillo. In 1967 Mr. Clifford began selling water to Mexico, as well as serving Ocotillo Unit No. 3. On December 1, 1977, McDougal Water Company took over the operation and installed a new 50-horsepower motor and second loading spout. A fleet of over 20 trucks made multiple trips daily, sometimes resulting in over 50 trips per day. The pumpage varied according to time of year and other factors, with the heaviest pumpage during the summer. Exports to Mexico from this well were ceased sometime near 1984. Export from this well can be estimated from energy use. Energy use records were available from IID for years 1974 through 1978. Table 4-4 presents a summary of energy use, total well production and water exported to Mexico from McDougal's Ocotillo well.

Table 4-4 Well Production and Export to Mexico Well No. 16S/9E-25K2			
Year	Energy Use (Kwh)	Total Pumped (af)	Exported to Mexico (af)
1974	55,460	141	138
1975	83,760	214	211
1976	84,580	216	213
1977	88,280	225	222
1978	54,940	140	137

In the above table, the total amount of water pumped is computed based upon 2.55 acre-feet per MWh, (from the 1979 Copley International Corporation Study). The amount of water exported to Mexico assumes that 3 acre-feet per year was used to serve residents in Ocotillo Unit No. 3.

McDougal Water Company had a similar operation in Yuha Estates (Well No. 17S/10E-11G4), which began in September 1977. Commercial export was ceased from this well on September 1, 1982. A 1979 report by David Huntley, estimated that 143 acre-feet per year was pumped from this well.

SECTION 5 GROUNDWATER FLOW MODEL DEVELOPMENT

A groundwater flow model (1996 model) was originally developed and reported in Bookman-Edmonston (1996). Aquifer parameters, boundary conditions, and water levels used in the 1996 model were developed based on Skrivan (1977). Some input parameters (as discussed in this report), such as transmissivities, were modified from Skrivan (1977) in the 1996 model where additional studies, and well pumping test data were available.

The new model also incorporated additional information, such as well pumping tests for US Gypsum Well No. 6 conducted in November 2002 (Appendix A), and geologic studies conducted by B-E in 2002 (see Section 3 Geology and Hydrogeology). In developing this model, hydrologists Andrew Kopania of Resource Design Technology, Inc. and Peter Martin of the USGS provided comments and suggestions about the model's structure, input parameters and boundary conditions. The new model incorporated their comments and suggestions. The new model provides higher resolution outputs by using a finer model grid.

The new groundwater flow model was used to determine the impacts of future groundwater pumping scenarios on groundwater elevations. The purpose of the model was to help predict changes in groundwater elevations and quality that result from future conditions. The groundwater flow model computes changes in groundwater elevations based on groundwater extractions from wells and from recharge to the groundwater basin.

The modeling effort consisted of two phases; phase one was model development and calibration described in this section, and phase two was the future scenario evaluation described in Section 6. Model calibration was accomplished using the groundwater model to compute groundwater elevations over a historic time period. The computed groundwater elevations were compared with actual groundwater elevation measurements. Adjustments were made to the model input until the computed water elevations were able to reasonably represent historical measured water elevations.

5.1 MODEL DESCRIPTION

The groundwater flow model was developed using MODFLOW. It is a three-dimensional finite difference groundwater flow model developed by the USGS. MODFLOW consists of a main program and a series of highly independent subroutines called modules. These modules, in turn, are grouped into packages that deal with specific features of the hydrologic system or a method for solving finite-difference equations.

MODFLOW generates a large amount of data, which requires pre- and post-processors to make the model development less laborious. The Groundwater Modeling System (GMS) was used as the pre-and-post processor.

5.2 MODEL FORMULATION

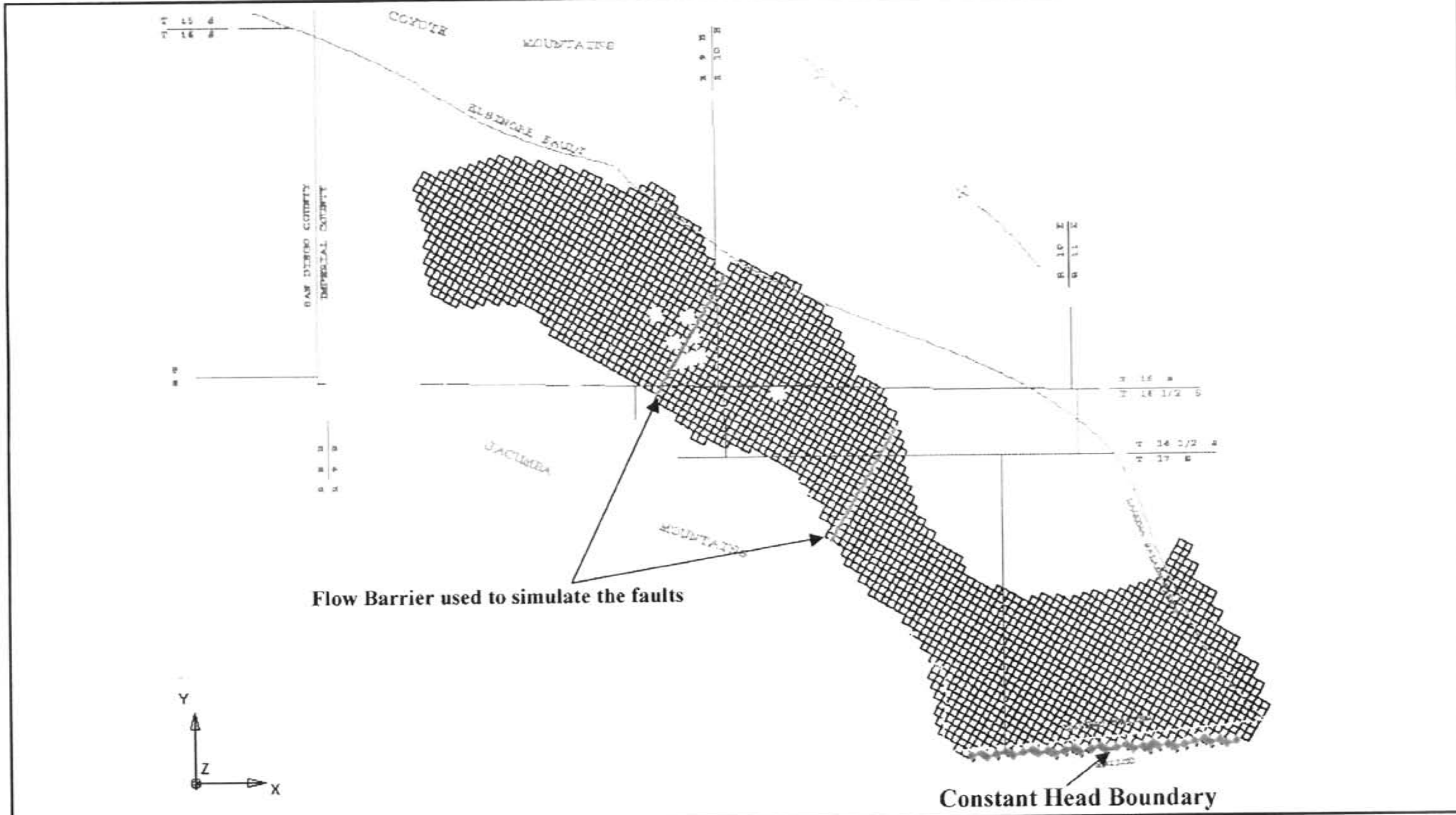
An AutoCAD base map was created which shows the boundaries of the model area. A finite-element grid system was superimposed upon the base map. The groundwater Basin was modeled as a two-layer aquifer system. The younger alluvial material was modeled as layer 1 (top layer) and tighter Tertiary deposits were modeled as layer 2 (bottom layer). The model grid consisted of 90 rows and 170 columns modeled at 1/8 mile spacing. The grid was oriented in the general direction of groundwater flow. The layer 1 and layer 2 grids with the active cells, and boundary conditions are presented in Figures 5-1 and 5-2 respectively.

All inputs and outputs to the groundwater model were accomplished by assigning values to the cells. Inputs at each cell consisted of initial head conditions, aquifer parameters, pumpage, and recharge. As shown in Figure 5-2, the base of the Jacumba and Coyote Mountains were modeled as a no flow boundaries. The Laguna Salada Fault on the east side of the model was also defined as no flow boundary. The Mexican border, and the northeastern limit of the model were assumed to be constant head boundaries.

Values for horizontal hydraulic conductivity were based on the geologic condition described in the Section 3. A horizontal hydraulic conductivity of 15 feet per day was used for the layer 1. A horizontal hydraulic conductivity of 1 foot per day was used for most of the area in layer 2 (the USGS Borego model, which simulated similar materials as found in layer 2, the horizontal hydraulic conductivity was estimated to be 1 ft/d from available pumping tests and lithologic descriptions, Peter Martin's email dated September 15, 2003). As shown in Figure 5-3, a horizontal hydraulic conductivity of 0.3 feet per day was used in the model layer 2 to reflect anticline material east of the Yuha wells. The values of vertical hydraulic conductivity were calculated as one percent of the values of horizontal conductivity for each layer.

The bottom elevations of layer 1 and layer 2 are shown in Figures 5-4 and 5-5, respectively. Bottom elevations for layer 1 and 2 were based on the geologic review described in Section 3.

Two northeast-southwest trending flow barriers in both layer 1 and layer 2 were used to simulate faults. These faults are described in Section 3. The locations of these two



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Ocotillo/Coyote Wells Groundwater Study

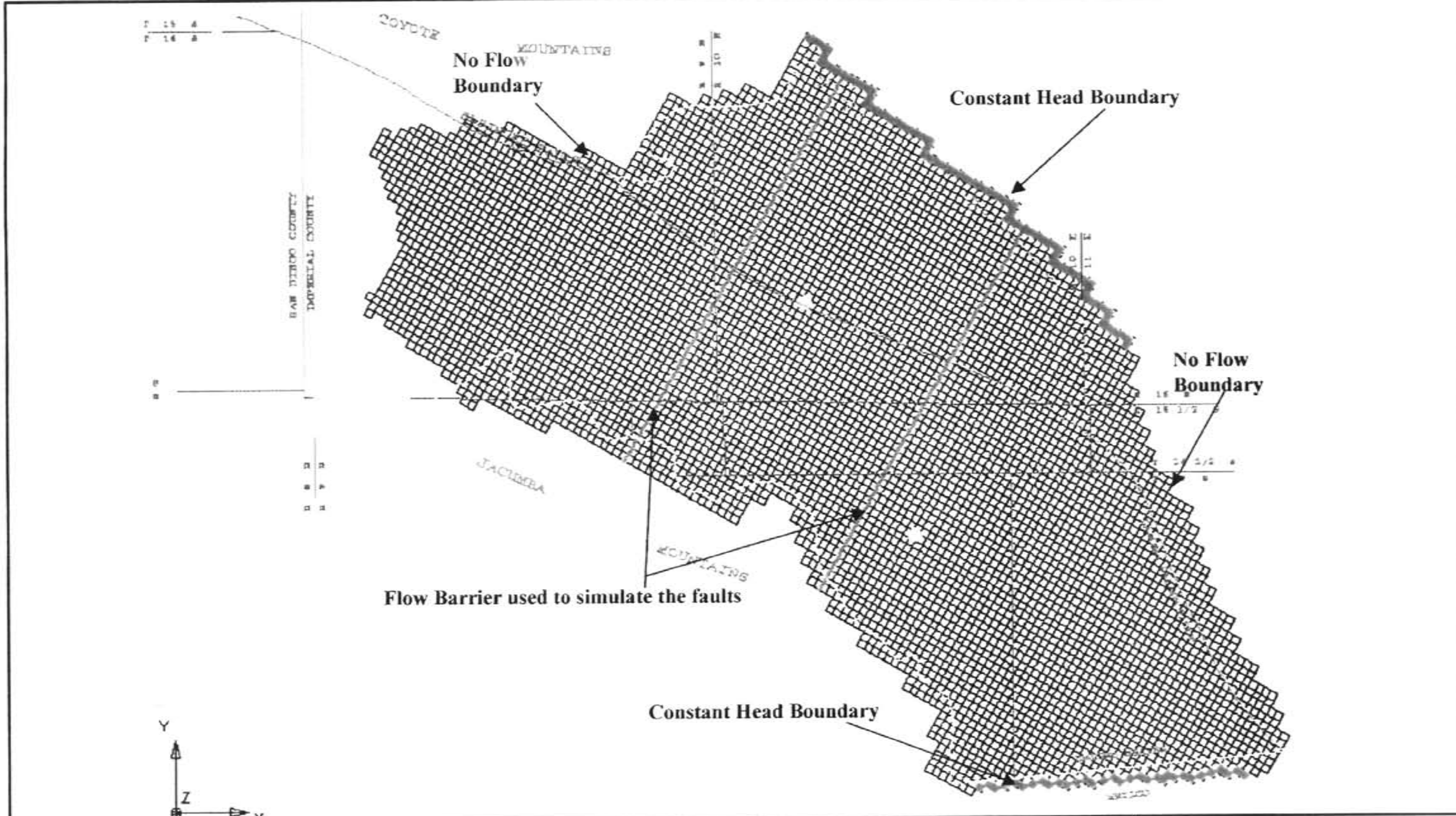
Layer 1 Grid, Boundary Condition and Barrier Location

U.S. Gypsum Company

10/10/03

FIGURE 5-1

PROJECT NUMBER 111320



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Ocotillo/Coyote Wells Groundwater Study

Layer 2 Grid, Boundary Condition and Barrier Location

U.S. Gypsum Company

10/10/03

FIGURE 5-2

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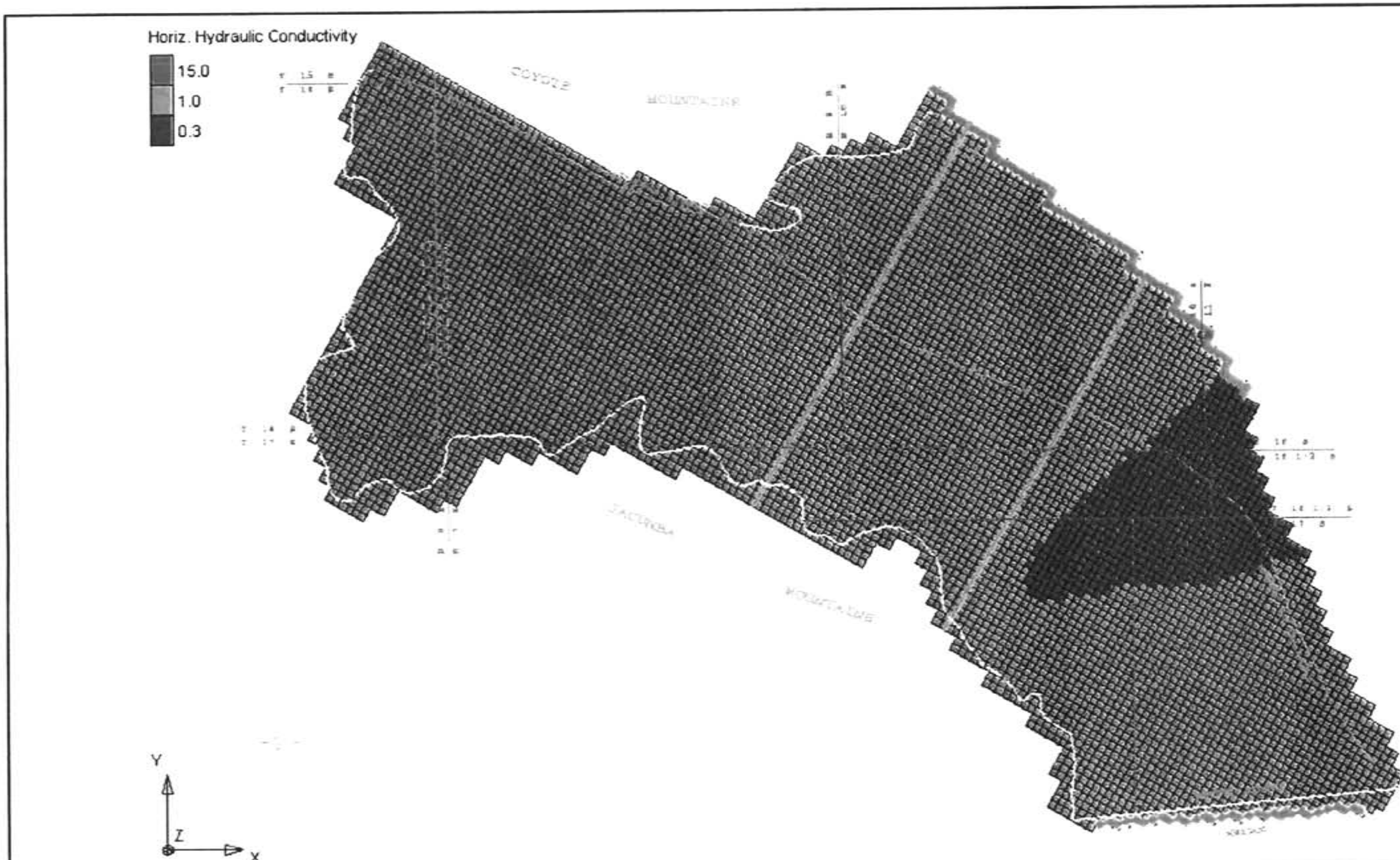
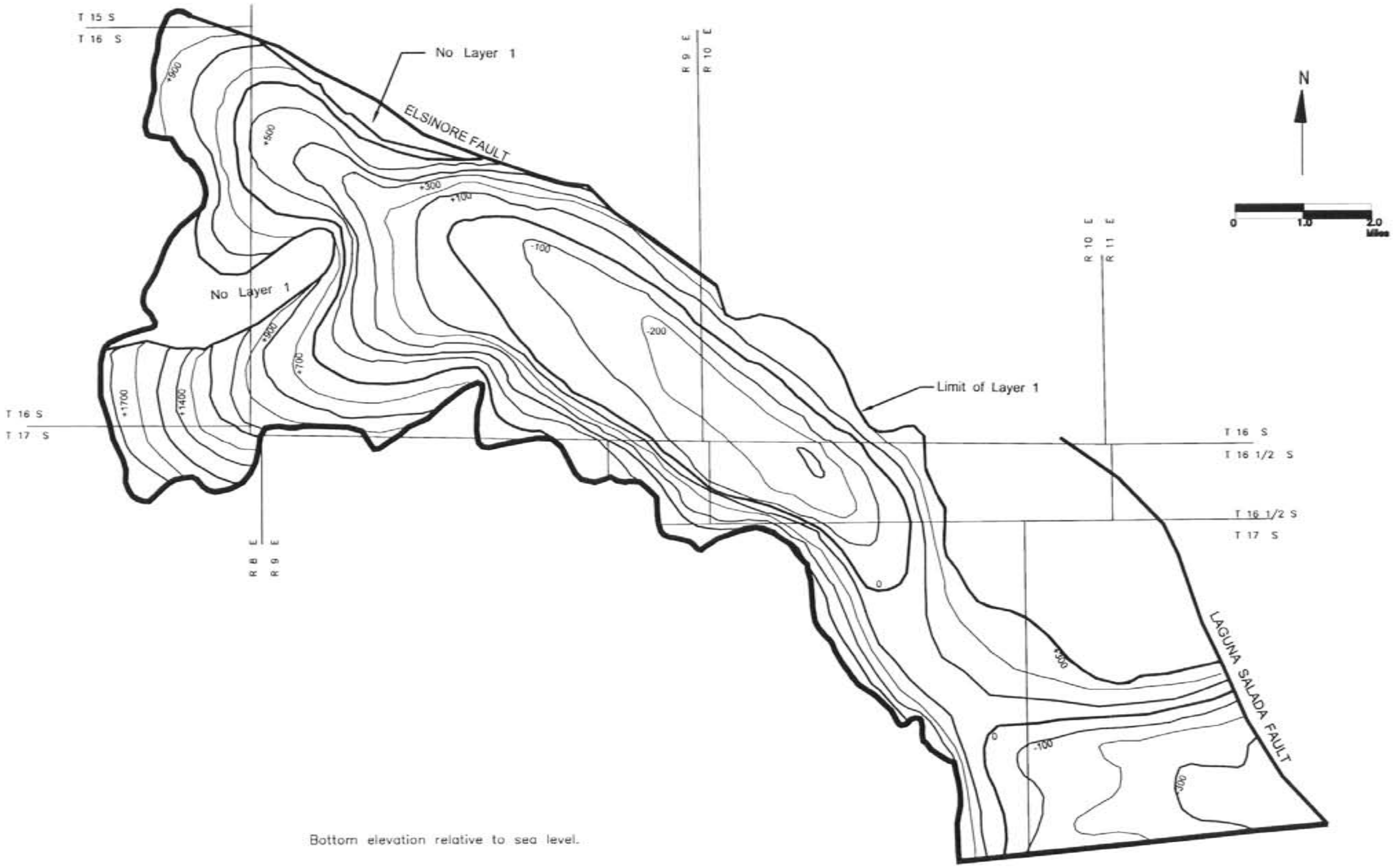


Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 2 Horizontal Hydraulic Conductivity (feet/day) U.S. Gypsum Company	10/10/03 FIGURE 5-3

PROJECT NUMBER 111320



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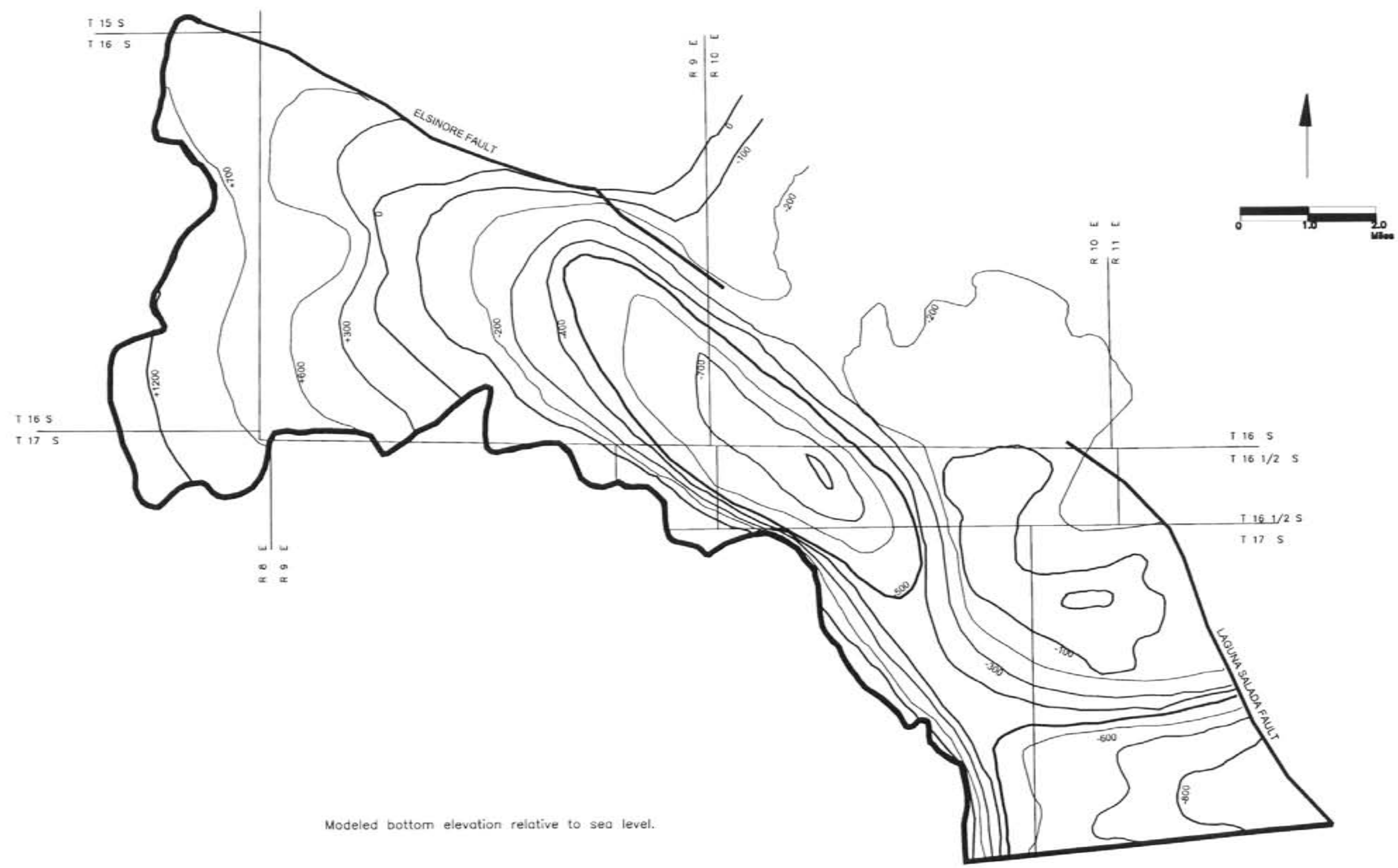
Ocotillo/Coyote Wells Groundwater Study
Model Geology - Bottom of Layer 1
U.S. Gypsum Company

10/9/03

FIGURE 5-4

111320.1



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Model Geology - Bottom of Layer 2 U.S. Gypsum Company	10/9/03 FIGURE 5-5

111320.1

barriers in layer 1 and layer 2 are shown on Figures 5-1 and 5-2, respectively. The barriers were simulated using the Horizontal Flow Barrier Package in MODFLOW. The permeability of the barriers in the model are defined by hydraulic characteristics, which equals the hydraulic conductivity divided by the width of the fault. The final values of hydraulic characteristic are determined by model calibration. Final calibrated values of hydraulic characteristic for layer 1 and layer 2 are 0.003 1/day and 0.0003 1/day, respectively.

The specific yield is the percent of water available in storage per total volume. As described in the Section 3, the well pumping test used to determine a specific yield was conducted by B-E (Appendix A) on US Gypsum's Well No. 6. The pumping test data was analyzed using the Neuman Method on data at the observation well US Gypsum Old #6 during two draw-down tests on US Gypsum Well No. #6. The results of these tests yielded values of 8.3 and 10.6 percent for recent alluvial material. The specific yield of 10 percent for layer 1 was used in the model. The specific yield of the Palm Springs and Imperial formations are unknown. However, the fine-grained and clay rich nature of the material suggests that the specific yield is likely to be somewhat less then that of the alluvium, perhaps in the range of 1 to less than 5 percent. The value of 2 percent was used as a conservative figure for model layer 2.

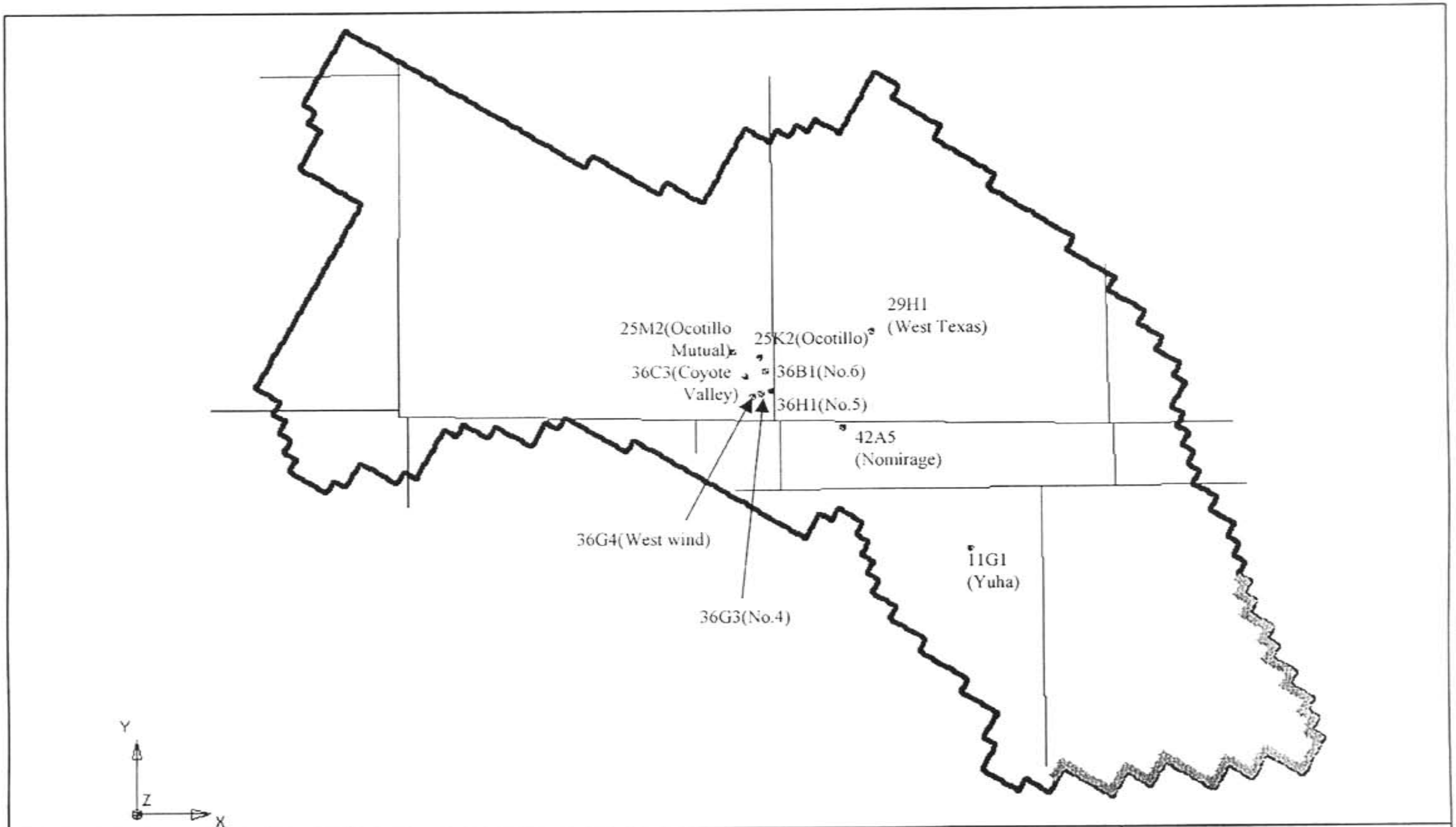
Pumping amounts were assigned to active cells in the basin to simulate groundwater production. This pumping is due to the production of U.S. Gypsum wells, local pumping at the communities of Ocotillo, Yuha Estates, Nomirage and West Texas, and pumping for export to Mexico by the McDougal Water Company. From 1925 to 1975 total pumpage reported by Skrivan (1977) was used in the current model. The pumpage from 1976 to 2002 was provided by U.S. Gypsum. Table 5-1 shows the pumpage in all wells from 1976 to 2002. The locations of pumping wells are shown in Figure 5-6.

The source of recharge to the groundwater basin is from precipitation that falls directly on the Basin and stream runoff from the Coyote and Jacumba Mountains. The Basin has a mean annual precipitation of 3 to 4 inches on the valley floor and up to 8 inches in the Jacumba Mountains.

All streams tributary to the study area are ephemeral and flow only during or shortly after large rainfall events. These stream channels form large alluvial fans as they expand out into the valley from the canyon mouths. The sediments making up these fans are coarser, thicker, and more permeable closer to the mountains. Drainages tributary to the study area include Palm Canyon Wash, Devils Canyon, Myer Creek, Davies Canyon, Pinto Wash, and several unnamed tributaries as presented in Figure 5-

Table 5-1
Historic Groundwater Pumping (Acre-Feet/Year)

	US Gypsum				Export to Mex McDougal Water Co.								
Year	Well No. 4	Well No. 5	Well No. 6	Total	Ocotillo	Yuha Estates	Coyote Valley	Ocotillo Mutual	Westwind	Yuha Estates	Nomirage	West Texas	Total Net GW Pumpage
1976	207	103	103	413	215	0	44	29	2	1	8	1	713
1977	236	118	118	472	224	0	45	30	2	1	8	1	782
1978	245	123	123	491	139	137	45	30	2	1	8	1	854
1979	248	124	124	496	139	137	46	31	3	1	8	1	861
1980	235	117	117	469	139	137	47	31	3	1	8	1	835
1981	131	65	65	261	139	137	47	32	3	1	8	1	628
1982	228	114	114	456	139	137	48	32	3	1	8	1	824
1983	236	118	118	472	139	0	49	32	3	1	8	1	705
1984	236	118	118	472	139	0	49	33	3	1	9	1	706
1985	245	122	122	489	2	0	50	33	3	1	9	1	588
1986	261	130	130	521	2	0	51	34	3	1	9	1	621
1987	256	128	128	512	2	0	51	34	3	1	9	1	613
1988	259	130	130	519	2	0	52	35	3	1	9	1	622
1989	246	123	123	492	2	0	53	35	3	1	9	1	596
1990	238	119	119	476	2	0	54	36	3	1	9	1	581
1991	214	107	107	428	2	0	54	36	3	1	9	1	535
1992	190	95	95	380	2	0	55	37	3	1	10	1	488
1993	181	91	91	363	2	0	56	37	3	1	10	1	473
1994	189	95	95	379	2	0	57	38	3	1	10	1	490
1995	163	82	82	327	2	0	57	38	3	1	10	1	440
1996	183	92	92	367	2	0	58	39	3	1	10	1	481
1997	166	83	83	332	2	0	59	39	3	1	10	1	448
1998	167	83	83	333	2	0	60	40	3	1	10	1	451
1999	186	93	93	372	2	0	61	41	3	1	11	1	491
2000	162	81	81	324	2	0	62	41	3	1	11	1	445
2001	217	109	109	434	2	0	62	42	3	1	11	1	556
2002	267	133	133	533	2	0	62	42	3	1	11	1	655



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Ocotillo/Coyote Wells Groundwater Study

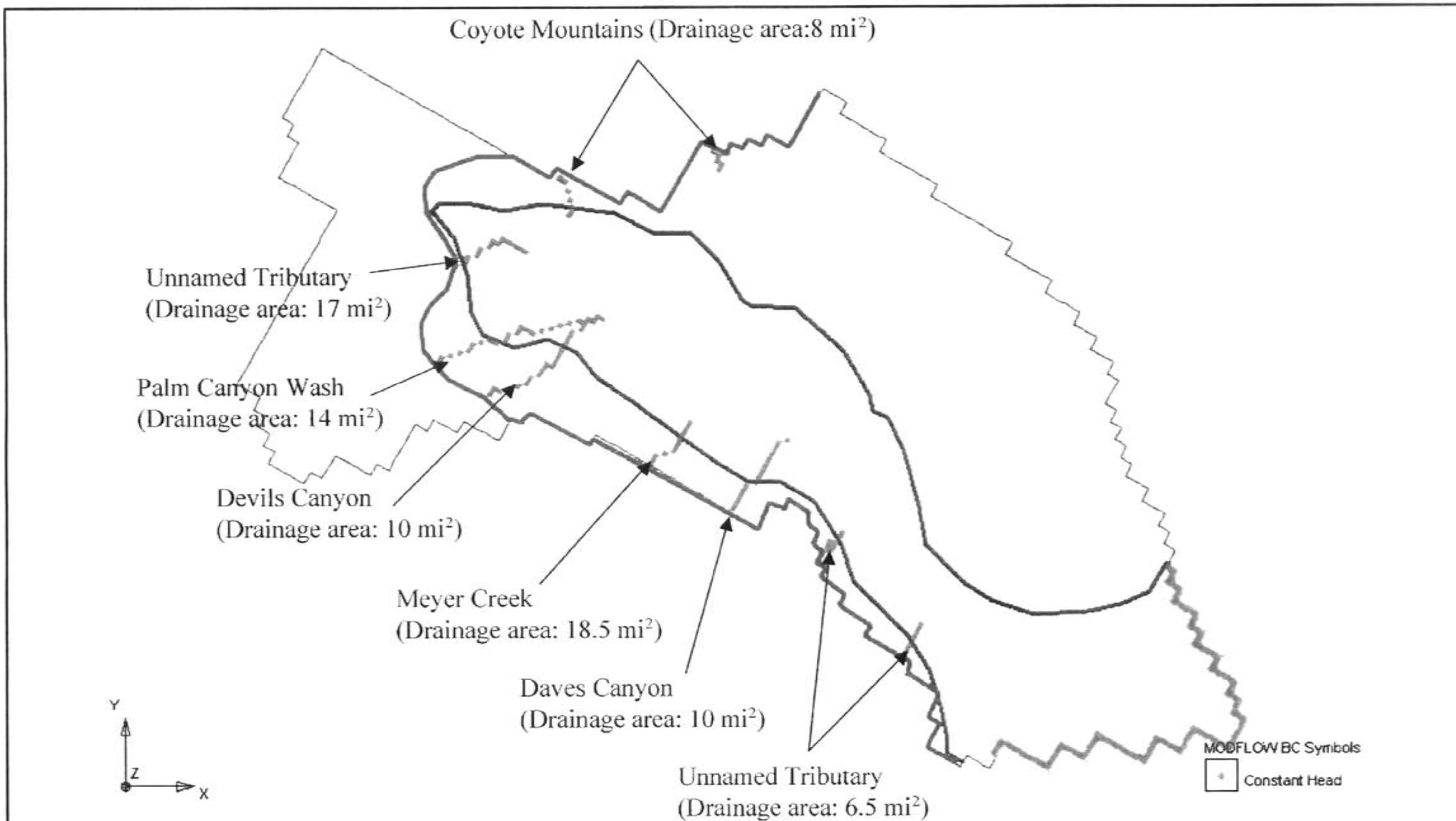
Location of Pumping Wells

U.S. Gypsum Company

10/10/03

FIGURE 5-6

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Creeks with Recharge U.S. Gypsum Company	10/10/03 FIGURE 5-7

PROJECT NUMBER 111320

7. Other than a few measurements on Myer Creek in the early 1960's, no measurements of flow are available in the study area.

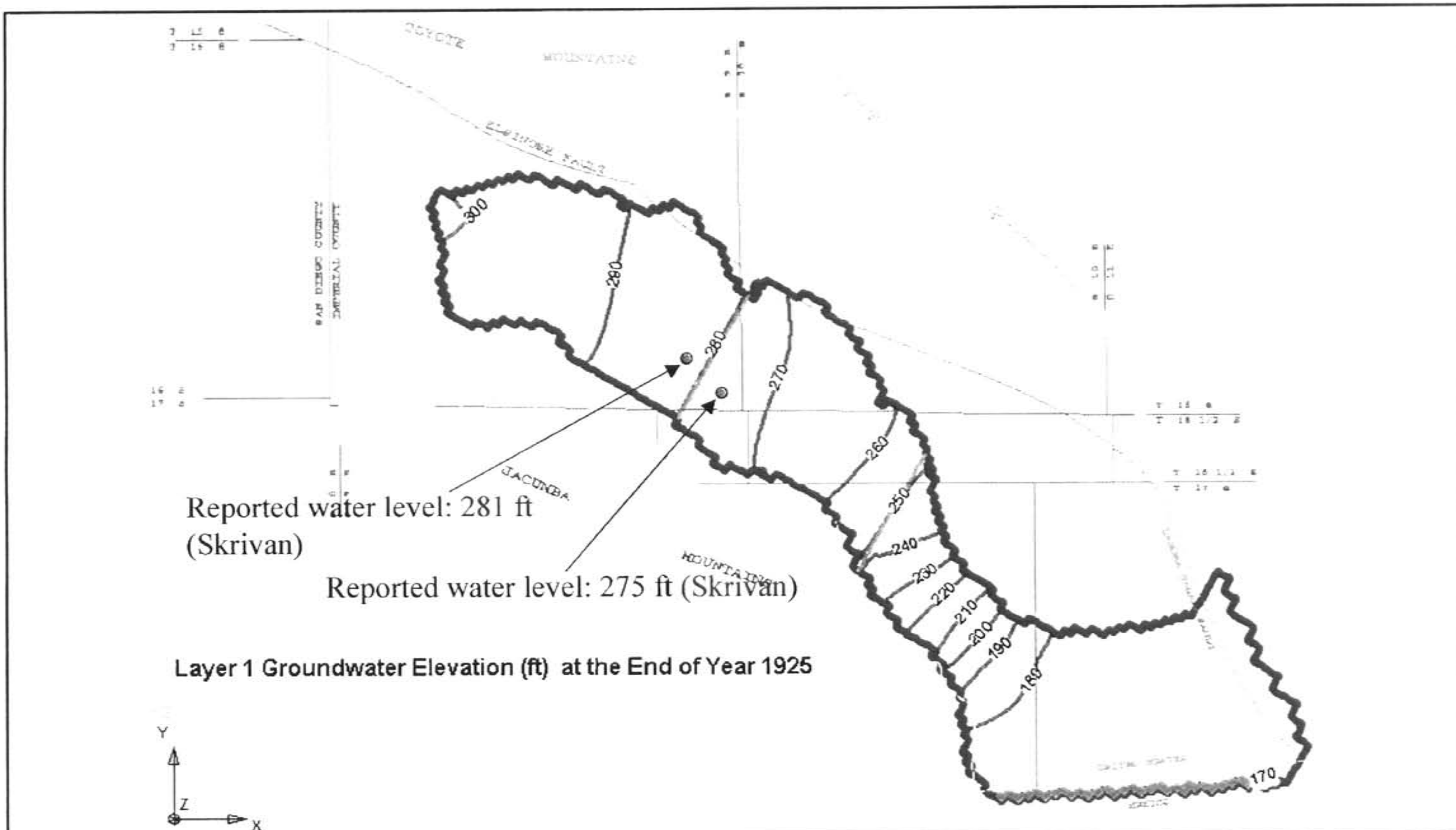
For modeling purposes it is assumed that the recharge occurs along these stream channels within the younger alluvial material of layer 1. The final recharge estimate was determined by the calibrations. In the calibration process, the recharge was adjusted until the model predicted groundwater elevations that matched the observed groundwater elevations in several wells.

5.3 MODEL CALIBRATION

Groundwater conditions for the period 1925 to 2002 were used to calibrate the transient-state model. A steady-state model simulating the groundwater conditions in 1925 was made to establish the initial conditions for the transient-state simulation from 1925 to 2002. During the model calibration, the recharge rate and barriers' hydraulic characteristic were adjusted within a predetermined range of uncertainty until the model produces the results that were close to the field measurements selected as calibration targets. This was done by manual trial-and-error adjustment of these two parameters in the iterations between the steady-state model and transient-state model. It required several model "runs" to produce a satisfactory match. The study period was selected from 1925 to 2002. The final calibrated 1925 groundwater contours of layer 1 and layer 2 are presented in Figures 5-8 and 5-9, respectively. The calibrated groundwater elevations for 1925 were used as the initial groundwater level conditions for transient-state simulation. The calibration was verified by comparing measured and computed hydrographs. The recharge rate based on model calibration was 1,077 ac-ft/yr. This is not necessarily an accurate estimate of the actual recharge rate, which historically has been estimated at 2,600 Ac-ft/yr. The calibrated hydraulic characteristics of the barriers were 0.003 1/day and 0.0003 1/day for layer 1 and layer 2, respectively.

Figures 5-10 and 5-11 show the calibrated groundwater elevation contours of the year 2002 in layer 1 and layer 2, respectively. Observed groundwater elevations from 1976 to 2002 are available in several wells. The locations of these wells are shown in Figure 5-12. Figures 5-13 through 5-27 present hydrographs of computed and measured groundwater elevations in these wells. The hydrographs shown in Figures 5-13 through 5-27 reasonably match the historic groundwater elevation and trend represented by actual data.

The model hydrograph for well 29H1 (Figure 5-18) shows a disparity between computed and measured water elevations. This is a localized site-specific anomaly,



Bookman-Edmonston
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Ocotillo/Coyote Wells Groundwater Study

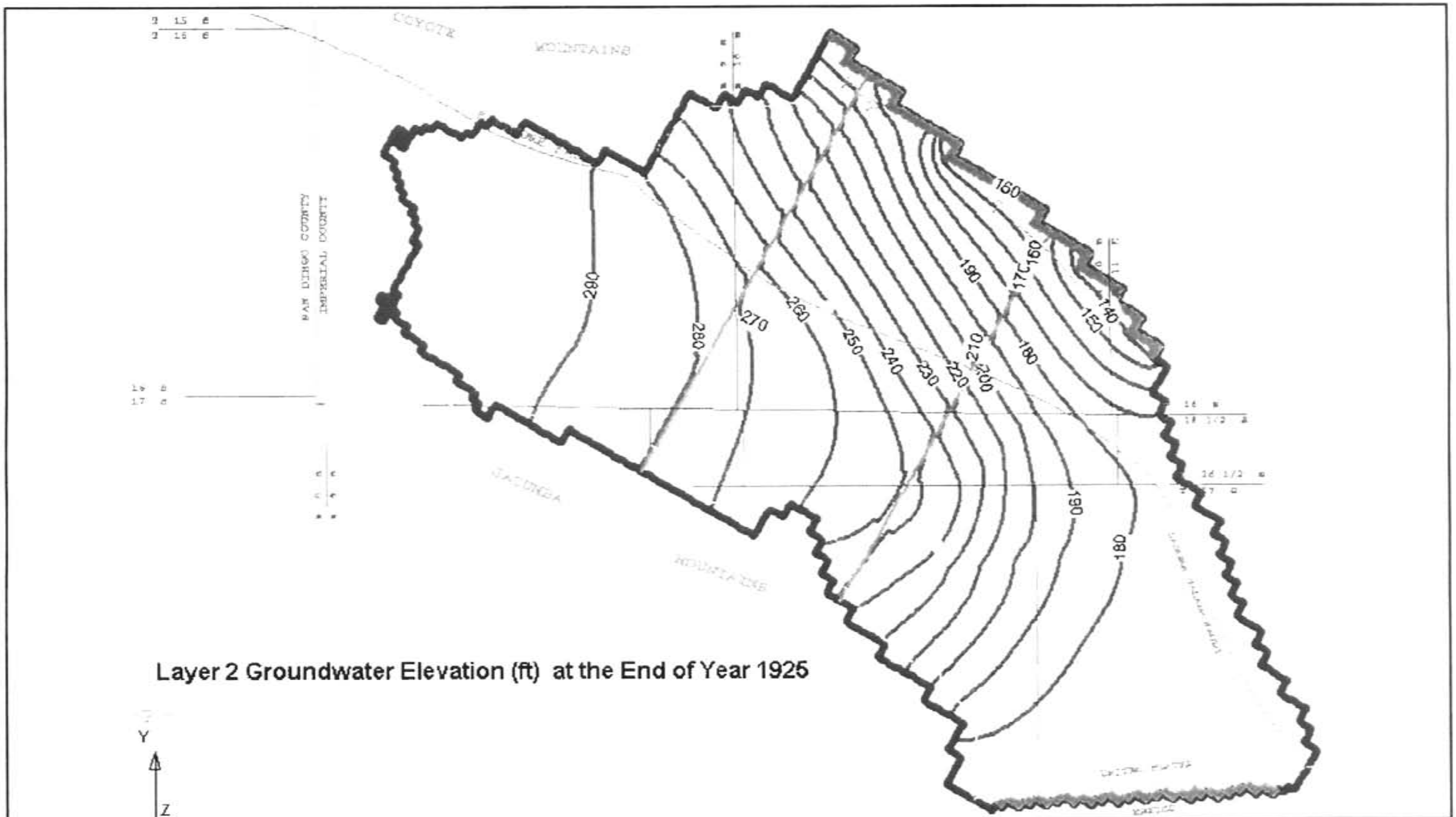
Calibrated 1925 Layer 1 Groundwater Elevations

U.S. Gypsum Company

10/10/03

FIGURE 5-8

PROJECT NUMBER 111320



Bookman-Edmonston
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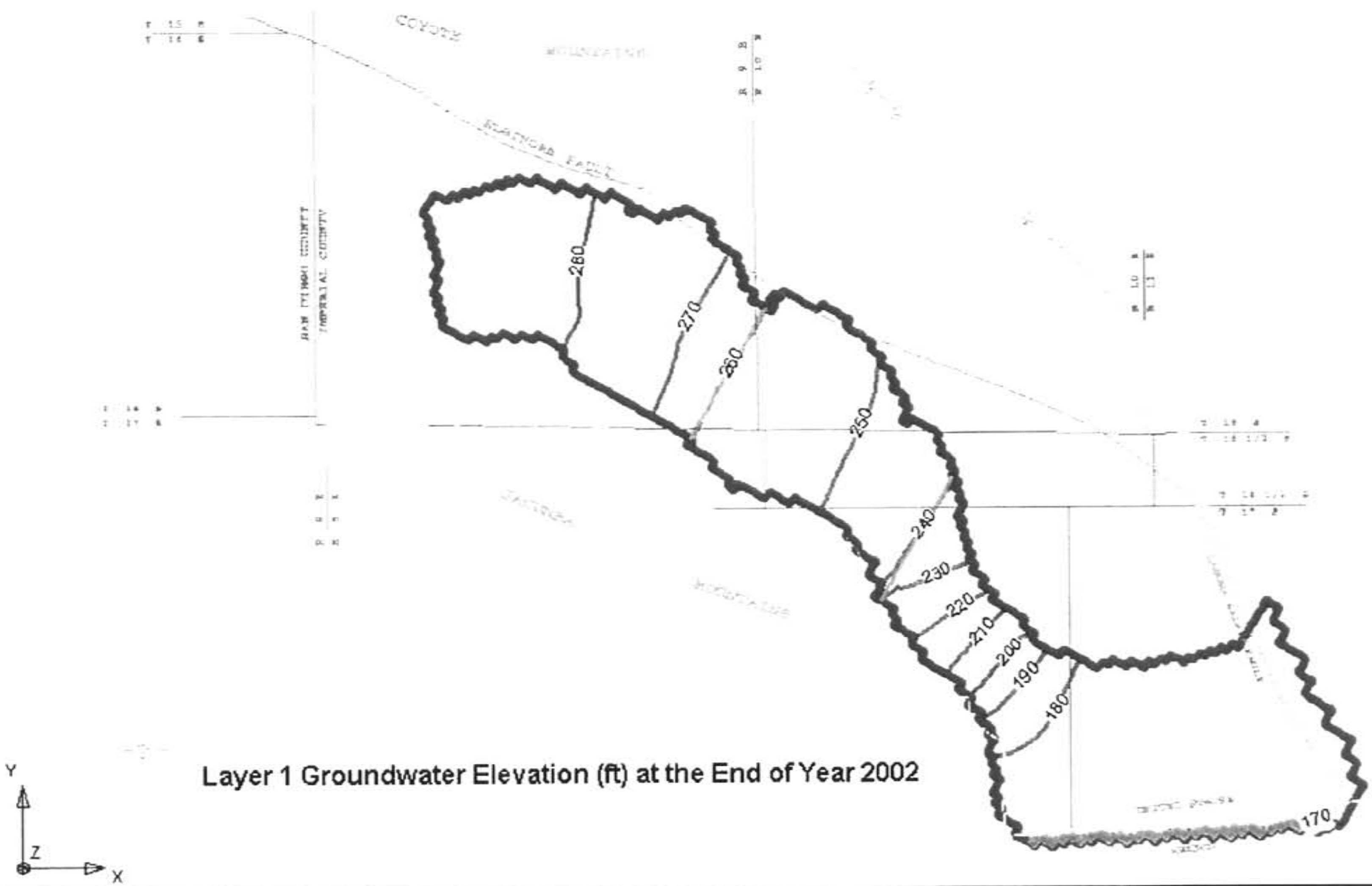
Ocotillo/Coyote Wells Groundwater Study
Calibrated 1925 Layer 2 Groundwater Elevations
U.S. Gypsum Company

10/10/03

FIGURE 5-9

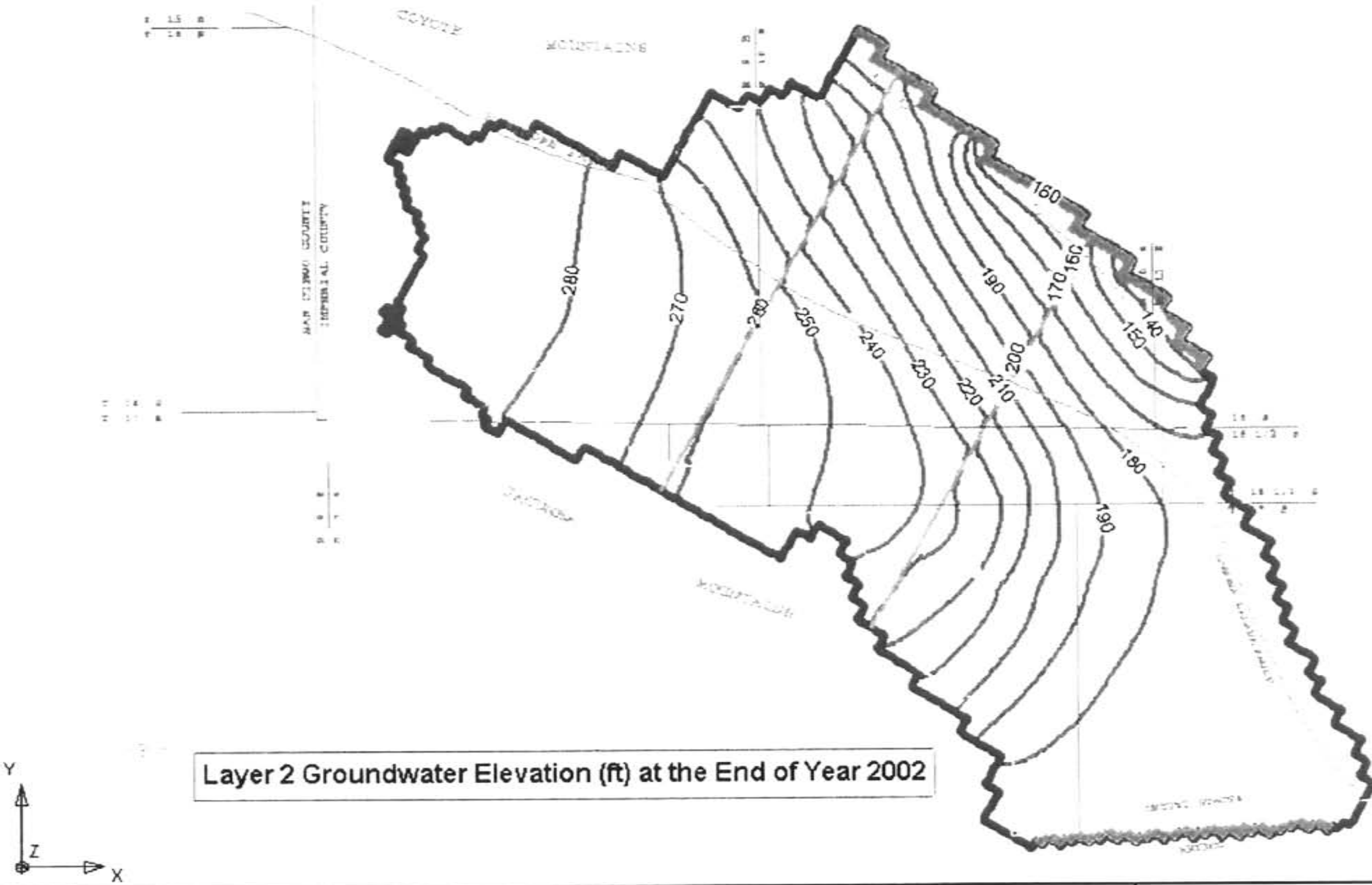
PROJECT NUMBER 111320



Layer 1 Groundwater Elevation (ft) at the End of Year 2002

Bookman-Edmonston A Division of GEI Consultants, Inc	Ocotillo/Coyote Wells Groundwater Study Calibrated 2002 Layer 1 Groundwater Elevations U.S. Gypsum Company	10/10/03 FIGURE 5-10

PROJECT NUMBER 111320



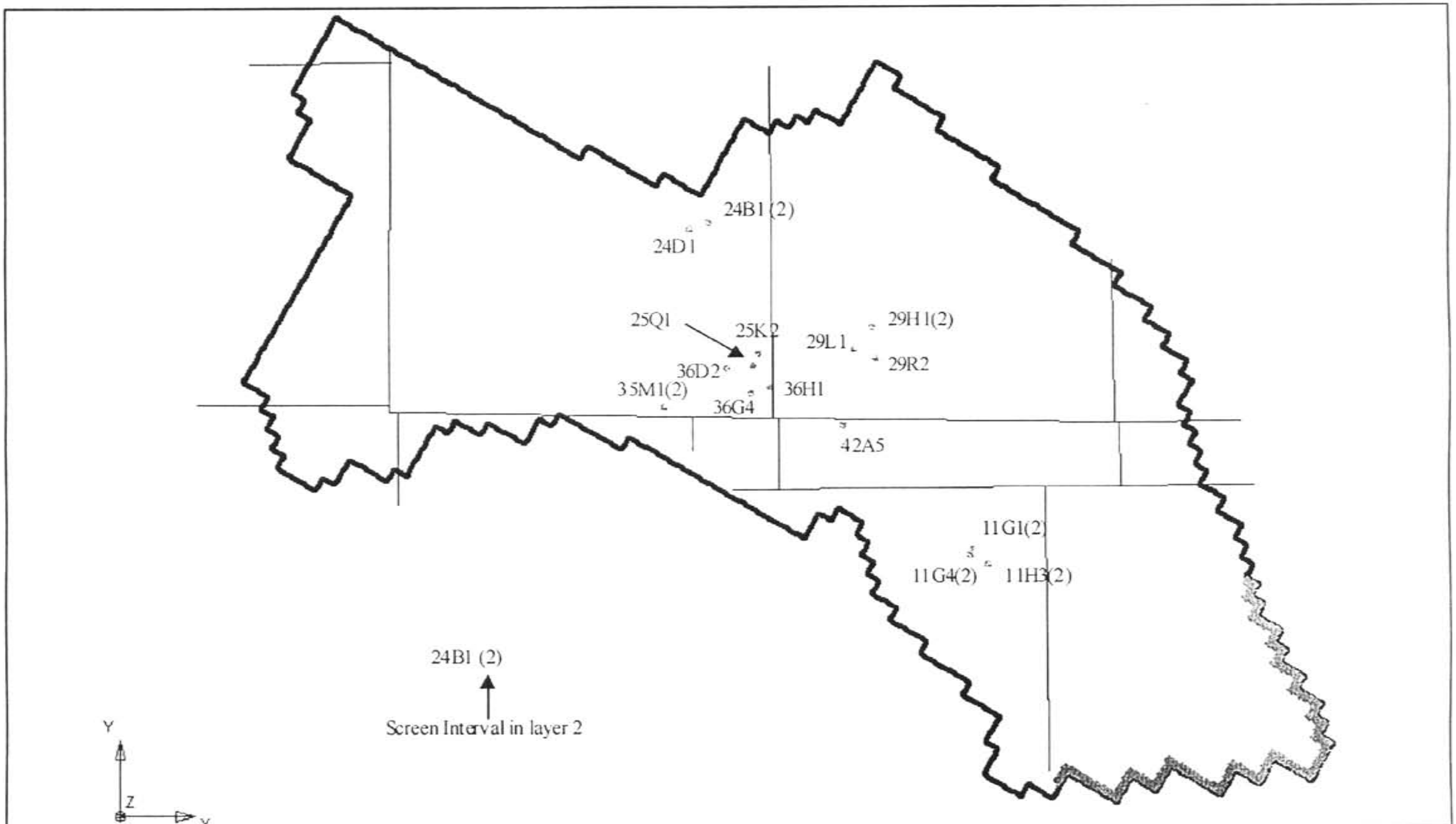
Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study
Calibrated 2002 Layer 2 Groundwater Elevations
U.S. Gypsum Company

10/10/03

FIGURE 5-11

PROJECT NUMBER 111320



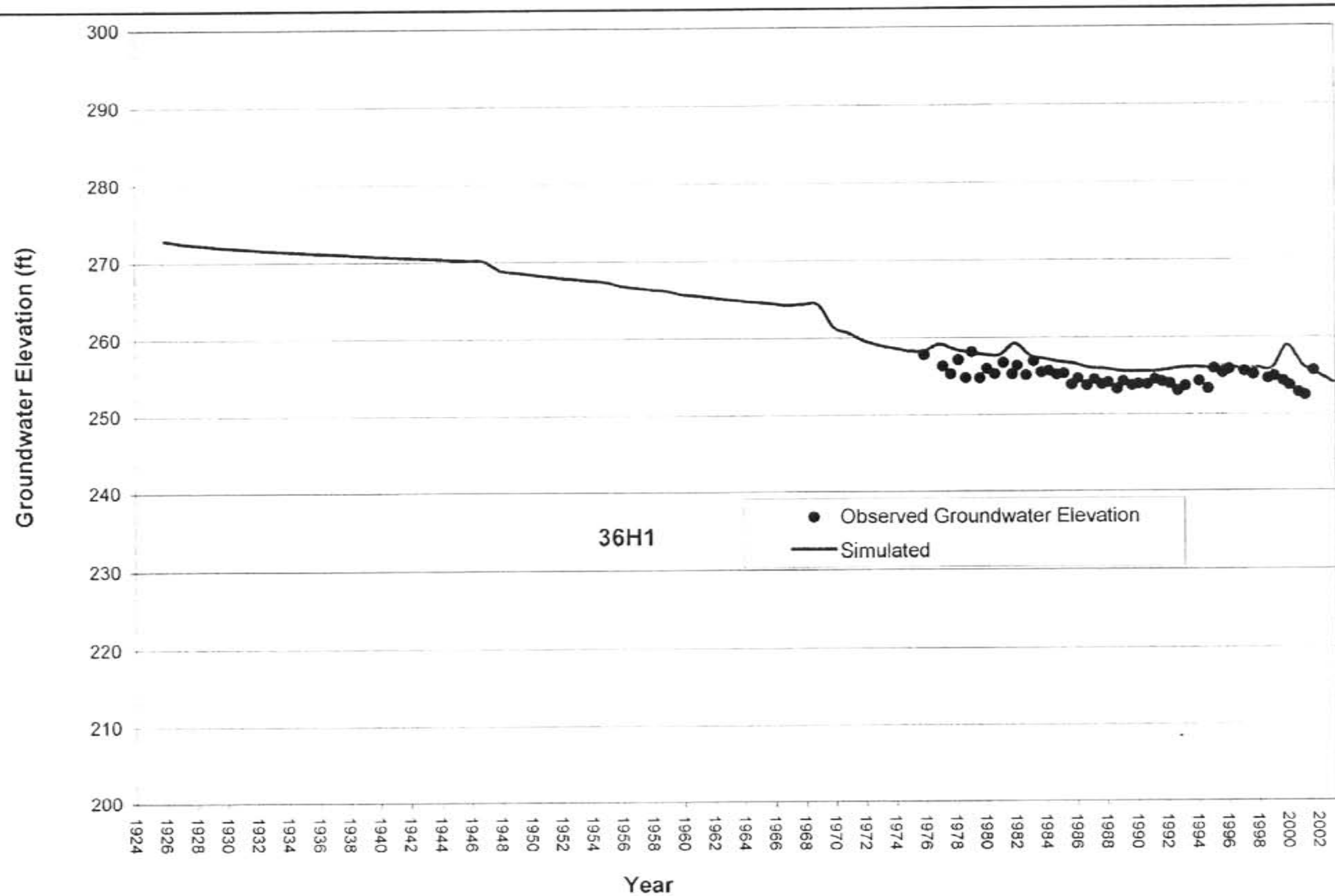
Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study
Location of Observation Wells
U.S. Gypsum Company

10/10/03

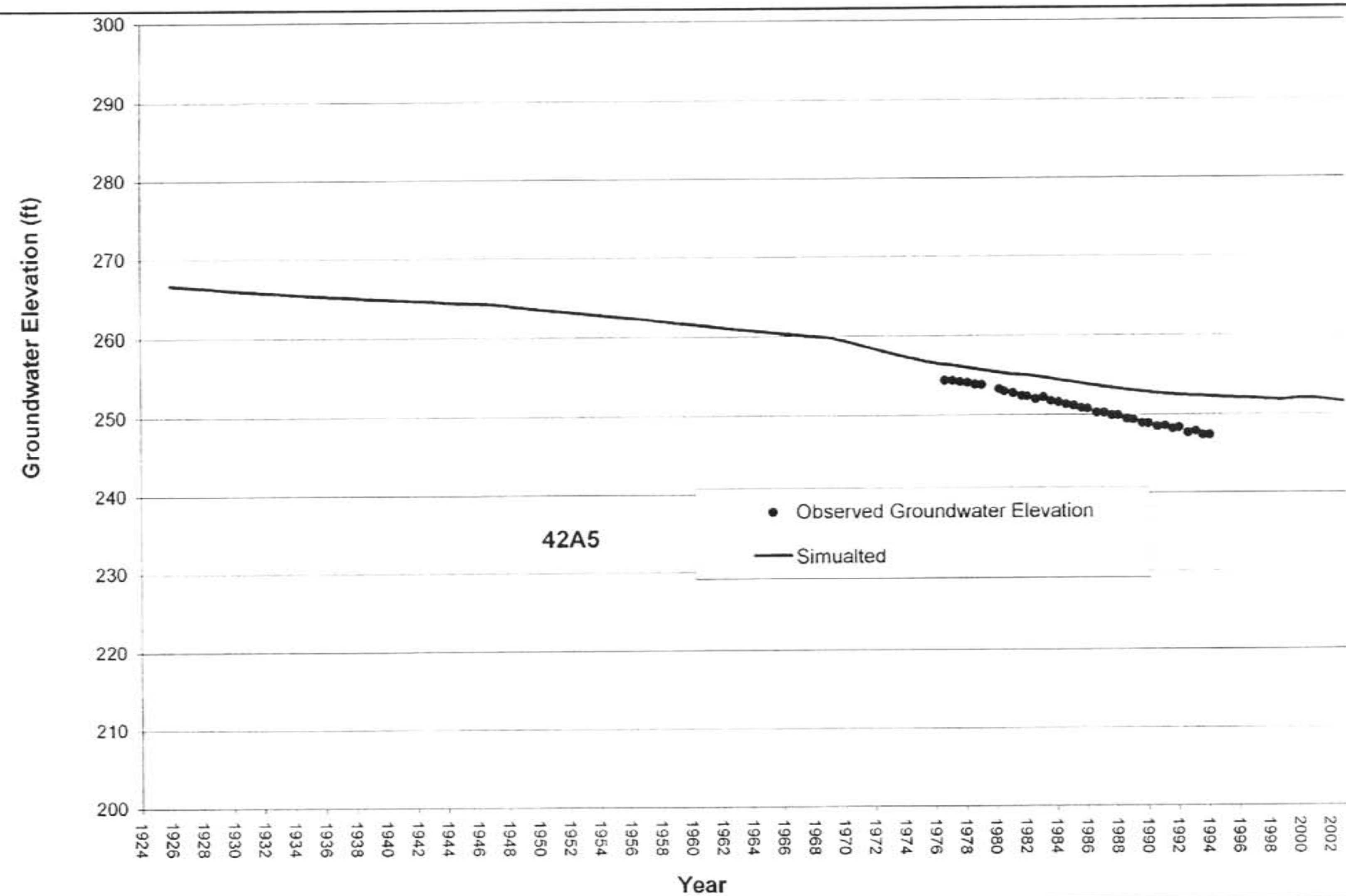
FIGURE 5-12

PROJECT NUMBER 111320



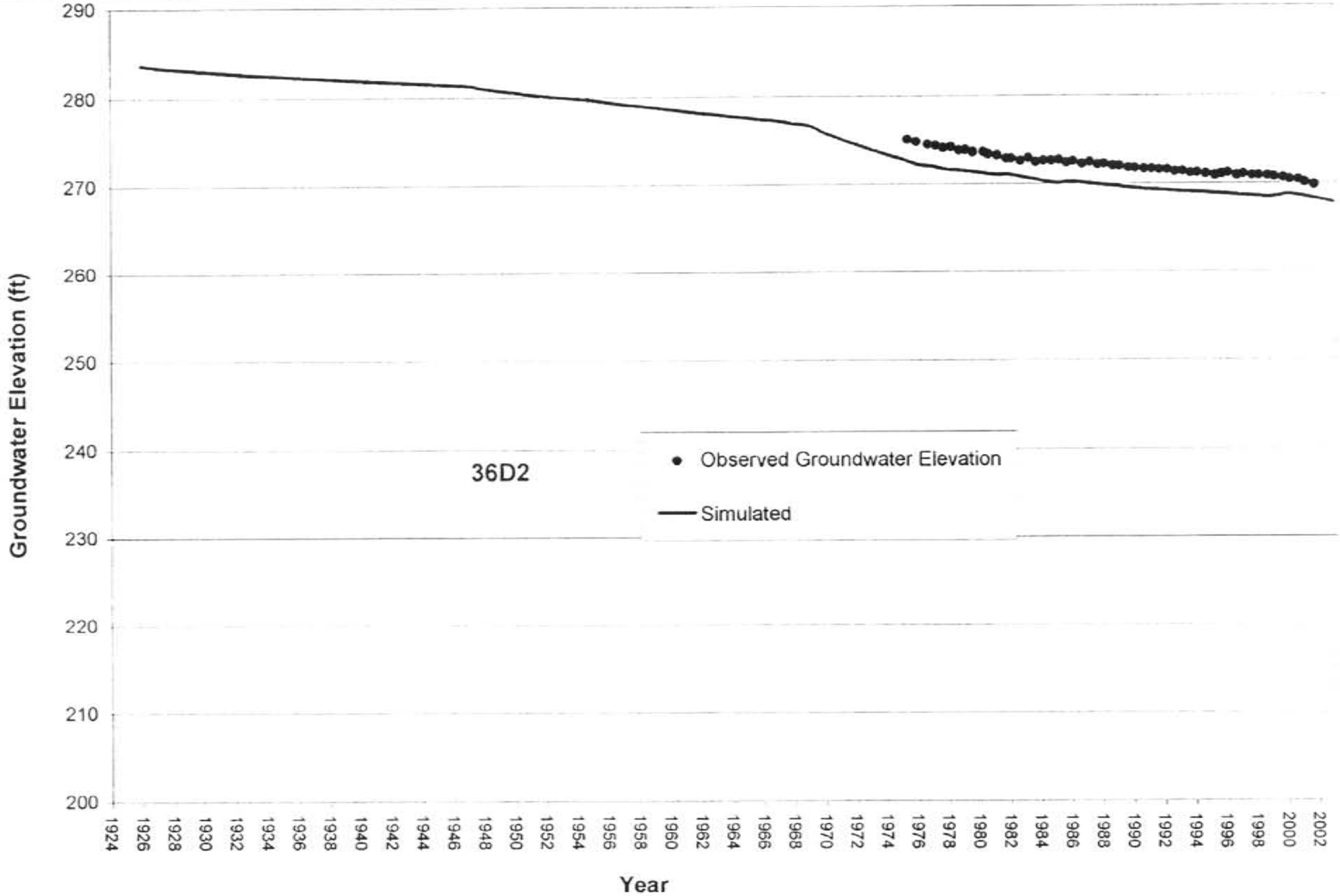
Bookman-Edmonston *A Division of GEI Consultants, Inc.*	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 36H1) U.S. Gypsum Company	10/10/03 FIGURE 5-13

PROJECT NUMBER 111320



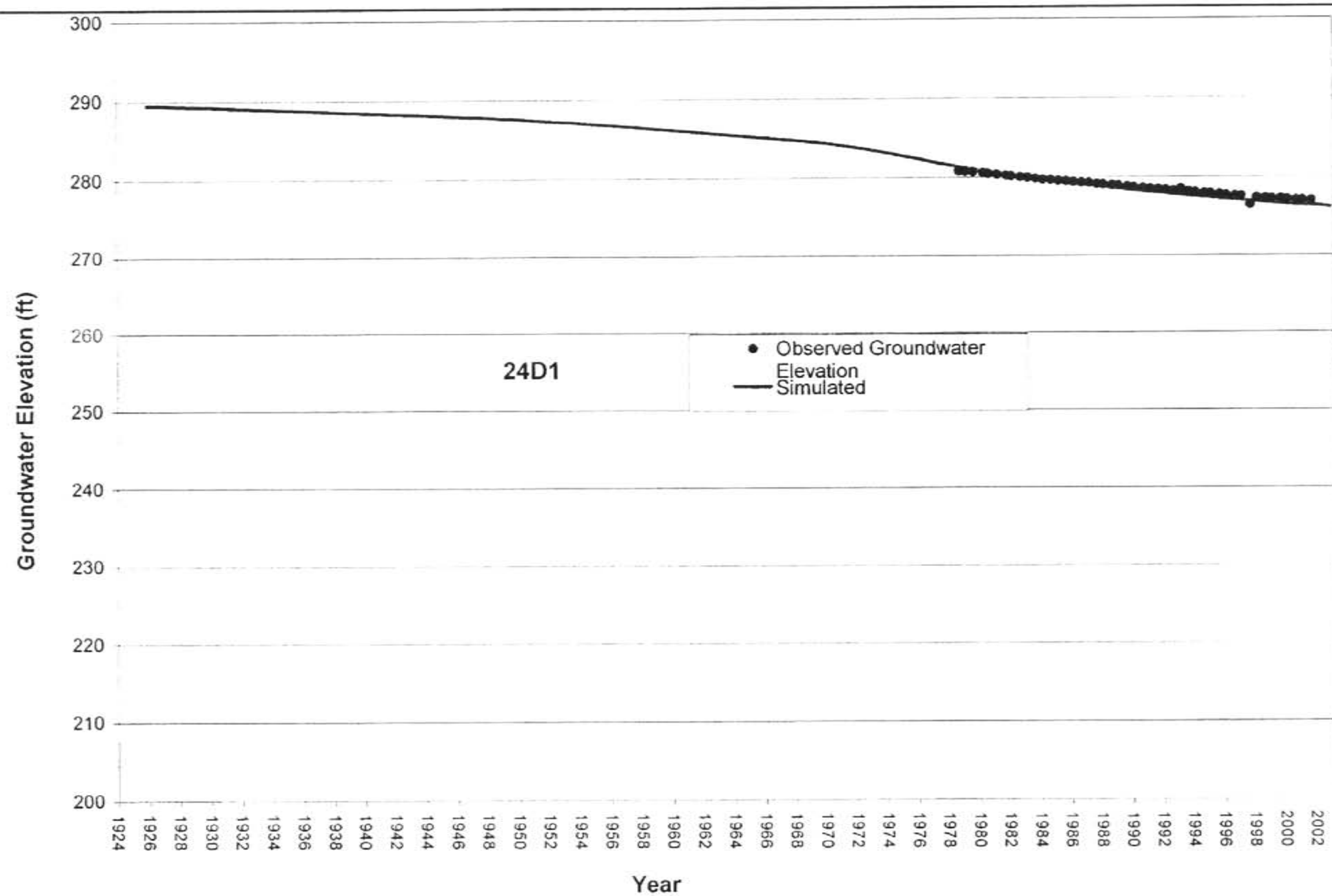
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 42A5) U.S. Gypsum Company	10/10/03 FIGURE 5-14

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 36D2) U.S. Gypsum Company	10//10/03 FIGURE 5-15

PROJECT NUMBER 111320



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Ocotillo/Coyote Wells Groundwater Study

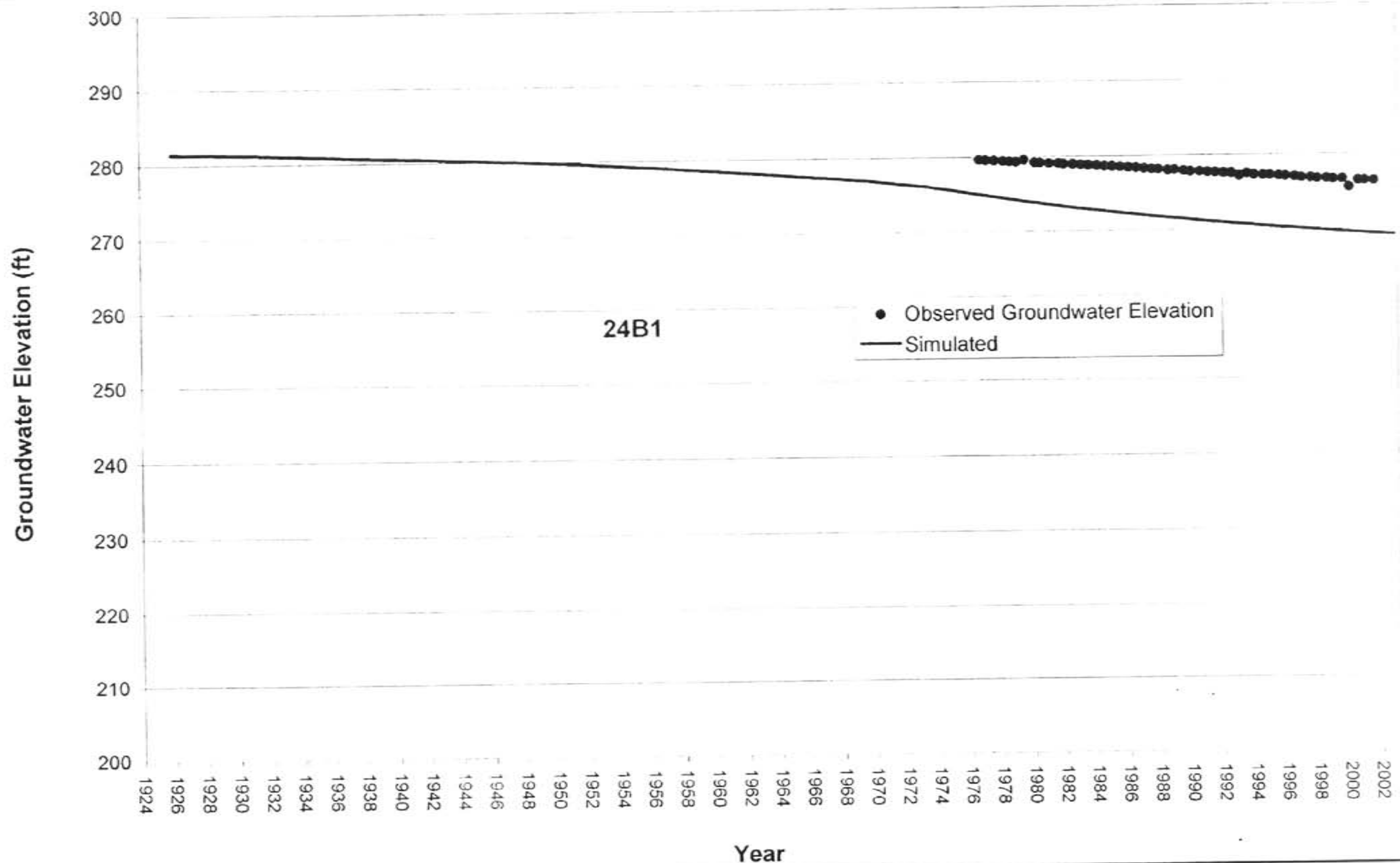
Computed and Measured Groundwater Elevations (Well 24D1)

U.S. Gypsum Company

10/10/03

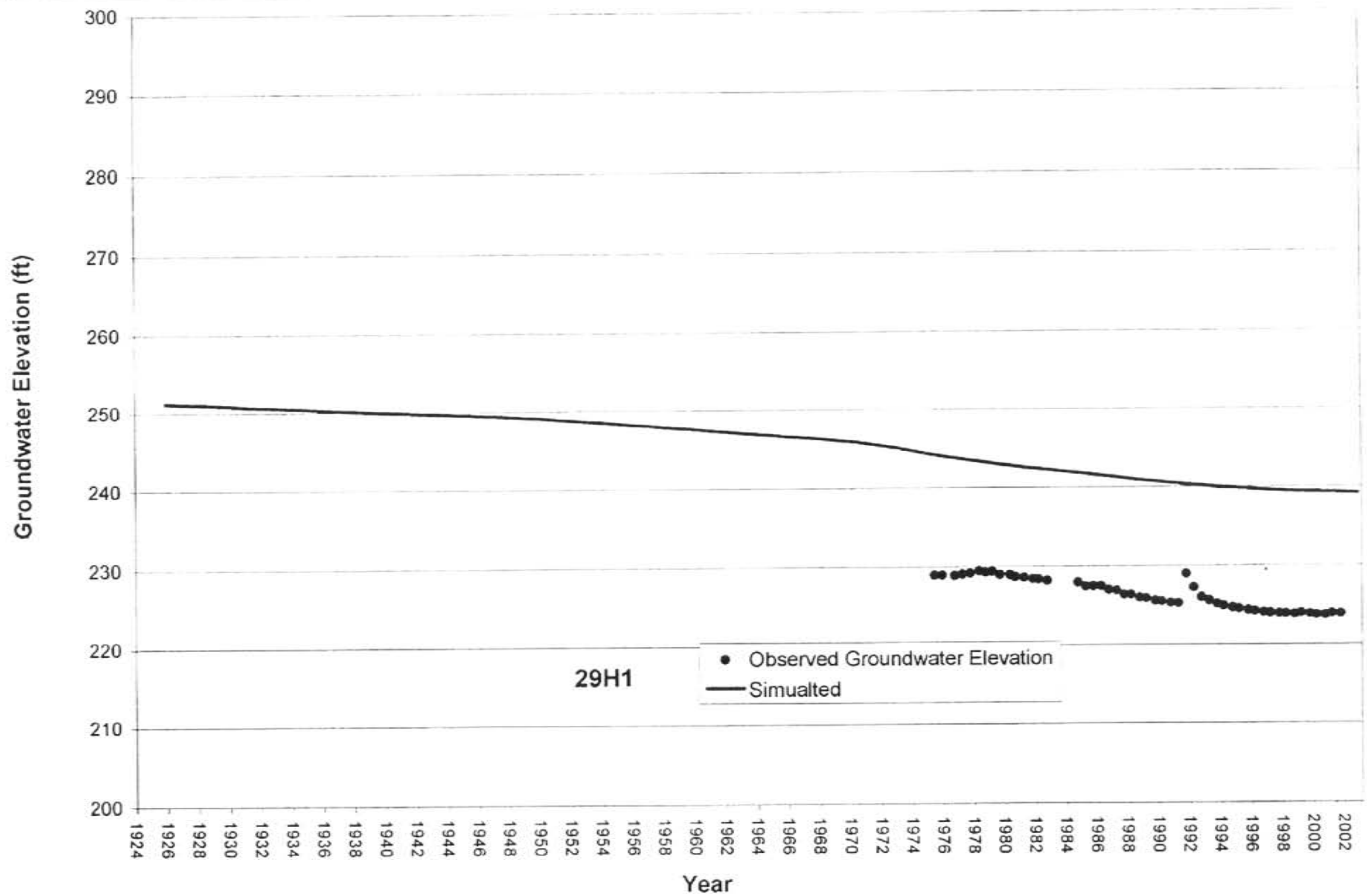
FIGURE 5-16

PROJECT NUMBER 111320



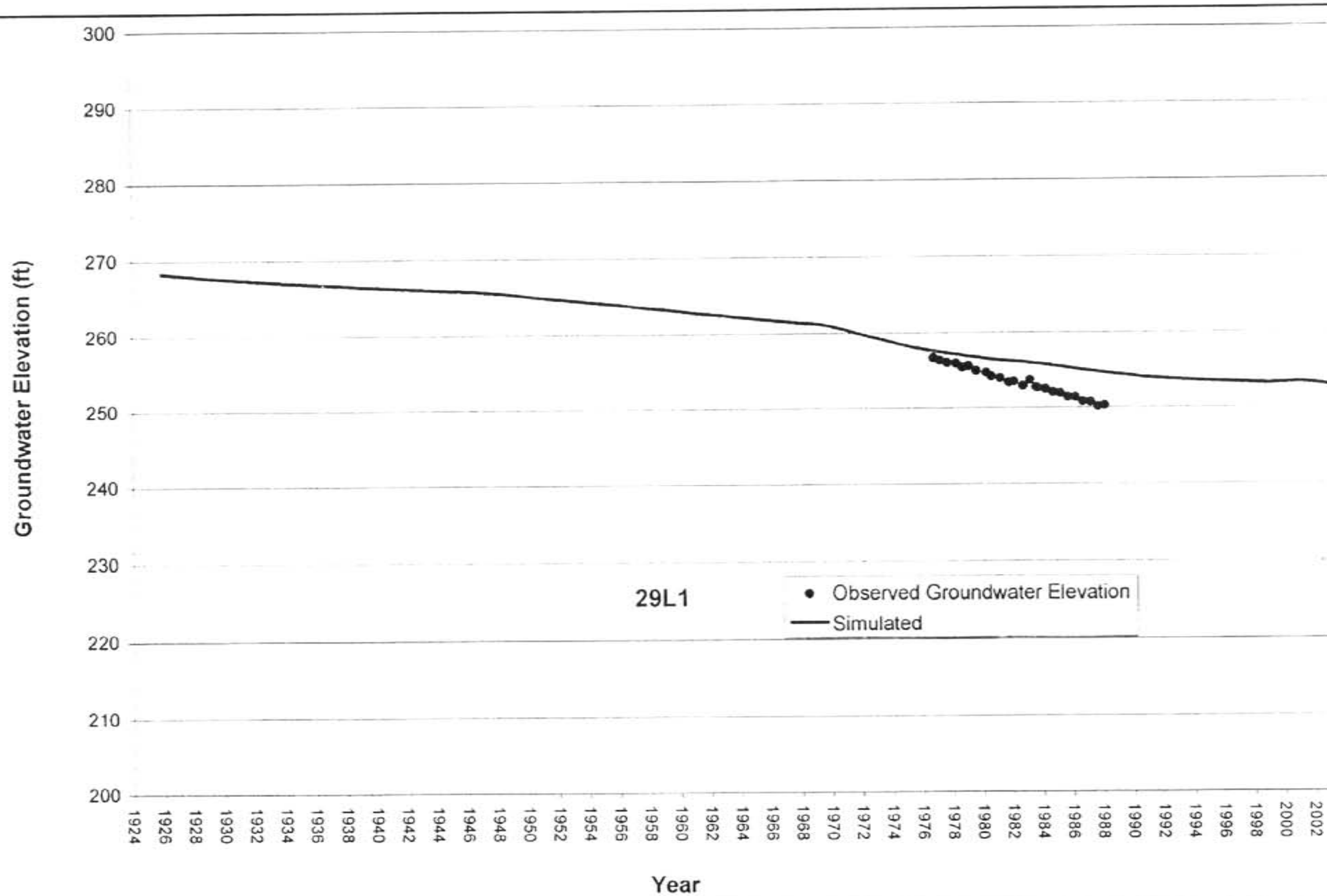
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 24B1) U.S. Gypsum Company	10/10/03 FIGURE 5-17

PROJECT NUMBER 111320



Bookman-Edmonston *A Division of GEI Consultants, Inc.*	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 29H1) U.S. Gypsum Company	10/10/03 FIGURE 5-18

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study

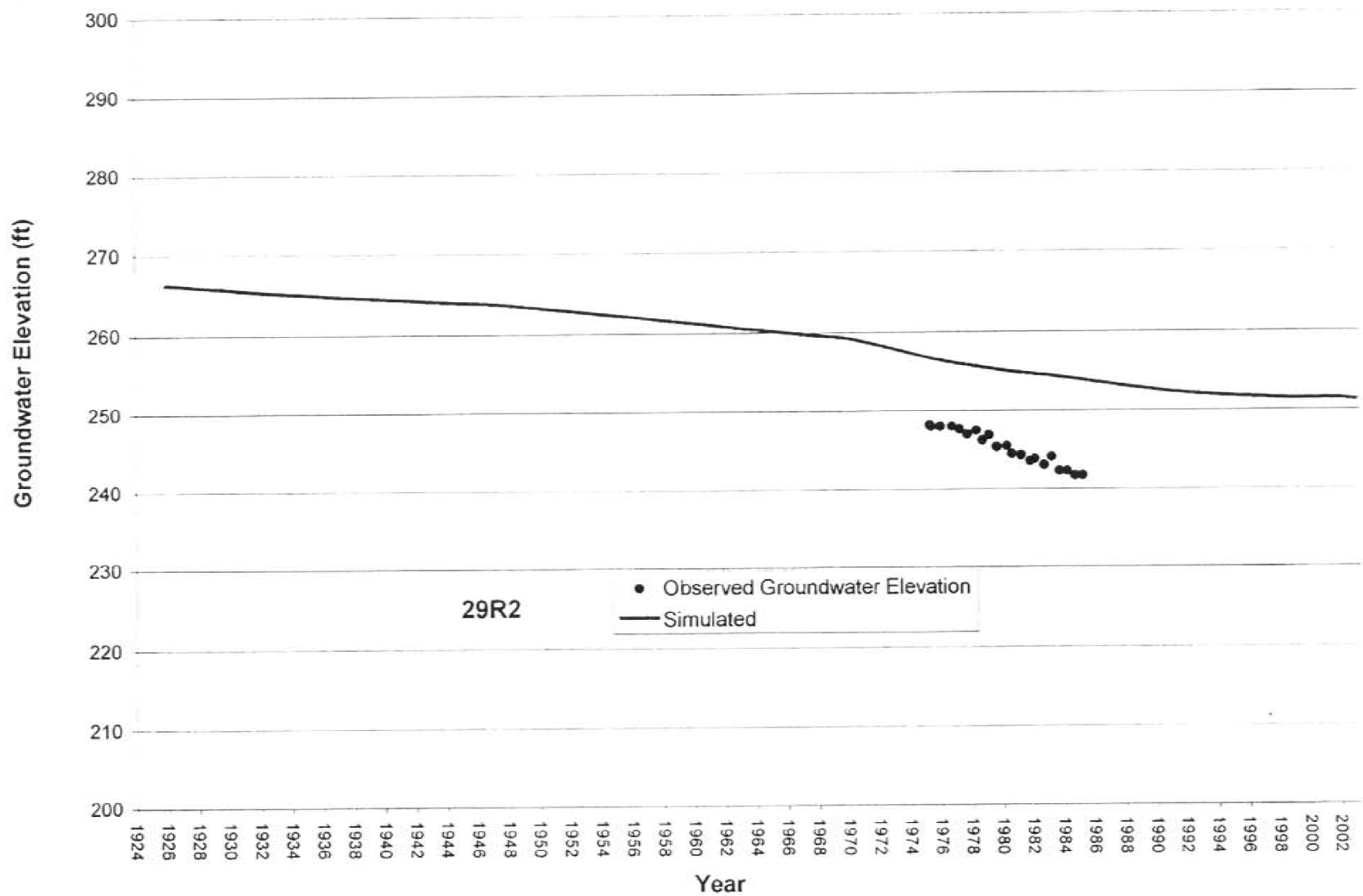
Computed and Measured Groundwater Elevations (Well 29L1)

U.S. Gypsum Company

10/10/03

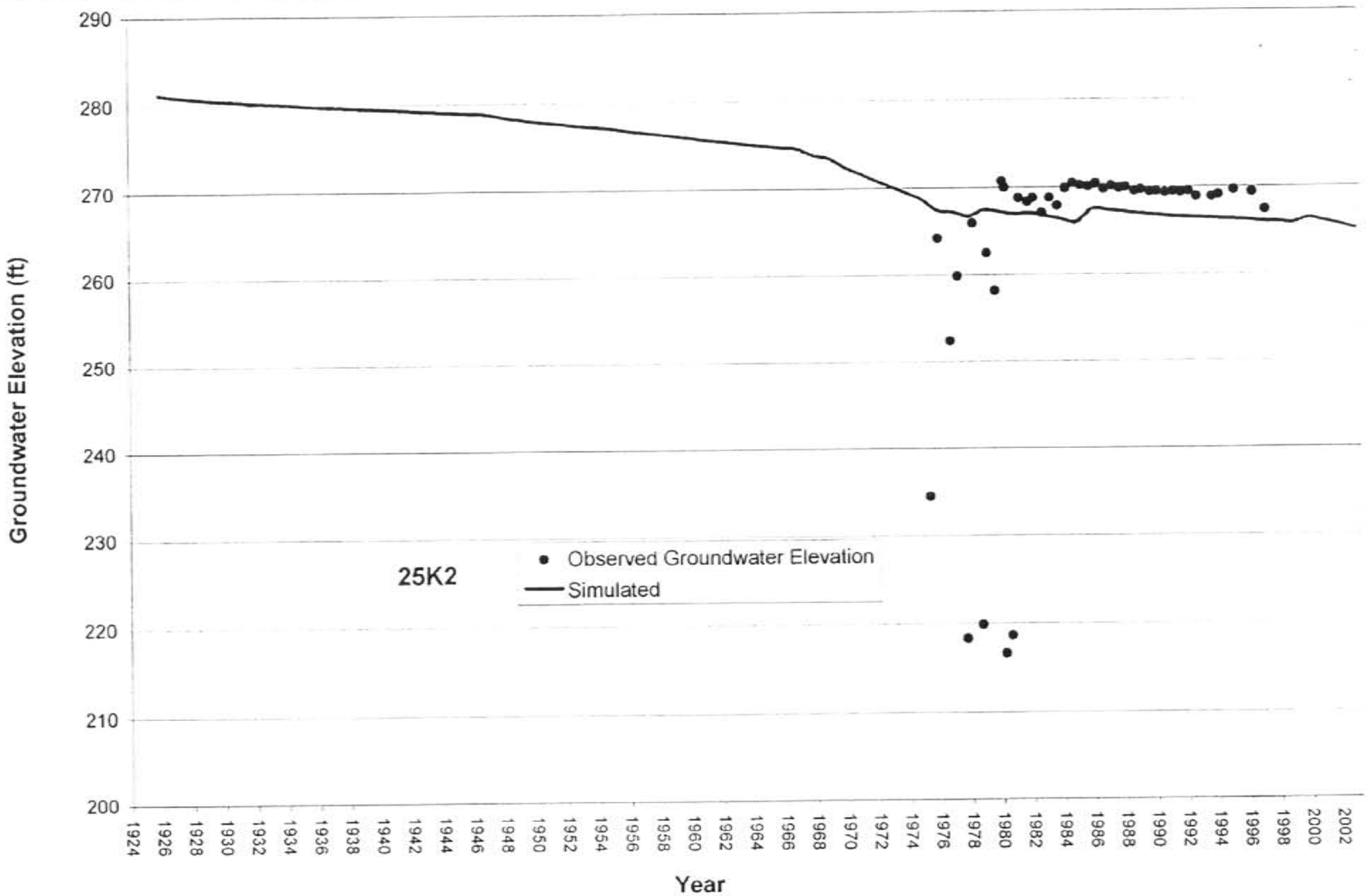
FIGURE 5-19

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 29R2) U.S. Gypsum Company	10/10/03 FIGURE 5-20

PROJECT NUMBER 111320



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Ocotillo/Coyote Wells Groundwater Study

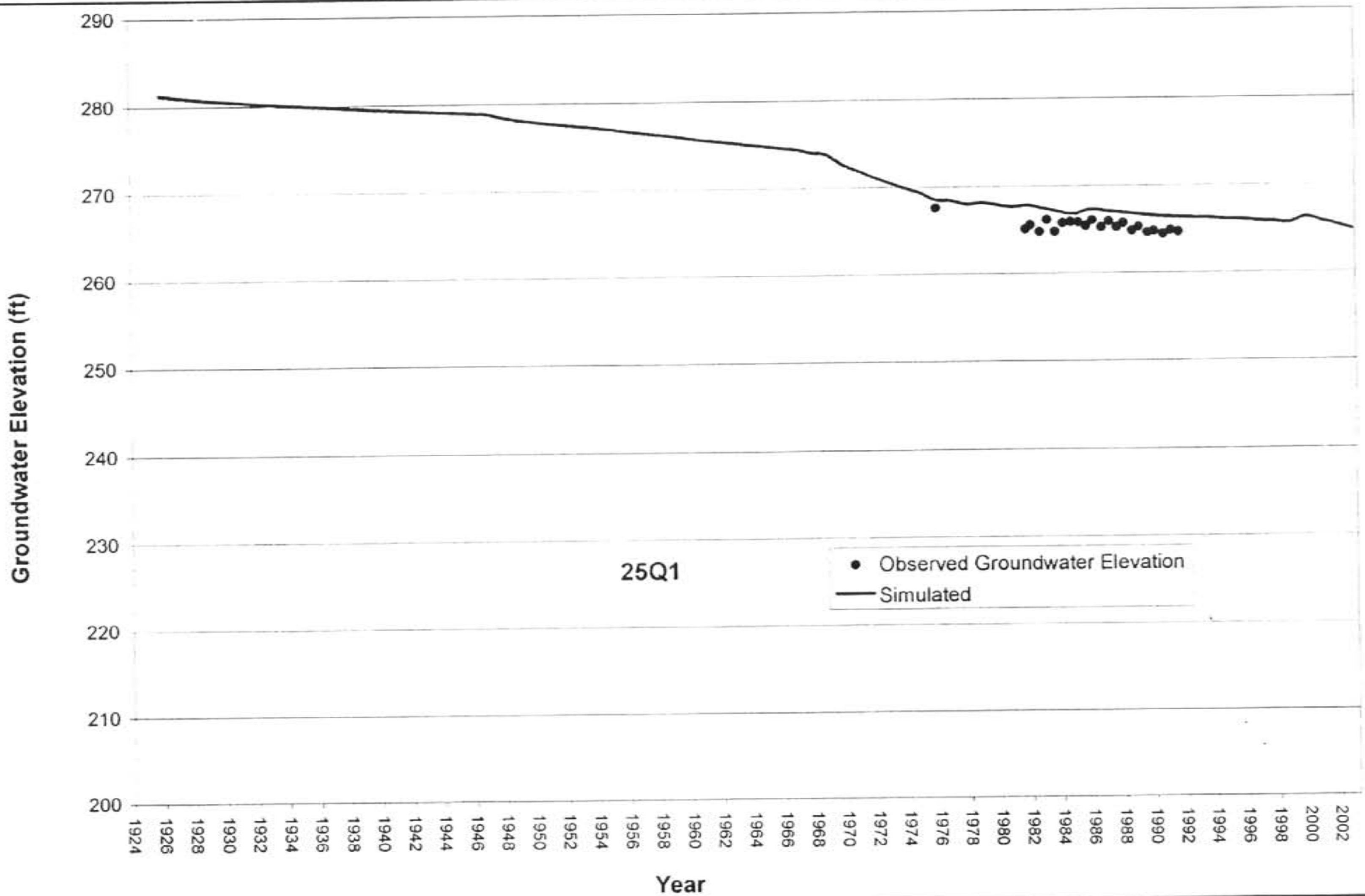
Computed and Measured Groundwater Elevations (Well 25K2)

U.S. Gypsum Company

10/10/03

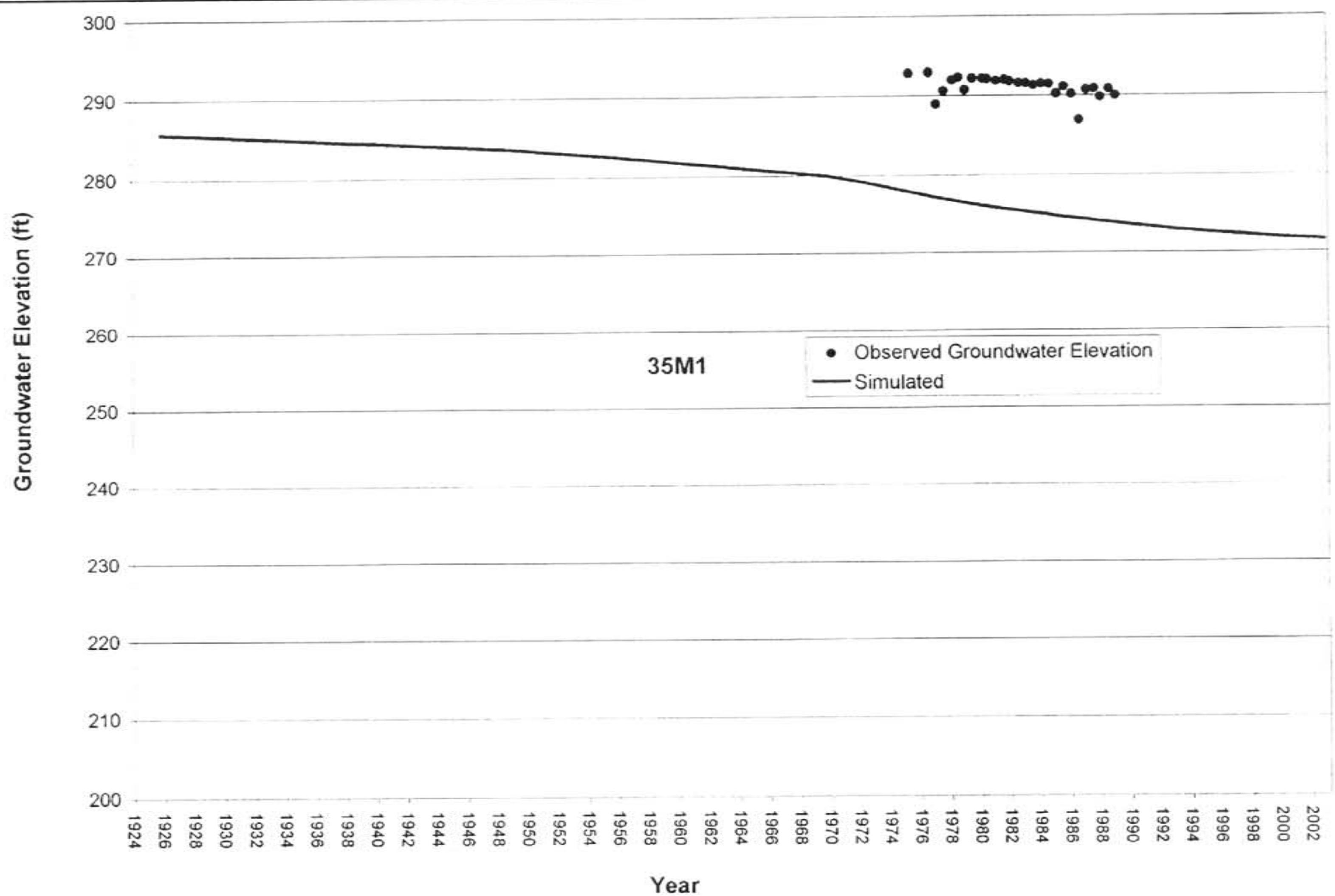
FIGURE 5-21

PROJECT NUMBER 111320



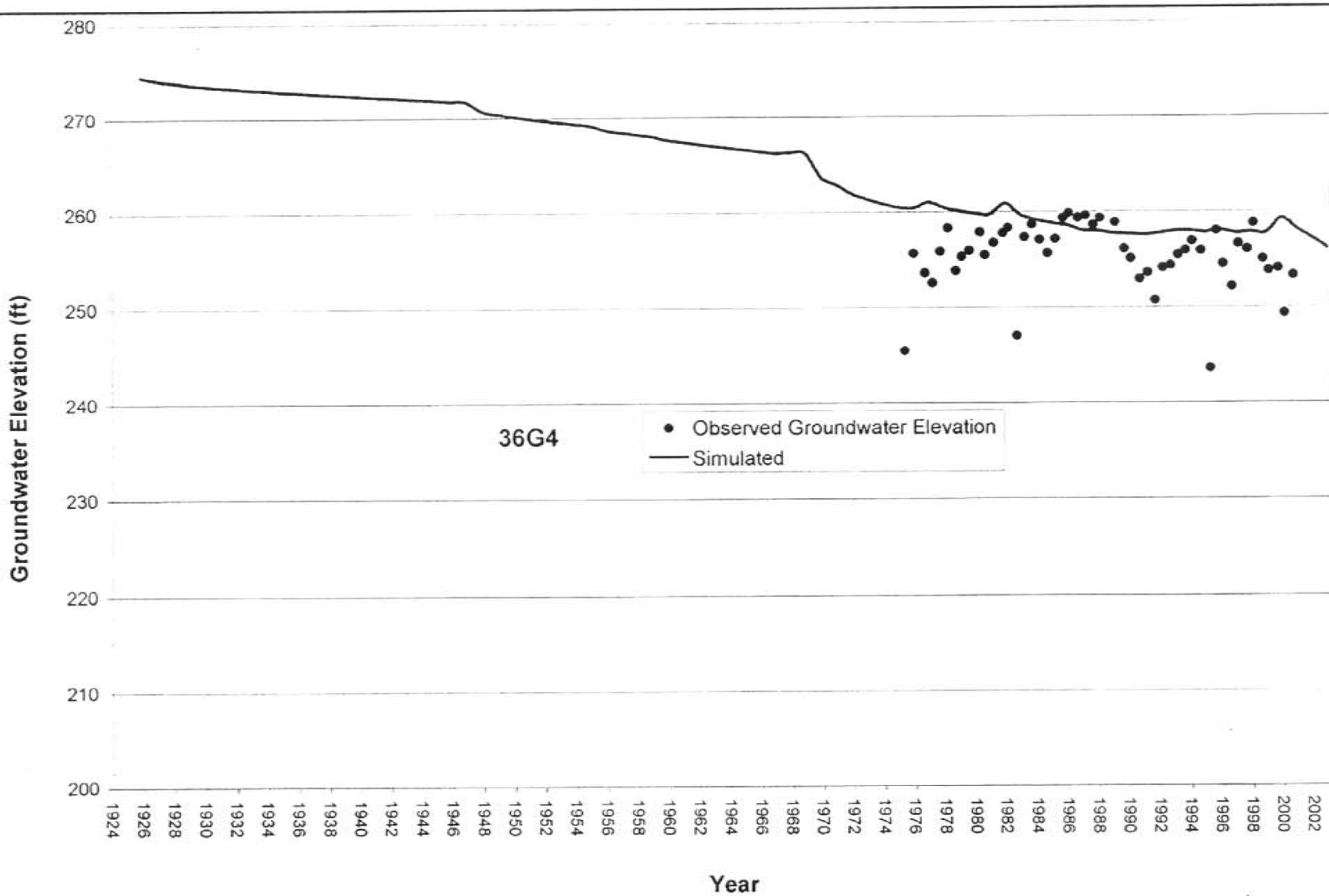
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 25Q1) U.S. Gypsum Company	10/10/03 FIGURE 5-22

PROJECT NUMBER 111320



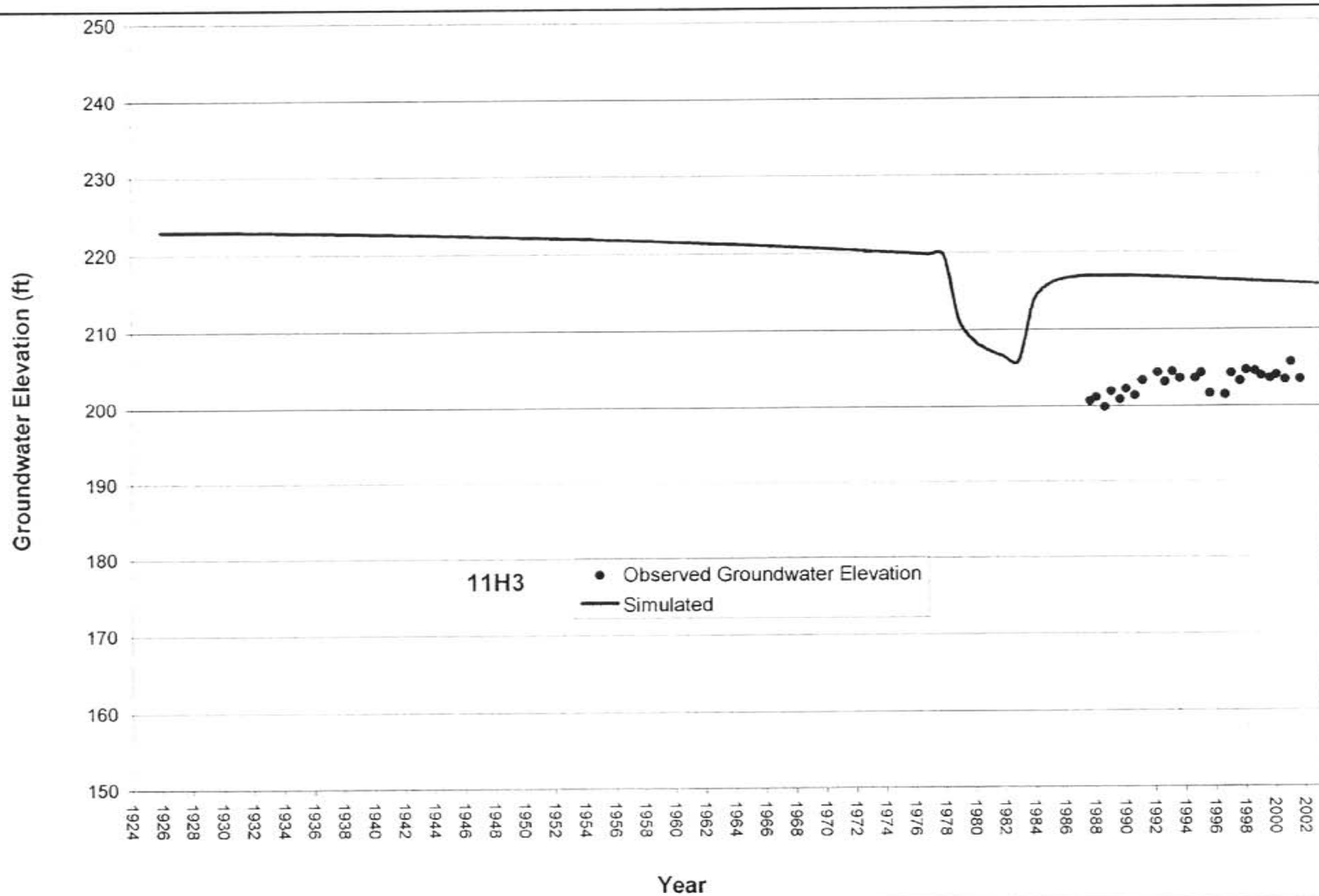
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 35M1) U.S. Gypsum Company	10/10/03 FIGURE 5-23

PROJECT NUMBER 111320



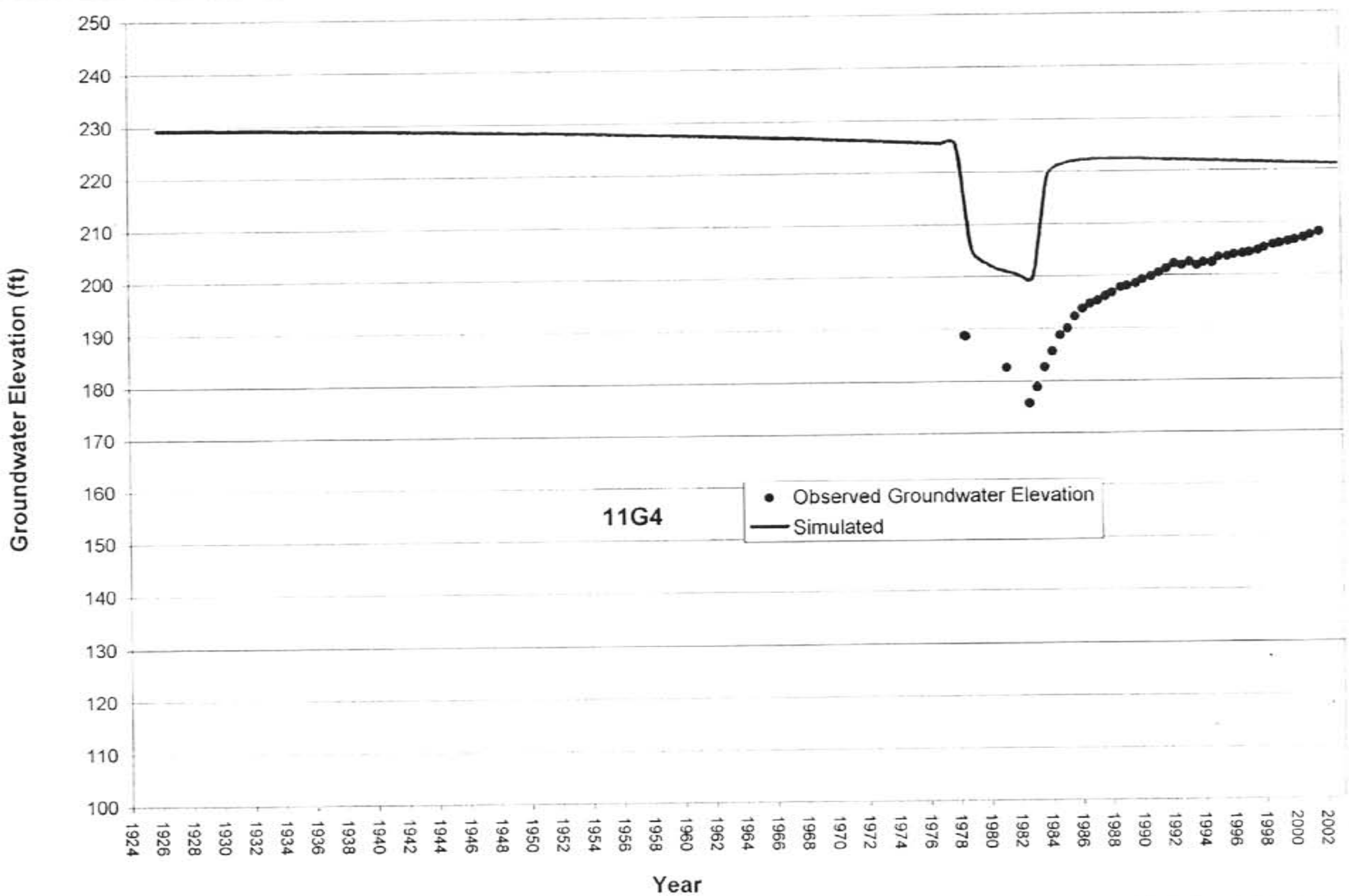
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 36G4) U.S. Gypsum Company	10/10/03 FIGURE 5-24

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Gruondwater Elevations (Well 11H3) U.S. Gypsum Company	10/10/03 FIGURE 5-25

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 11G4) U.S. Gypsum Company	10/10/03 FIGURE 5-26

PROJECT NUMBER 111320

Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Computed and Measured Groundwater Elevations (Well 11G1) U.S. Gypsum Company	10/10/03 FIGURE 5-27

PROJECT NUMBER 111320

which cannot be addressed with the groundwater model. We believe localized faulting and increased tranmissivity in the area caused this anomaly.

The above comparison shows modeled water elevation similar to those of the actual groundwater elevation measurements suggesting that the model reasonably simulated historic 1975 to 2002 changes. It is expected that the model will exhibit this consistency in future scenario simulations as described in Section 6.

Potential impacts of groundwater pumping in the Ocotillo/Coyote Wells Groundwater Basin were evaluated utilizing the groundwater flow model. The impacts were evaluated by simulating various future groundwater-pumping scenarios. Also, potential impacts could include degrading the Basin's water quality either by; 1) vertical saline water intrusion (upconing), or 2) horizontal saline water intrusion. Both of these potential impacts were also assessed.

6.1 SELECTED MODELING SCENARIOS

Several future scenarios were evaluated using the groundwater flow model to determine the potential impacts on the Ocotillo/Coyote Wells Groundwater Basin. The future scenarios simulate groundwater flow for an 80-year period starting from 2003. The model calibrated groundwater elevations of 2002 were used as the initial groundwater elevation conditions for the simulations for each scenario. Below are descriptions of each of these scenarios.

Baseline Scenario

This scenario uses the average pumping rate of 347 acre-feet per year (ac-ft/yr) in US Gypsum wells from 1994 to 1998, and an aggregate pumping rate of 122 ac-ft/yr in all other Basin wells for the 80-year period simulation starting from 2003. This scenario serves as the base condition to compare with other scenarios.

650 Acre-Feet Per Year Pumping Scenario

This scenario uses the pumping rate of 650 ac-ft/yr in the US Gypsum pumping wells, and pumping rates in local wells increased at an annual rate of 1.4 percent for the 80-year simulation starting from 2003.

767 Acre-Feet Per Year Pumping Scenario

This scenario uses the pumping rate of 767 ac-ft/yr in the US Gypsum pumping wells, and pumping rates in local wells increased at an annual rate of 1.4 percent for the 80-year simulation starting from 2003.

6.2 SIMULATION RESULTS OF FUTURE SCENARIOS

Descriptions of the groundwater level impacts for each of the scenarios considered are discussed below.

Baseline Scenario

To demonstrate the impact of continued current pumping amounts, a groundwater flow model run was conducted assuming the average pumping rate of 347 ac-ft/yr in US Gypsum wells from 1994 to 1998, and a pumping rate of 122 ac-ft/yr in local wells continues for 80 years (2003 through 2082).

Contours of simulated 2082 groundwater levels in layer 1 and layer 2 are presented in Figures 6-1 and 6-2, respectively. The simulated 2082 groundwater flow directions in layer 1 and layer 2 are also shown in Figures 6-3 and 6-4, respectively. As shown in Figures 6-3 and 6-4, groundwater flow will travel southward in layer 1 and northward and southward in layer 2. These observations indicate that poor quality groundwater east of the Ocotillo area in layer 2 will continue to stay there or flow to east and not degrade the good quality water in the Basin.

Groundwater elevation decline from year 2002, in wells perforated in layer 1 for the baseline scenario simulation are shown in Table 6-1. As shown in Table 6-1, the maximum 80-year decline is about 10 feet.

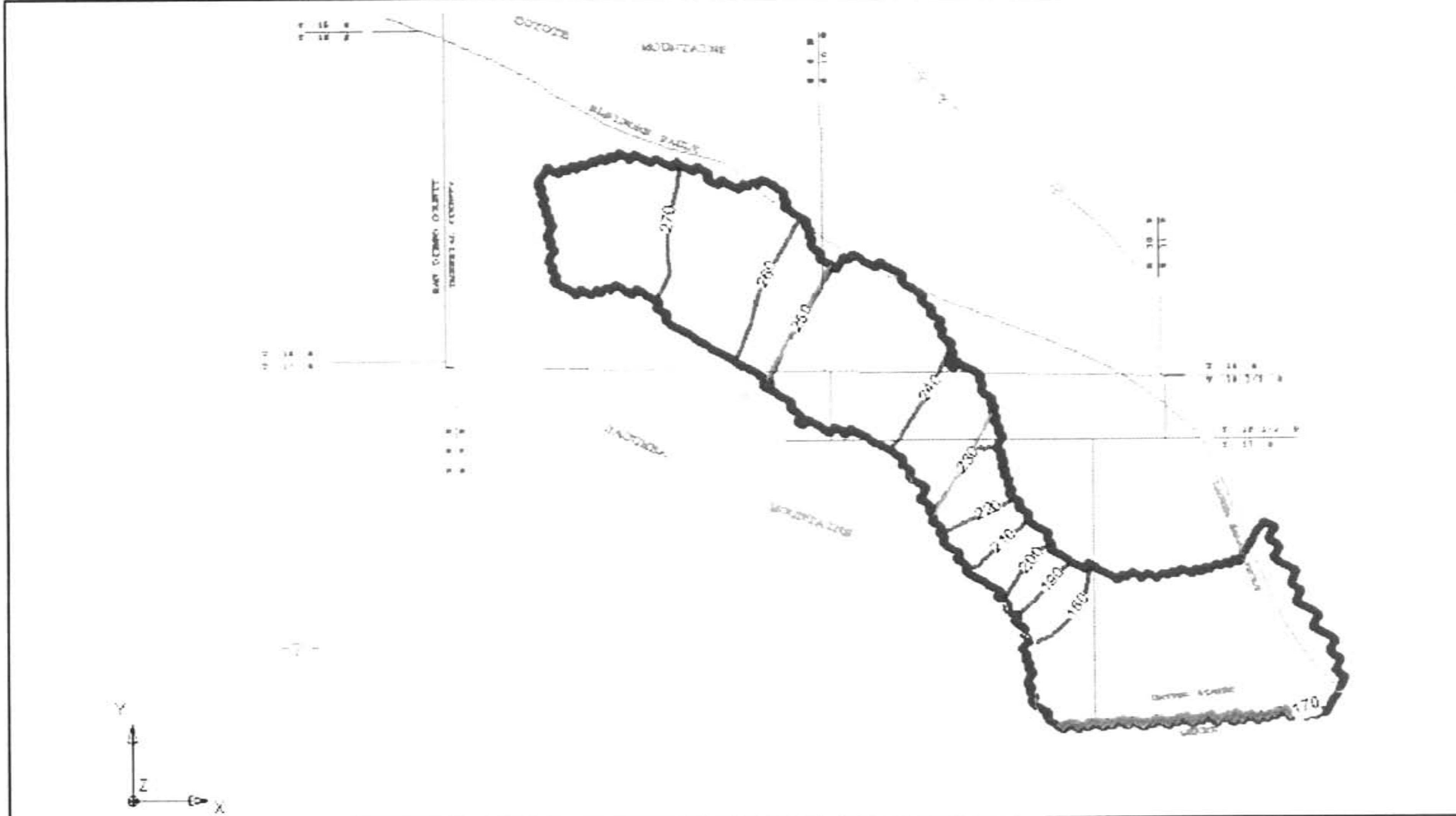
650 Acre-Feet Per Year Pumping Scenario

This model run provides an estimate of the potential impact assuming US Gypsum pumps water at a rate of 650 ac-ft/yr, and the future urban water use increases by 1.4 percent annually for all local wells. Figures 6-5 and 6-6 show the simulated 2082 groundwater contours in layer 1 and layer 2, respectively. Simulated 2082 groundwater flow directions in layer 1 and layer 2 are shown in Figure 6-7 and 6-8, respectively. Comparing Figures 6-7 and 6-8 to Figures 6-3 and 6-4 of the baseline scenario, the US Gypsum pumping rate increase to 650 ac-ft/yr, and an increase of urban water use by 1.4 percent annually will not cause a gradient reversal. The groundwater will travel southward in layer 1 and northward and southward in layer 2. Therefore, poor quality groundwater east of the Ocotillo area in layer 2 will continue to stay there or flow east and the good quality water in the Basin will not be impacted.

Table 6-1 Layer 1 Well Drawdowns (ft) for Baseline Scenario

(Drawdown from Groundwater Elevation at the End of 2002)

	Well								
	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
Years	Drawdown (ft)								
10	-1.2	0.1	-1.4	-1.6	-1.3	-1.4	-1.3	-1.2	-0.2
20	-2.4	-1.2	-2.7	-3.1	-2.6	-2.6	-2.6	-2.6	-1.5
30	-3.6	-2.5	-4.0	-4.4	-3.8	-3.7	-3.9	-3.9	-2.8
40	-4.7	-3.7	-5.3	-5.7	-4.9	-4.8	-5.1	-5.1	-4.0
50	-5.8	-4.8	-6.5	-6.9	-6.0	-5.9	-6.3	-6.3	-5.1
60	-6.8	-5.8	-7.6	-8.1	-7.0	-6.9	-7.4	-7.4	-6.2
70	-7.7	-6.9	-8.6	-9.2	-8.0	-7.9	-8.5	-8.4	-7.2
80	-8.7	-7.8	-9.6	-10.2	-8.9	-8.8	-9.5	-9.4	-8.2



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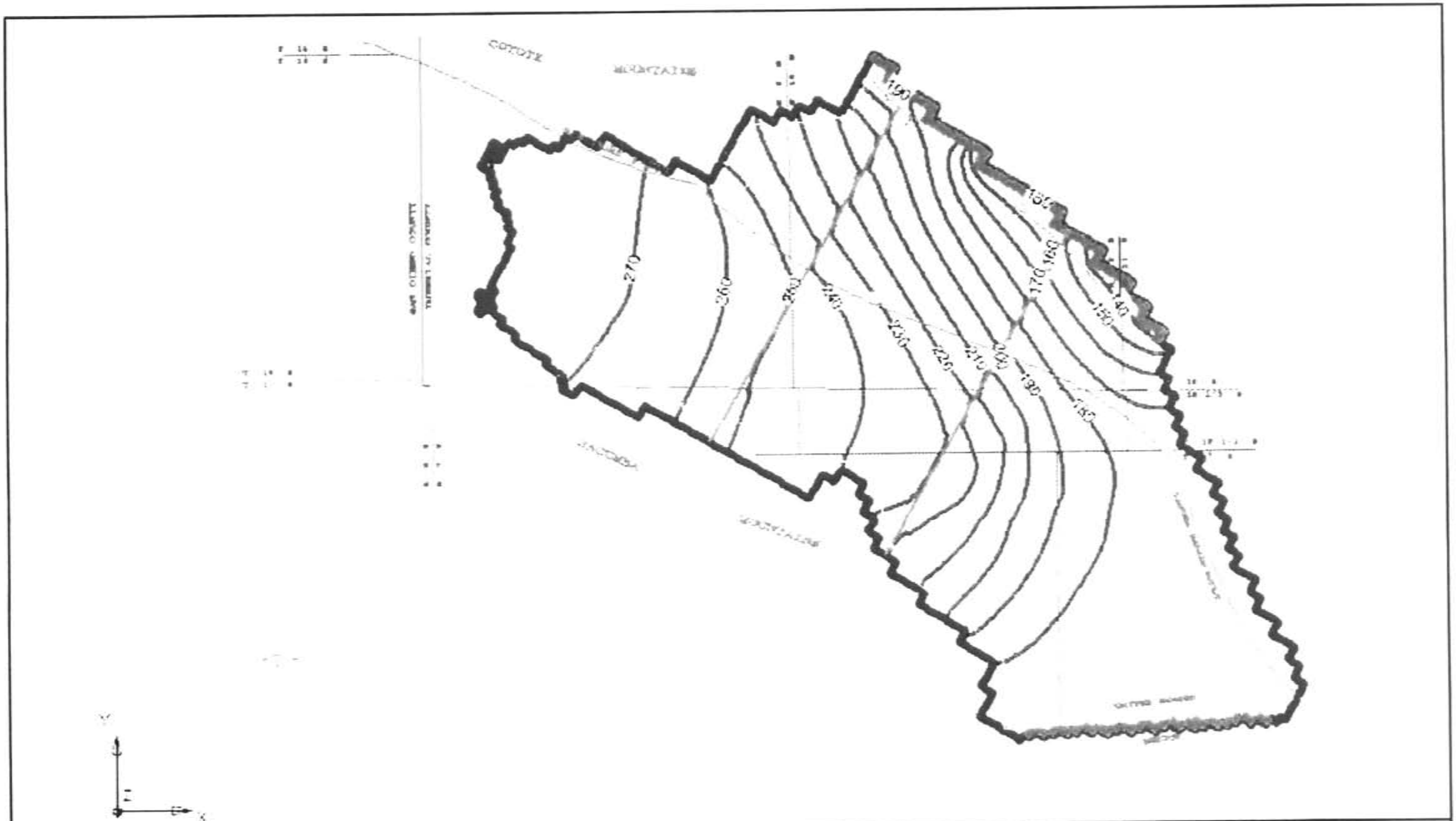
Ocotillo/Coyote Wells Groundwater Study

Layer 1 Gorundwater Elevation (ft) at the End of Year 2082
(Baseline Scenario)

10/10/03

FIGURE 6-1

PROJECT NUMBER 111320



Bookman-Edmonston
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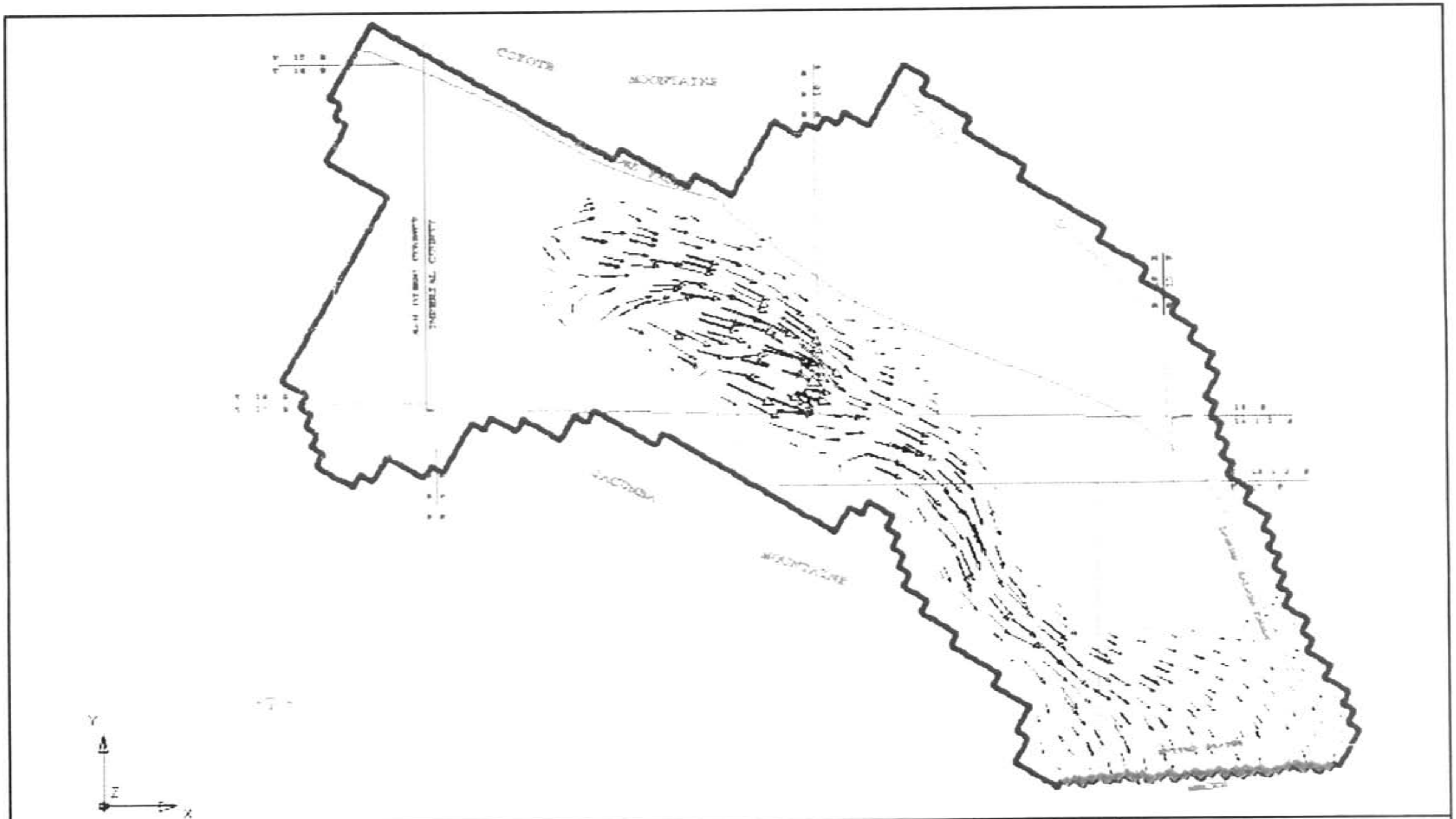
Ocotillo/Coyote Wells Groundwater Study

Layer 2 Groundwater Elevation (ft) at the End of Year 2082
(Baseline Scenario)

10/10/03

FIGURE 6-2

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

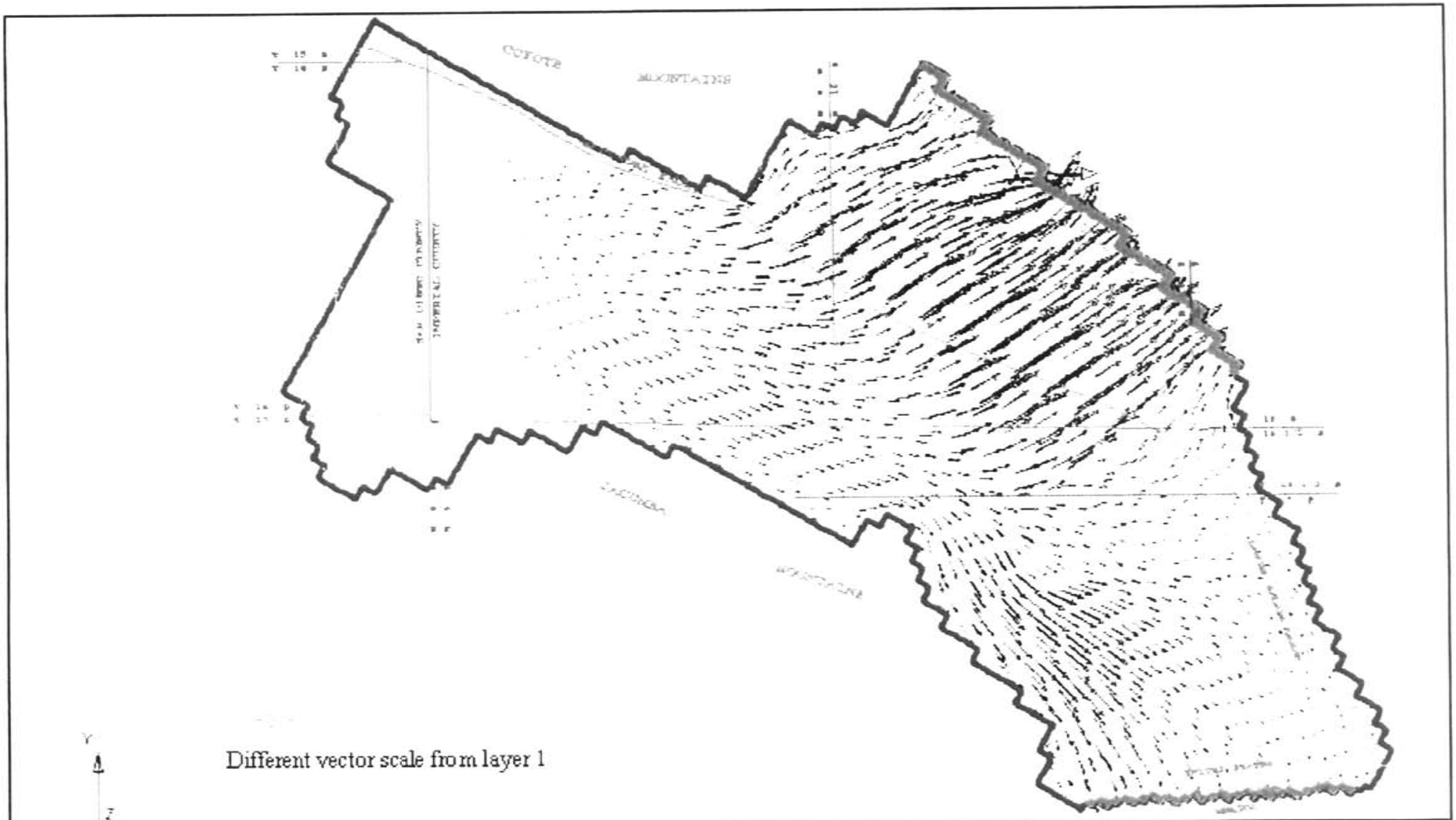
Ocotillo/Coyote Wells Groundwater Study

Layer 1 Gorundwater Flow Directions at the End of Year 2082
(Baseline Scenario)

10/10/03

FIGURE 6-3

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

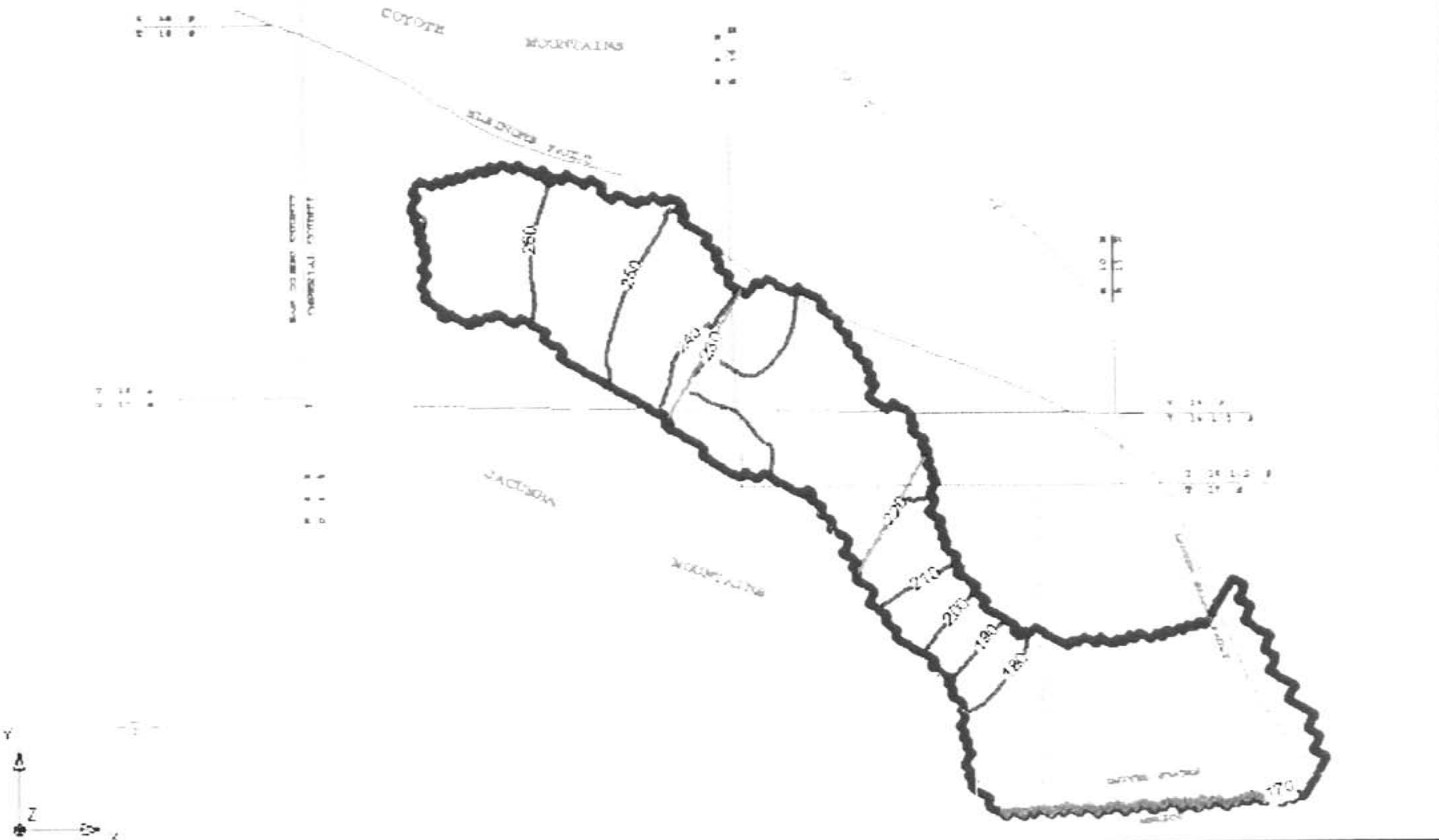
Ocotillo/Coyote Wells Groundwater Study

Layer 2 Groundwater Flow Direction at the End of Year 2082
(Baseline Scenario)

10/10/03

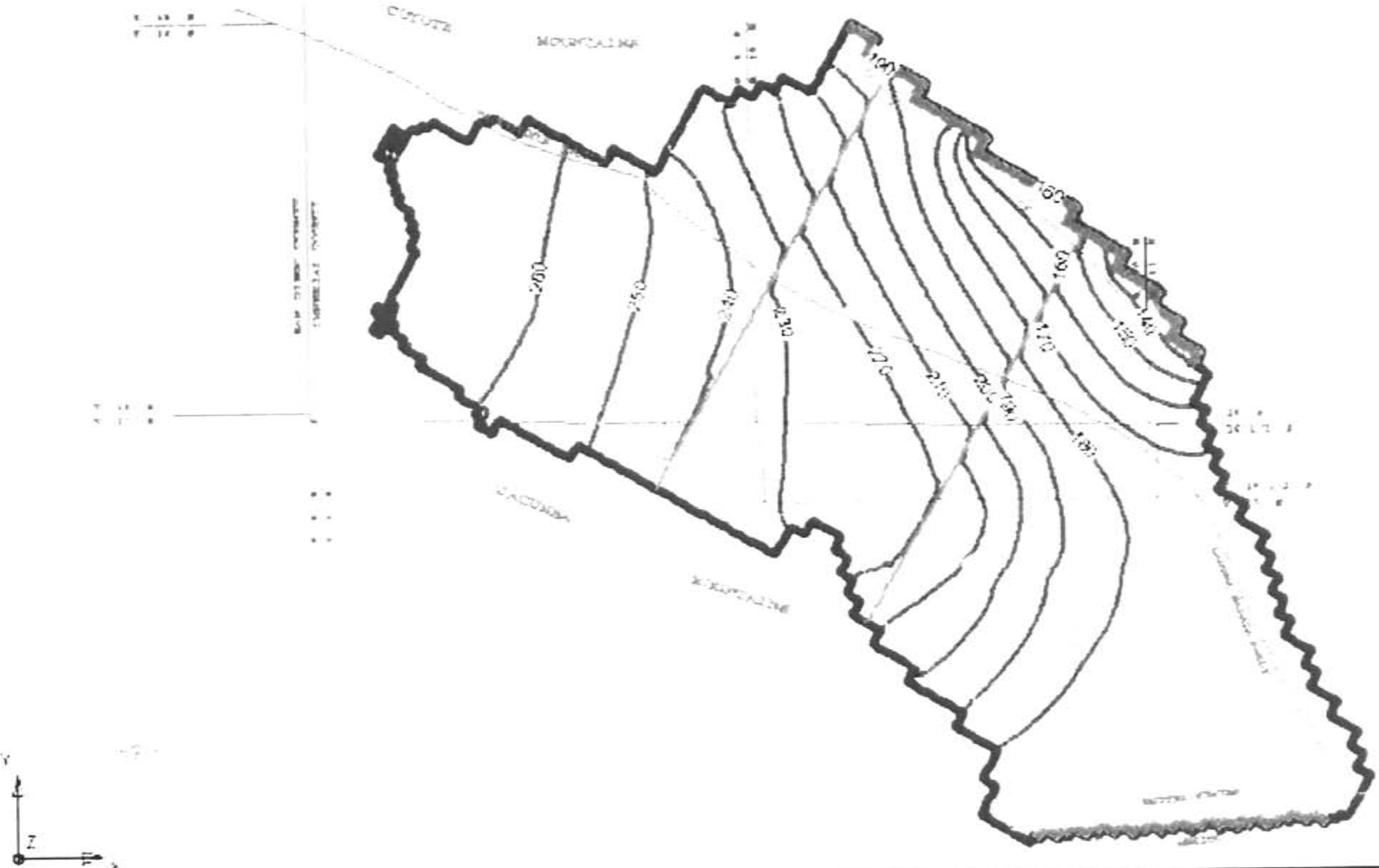
FIGURE 6-4

PROJECT NUMBER 111320



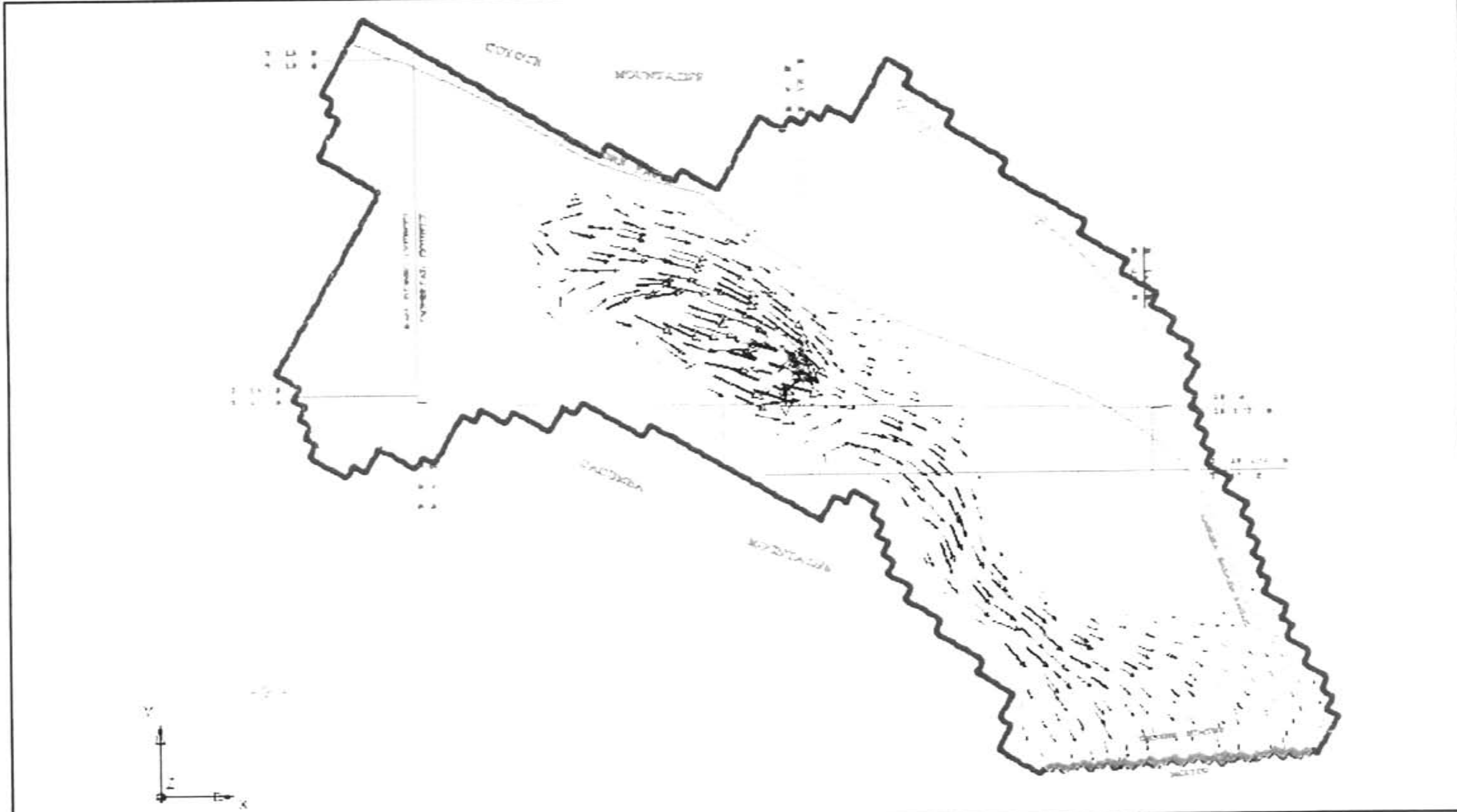
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 1 Groundwater Elevation (ft) at the End of Year 2082 (650 ac-ft/yr Pumping Scenario)	10/10/03 FIGURE 6-5

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 2 Groundwater Elevation (ft) at the End of Year 2082 (650 ac-ft/yr Pumping Scenario)	10/10/03 FIGURE 6-6

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

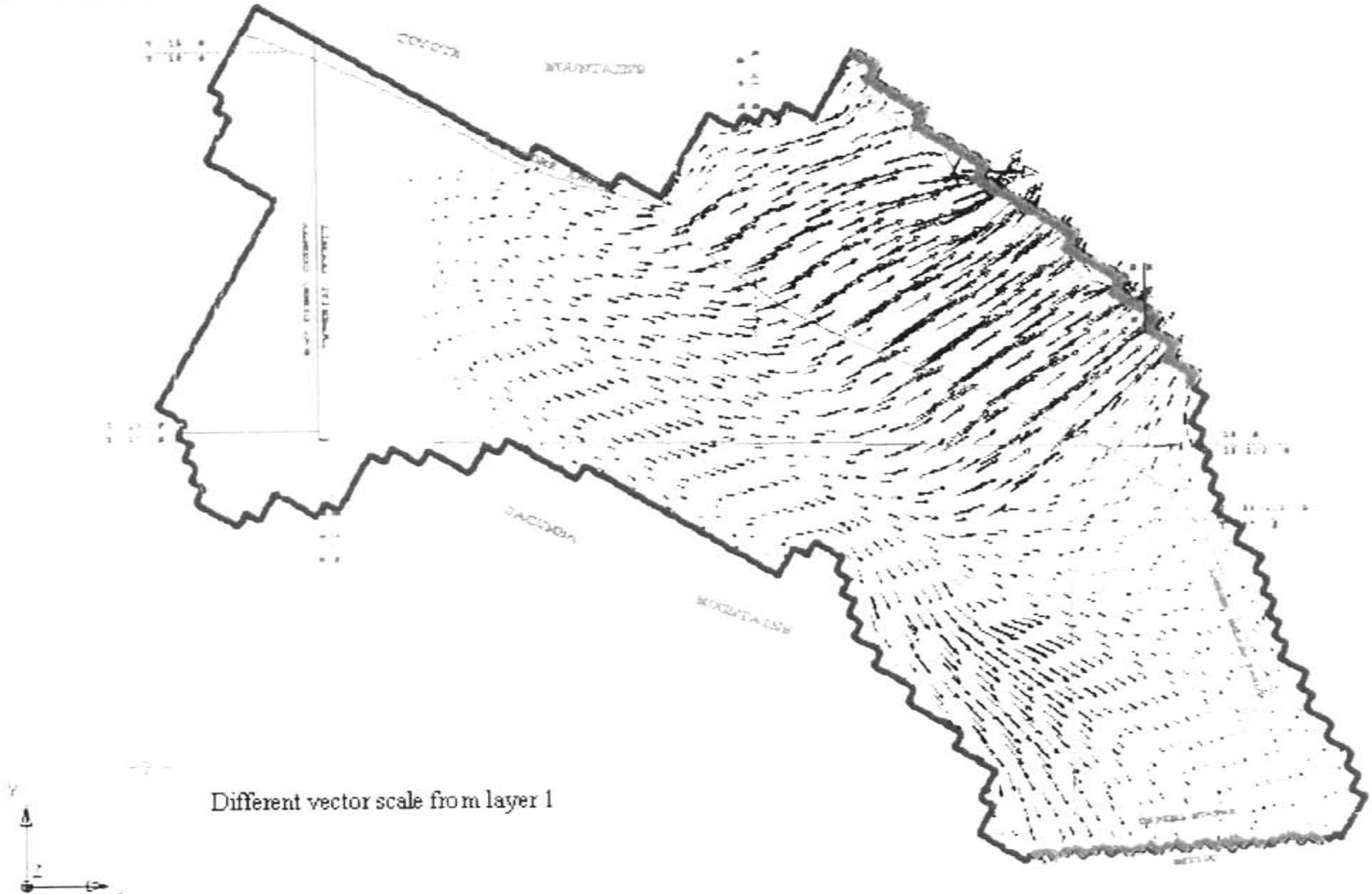
Ocotillo/Coyote Wells Groundwater Study

Layer 1 Groundwater Flow Direction at the End of Year 2082
(650 ac-ft/yr Pumping Scenario)

10/10/03

FIGURE 6-7

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 2 Groundwater Flow Direction at the End of Year 2082 (650 ac-ft/yr Pumping Scenario)	10/10/03 FIGURE 6-8

PROJECT NUMBER 111320

Groundwater elevation decline from year 2002, in wells of layer 1 for the 650 ac-ft/yr pumping scenario simulation is shown in Table 6-2. As shown in Table 6-2, the maximum 80-year decline is about 26 feet.

767 Acre-Feet Per Year Pumping Scenario

This model run provides an estimate of the potential impacts assuming US Gypsum pumps at a rate of 767 ac-ft/yr, and an increase in future urban water use by 1.4 percent annually for all local wells. Figures 6-9 and 6-10 show the simulated 2082 groundwater contours in layer 1 and layer 2, respectively. The simulated 2082 groundwater flow directions in layer 1 and layer 2 are shown in Figures 6-11 and 6-12, respectively. Comparing Figures 6-11 and 6-12 to Figures 6-3 and 6-4 of the baseline scenario, the US Gypsum pumping rate increase to 767 ac-ft/yr, and the increase of urban water use by 1.4 percent annually will not cause a gradient reversal. Groundwater flow will be toward the south in layer 1, and to the north and south in layer 2. Therefore, poor quality groundwater east of the Ocotillo area in layer 2 will continue to stay there or flow east and the good quality water in the Basin will not be impacted.

Groundwater elevation decline from year 2002, in wells completed in layer 1 for the 767 acre-feet per year pumping scenario simulation are shown in Table 6-3. As shown in Table 6-3, the maximum 80-year groundwater level decline is about 31 feet.

6.3 GROUNDWATER IMPACTS

The potential groundwater impacts of each selected modeling scenario were evaluated based on the groundwater flow model outputs to determine if the scenarios caused negative impacts to the groundwater Basin. Lowering groundwater levels in the Ocotillo area are a result of overall pumping from the area. The cross-section on Figure 6-13 shows the bottom elevation of younger alluvial material (layer 1 material), well screen intervals, and groundwater elevations in the year 2082 simulated from the future scenarios. As shown in the Figure 6-13 and Table 6-3, the maximum groundwater level drop in the Ocotillo area from 2002 to the end of year 2082 for the 767 ac-ft/yr pumping scenario is 31 feet. The saturated thickness of the younger alluvial material (layer 1 material) in the Ocotillo area is about 400 feet. Therefore, the maximum groundwater level decline after 80 years, with 767 ac-ft/yr pumping scenario, is about 8% of the younger alluvial material. Tables 6-4 and 6-5 show the differences in groundwater levels between the baseline scenario and the 650 ac-ft/yr pumping scenario or the 767 ac-ft/yr pumping scenario. As shown in Tables 6-4 and 6-5, the groundwater levels will be 18 and 24 feet lower than the baseline scenario at the end of 80 years for the 650 ac-ft/yr pumping scenario, and for the 767 ac-ft/yr pumping scenario, respectively.

Table 6-2 Layer 1 Well Drawdowns (ft) for 650 ac-ft/yr Pumping Scenario

(Drawdown from Groundwater Elevation at the End of 2002)

	Well								
	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
Years	Drawdown (ft)								
10	-3.6	-5.1	-3.8	-2.5	-3.8	-3.5	-3.9	-4.0	-4.9
20	-6.5	-8.2	-6.9	-5.3	-6.8	-6.5	-7.0	-7.1	-8.0
30	-9.3	-11.1	-9.9	-8.1	-9.6	-9.2	-10.0	-10.2	-11.0
40	-12.0	-14.0	-12.9	-10.9	-12.3	-11.9	-13.0	-13.2	-13.9
50	-14.6	-16.9	-16.0	-13.8	-15.0	-14.5	-16.0	-16.3	-16.8
60	-17.3	-19.8	-19.2	-16.7	-17.7	-17.2	-19.2	-19.5	-19.8
70	-20.1	-22.8	-22.5	-19.7	-20.5	-19.9	-22.4	-22.7	-22.9
80	-22.9	-26.0	-25.9	-22.8	-23.4	-22.7	-25.7	-26.2	-26.1

Table 6-3 Layer 1 Well Drawdowns (ft) for 767 ac-ft/yr Pumping Scenario

(Drawdown from Groundwater Elevation at the End of 2002)

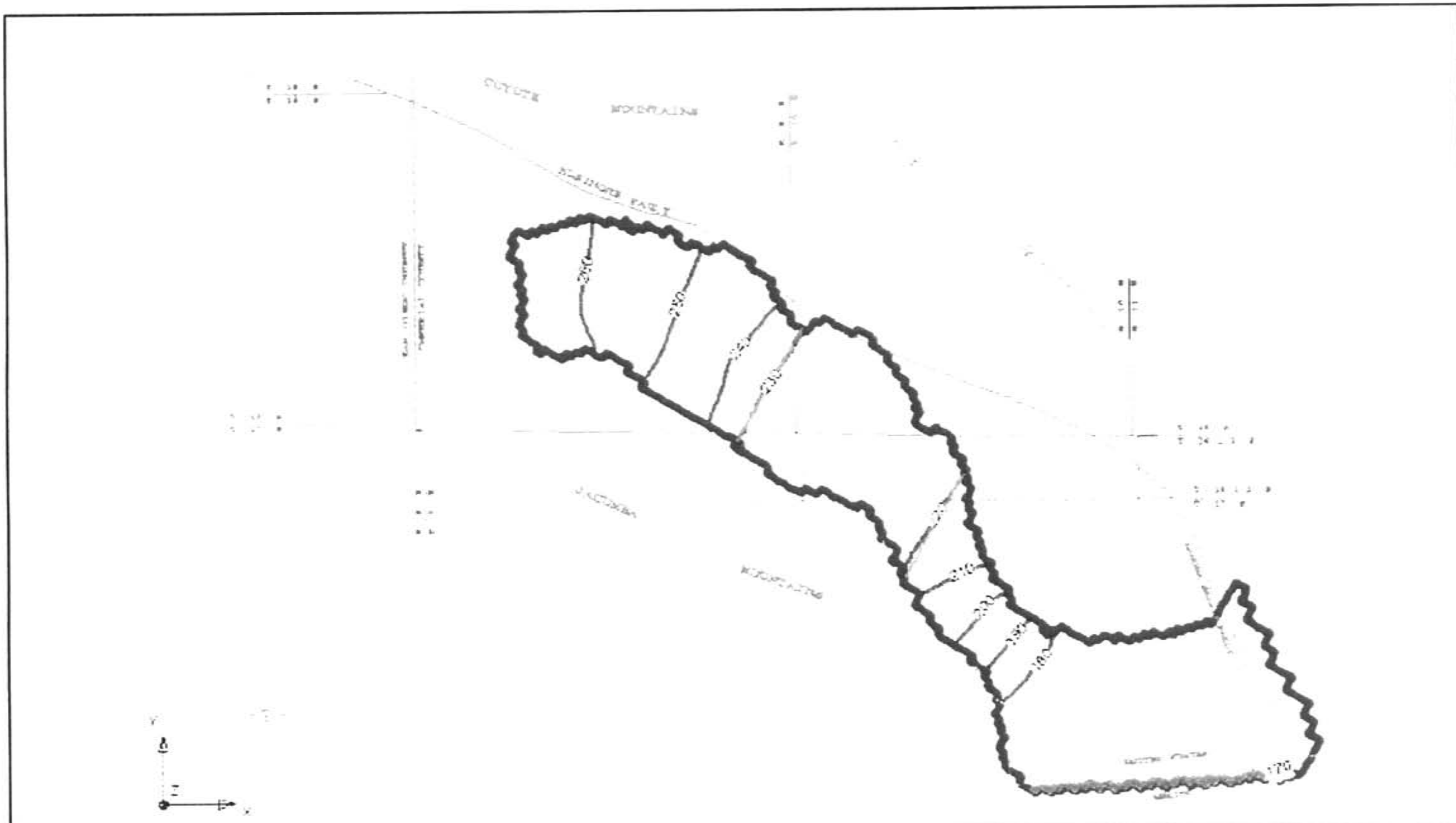
	Well								
	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
Years	Drawdown (ft)								
10	-4.5	-7.0	-4.6	-2.9	-4.7	-4.3	-4.9	-5.0	-6.6
20	-8.0	-10.8	-8.3	-6.1	-8.3	-7.9	-8.5	-8.7	-10.4
30	-11.3	-14.2	-11.8	-9.4	-11.7	-11.2	-12.0	-12.3	-13.9
40	-14.5	-17.6	-15.3	-12.6	-14.8	-14.3	-15.5	-15.8	-17.3
50	-17.6	-21.0	-18.9	-15.9	-18.0	-17.4	-19.0	-19.3	-20.7
60	-20.7	-24.4	-22.5	-19.3	-21.2	-20.5	-22.6	-22.9	-24.2
70	-23.8	-27.8	-26.2	-22.7	-24.3	-23.6	-26.2	-26.7	-27.7
80	-27.1	-31.4	-30.0	-26.2	-27.6	-26.8	-30.0	-30.5	-31.3

Table 6-4 Differences in Groundwater Levels Between Baseline Scenario and 650 ac-ft/yr Pumping Scenario

	Well								
	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
Years	Drawdown (ft)								
10	-2.3	-5.1	-2.4	-0.9	-2.4	-2.1	-2.7	-2.8	-4.7
20	-4.1	-6.9	-4.1	-2.2	-4.2	-3.9	-4.4	-4.6	-6.5
30	-5.7	-8.6	-5.9	-3.7	-5.8	-5.5	-6.1	-6.3	-8.2
40	-7.3	-10.3	-7.7	-5.2	-7.4	-7.0	-7.9	-8.1	-9.9
50	-8.9	-12.1	-9.6	-6.9	-9.0	-8.6	-9.7	-10.1	-11.7
60	-10.6	-14.0	-11.6	-8.6	-10.7	-10.3	-11.8	-12.1	-13.6
70	-12.4	-16.0	-13.8	-10.5	-12.5	-12.0	-13.9	-14.3	-15.7
80	-14.3	-18.1	-16.3	-12.6	-14.4	-13.9	-16.3	-16.8	-17.9

Table 6-5 Differences in Groundwater Levels Between Baseline Scenario and 767 ac-ft/yr Pumping Scenario

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	Drawdown (ft)								
10	-3.2	-7.1	-3.3	-1.2	-3.3	-2.9	-3.6	-3.8	-6.4
20	-5.6	-9.5	-5.6	-3.0	-5.8	-5.3	-5.9	-6.2	-8.9
30	-7.7	-11.8	-7.8	-4.9	-7.9	-7.4	-8.1	-8.4	-11.1
40	-9.8	-14.0	-10.1	-6.9	-9.9	-9.4	-10.4	-10.7	-13.4
50	-11.8	-16.2	-12.4	-9.0	-12.0	-11.5	-12.7	-13.1	-15.6
60	-13.9	-18.5	-14.9	-11.2	-14.1	-13.6	-15.2	-15.6	-18.0
70	-16.1	-20.9	-17.6	-13.5	-16.3	-15.7	-17.7	-18.2	-20.5
80	-18.4	-23.5	-20.4	-16.0	-18.7	-18.0	-20.5	-21.1	-23.1



Bookman-Edmonston
A Division of GEI Consultants, Inc.

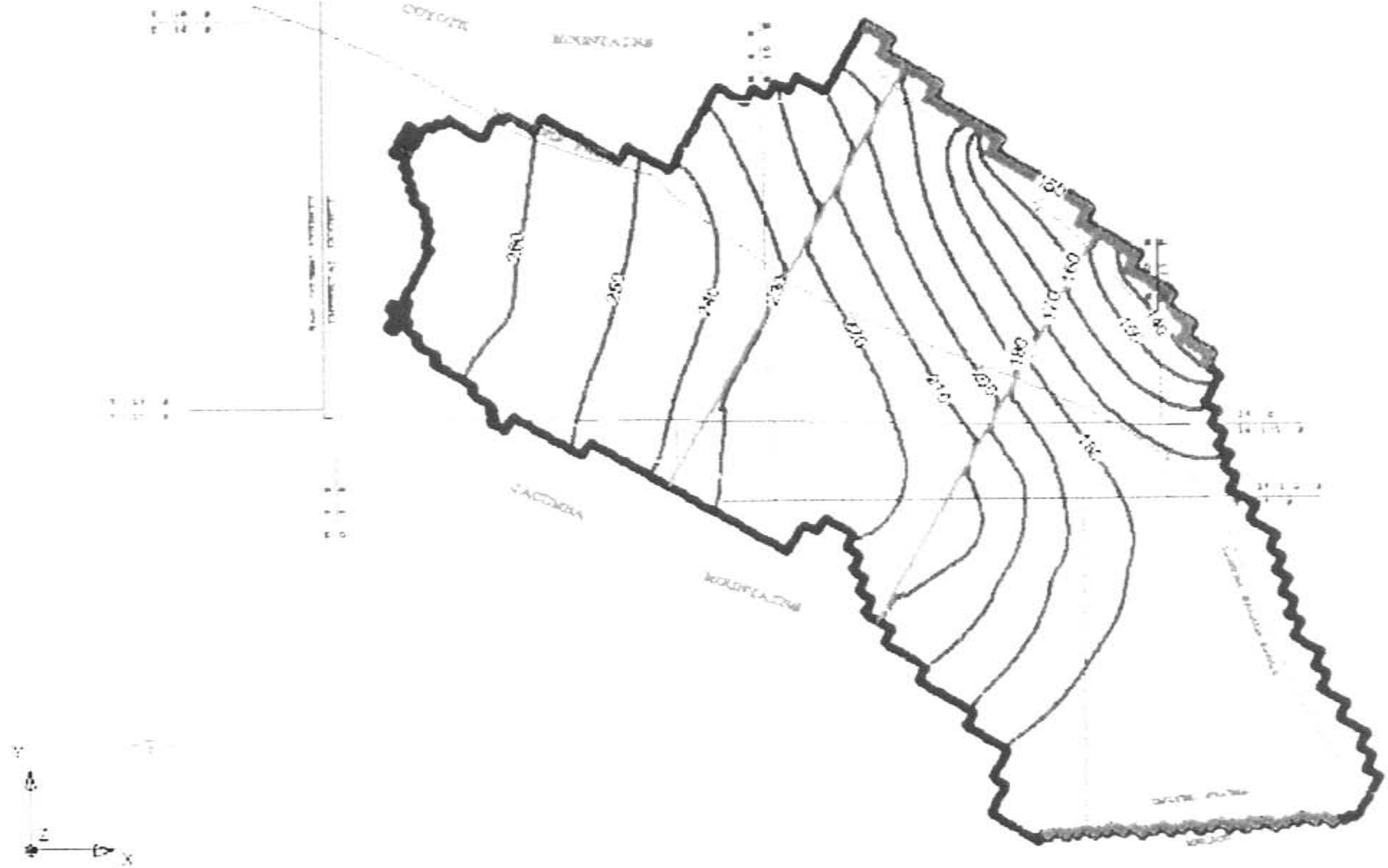
Ocotillo/Coyote Wells Groundwater Study

Layer 1 Groundwater Elevation (ft) at the End of Year 2082
(767 ac-ft/yr Pumping Scenario)

10/10/03

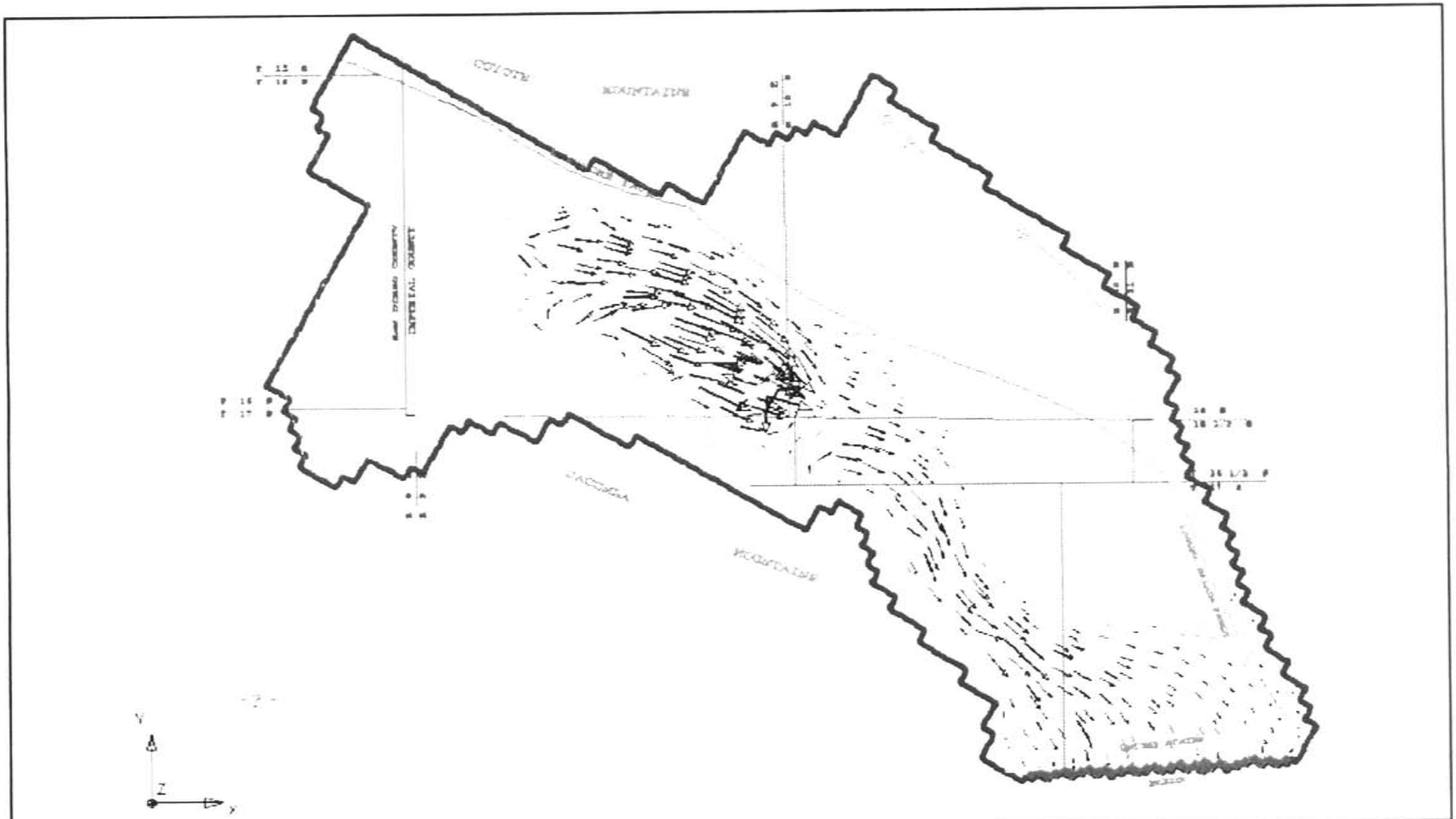
FIGURE 6-9

PROJECT NUMBER 111320



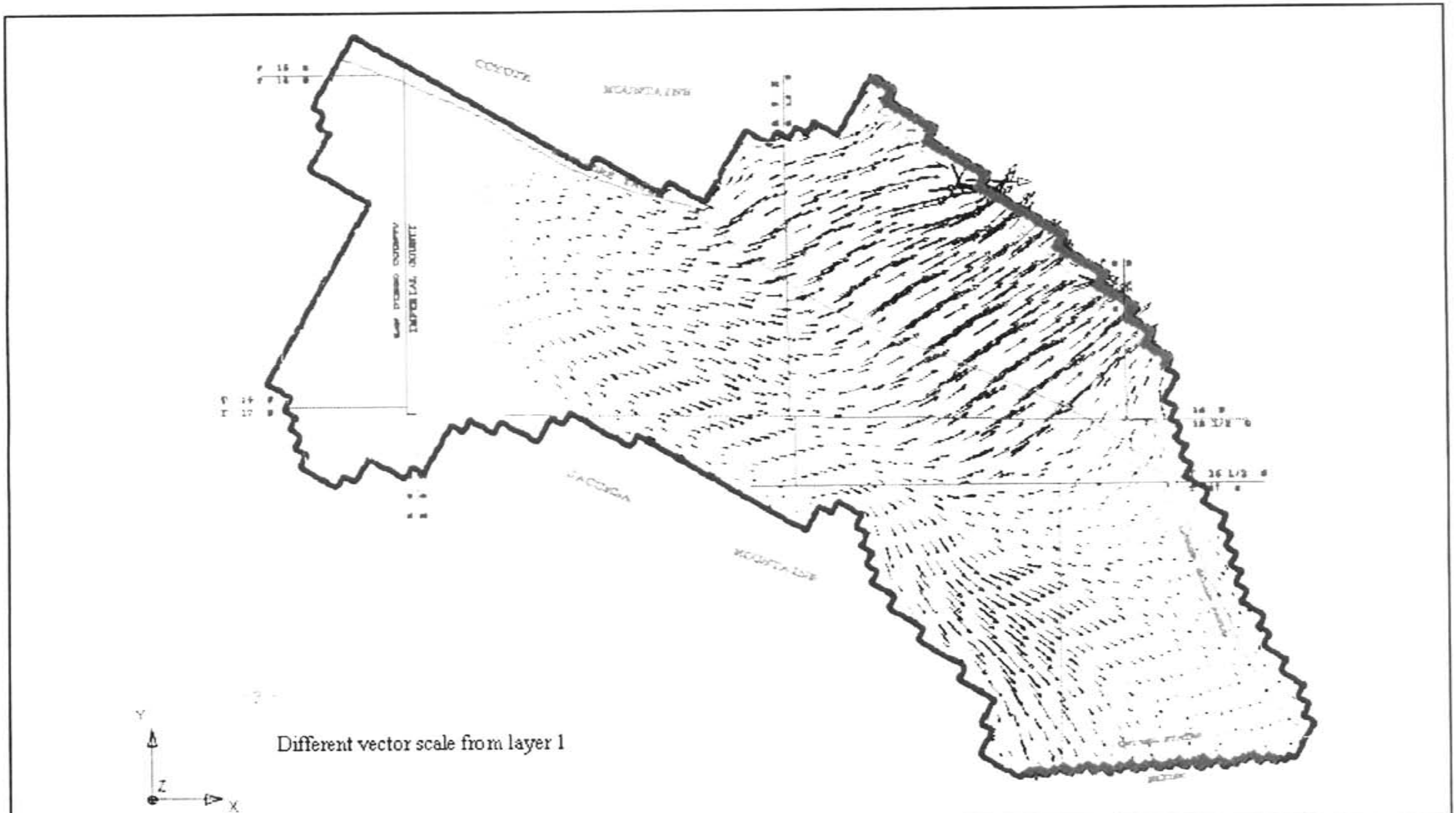
Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 2 Groundwater Elevation (ft) at the End of Year 2082 (767 ac-ft/yr Pumping Scenario)	10/10/03 FIGURE 6-10

PROJECT NUMBER 111320



Bookman-Edmonston A Division of GEI Consultants, Inc.	Ocotillo/Coyote Wells Groundwater Study Layer 1 Groundwater Flow Direction at the End of Year 2082 (767 ac-ft/yr Pumping Scenario)	10/10/03 FIGURE 6-11

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

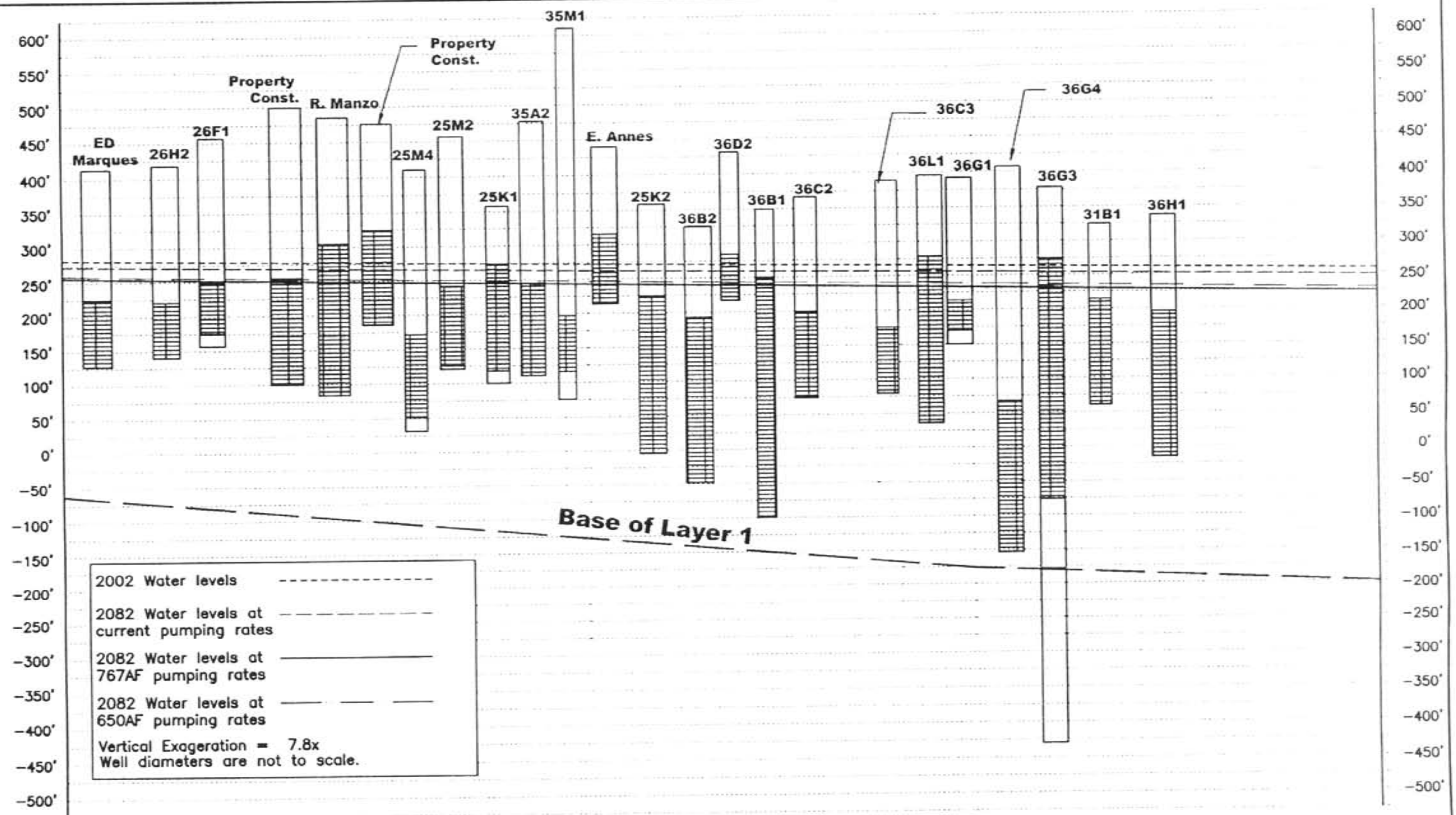
Ocotillo/Coyote Wells Groundwater Study

Layer 2 Groundwater Flow Direction at the End of Year 2082
(767 ac-ft/yr Pumping Scenario)

10/10/03

FIGURE 6-12

PROJECT NUMBER 111320



Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study

Cross-Section of Screen Intervals

Base of Layer 1 and Predicted Groundwater Elevations

10/10/03

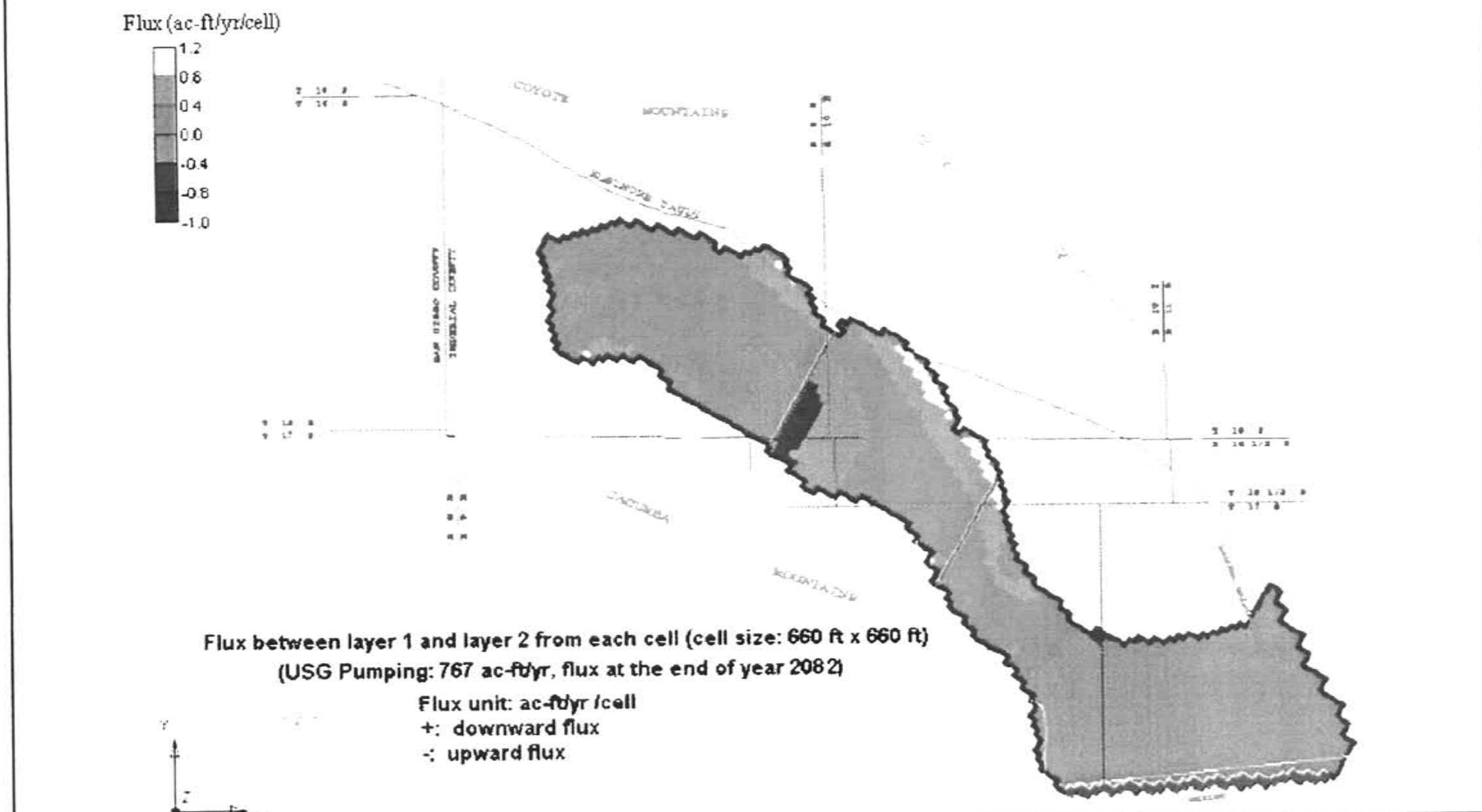
Figure 6-13

PROJECT NUMBER 111320

Potential impacts could include degrading the water quality of the groundwater basin. Two causes of groundwater quality degradation in the basin were considered. They are; 1) vertical saline water intrusion (upconing), and 2) horizontal saline water intrusion. Figure 6-14 shows the model simulated vertical water flux between layer 1 and layer 2 in each cell (660 feet by 660 feet) at the end of year 2082 for the 767 ac-ft/yr pumping scenario. As shown, in Figure 6-14, the vertical flux simulated from the model in each cell is small. The maximum upward flux is 1 ac-ft/yr/ cell. This maximum upward flux happens in the cell where the US Gypsum pumping well No. 4 is located. The water balances in this cell are (1) 383.7 ac-ft/yr of pumpage, (2) 382.45 ac-ft/yr from horizontal inflow, (3) 1 ac-ft/yr from upward inflow, and (4) 0.3 ac-ft/yr from storage. The modeling results suggest that the potential for upconing in the Ocotillo area is insignificant. This model result is corroborated by the observations that US Gypsum's wells are perforated to depths greater than any other in the basin and yet they do not produce saline water.

Horizontal saline water intrusion from poor quality water east and north of the Ocotillo area is another consideration. Historically, groundwater levels in the Ocotillo/Coyote Wells Groundwater Basin have been higher than groundwater levels on the east side of this area. This causes groundwater flow from west to east. From the simulation results of the 650 ac-ft/yr pumping scenario, and the 767 ac-ft/yr pumping scenario, shown in Figures 6-7, 6-8, 6-11 and 6-12, the increase of pumping to 767 ac-ft/yr in the US Gypsum wells will still maintain the existing groundwater flow directions, and does not cause the gradient to reverse.

The future potential groundwater impacts discussed in this section are based on the model results. Although the model is a good predictive tool to estimate the future impacts, the model simulations are subject to uncertainties. Therefore, field monitoring of the groundwater quality should be implemented in the future, and model results should be reevaluated periodically.



Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study

Vertical Flux Between Layer 1 And Layer 2 in Year 2082
(767 ac-ft/yr Pumping Scenario)

10/10/03

FIGURE 6-14

PROJECT NUMBER 111320

Bookman-Edmonston, 1996, Ocotillo/Coyote Wells Basin Hydrology and Groundwater Modeling Study, Unpublished Report

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APPENDIX A

U.S. Gypsum Well Number 6 Pumping Test

MEMORANDUM

DATE: December 5, 2002

TO: Dick Rhone

CC: Tom Regan

FROM: Ron Schnabel
Bookman-Edmonston

SUBJECT: US GYPSUM WELL 6 PUMPING TEST ANALYSIS

Bookman-Edmonston (B-E) assisted US Gypsum in conducting a pump test on US Gypsum well 6 at Ocotillo, California. This memorandum is a summary of that test and findings.

US Gypsum, Plaster City, California, performed a pumping test on US Gypsum well 6 from November 25 to December 3, 2002 during a scheduled plant maintenance shutdown. During the pumping test, US Gypsum observation (OB) well 6, located approximately 38 feet southeast of US Gypsum well 6 was used as an observation well and monitored with an In-Situ miniTROLL pressure transducer installed by B-E to read water levels at 30-second intervals. Additionally, US Gypsum well #5, located about 1,700 feet south of well 6, was measured by US Gypsum personal using a metal tape during the first 100 recovery minutes of the pump test.

Presented below are summaries of test results and a description of standard analytical procedures performed to estimate pertinent aquifer parameters from test results, specifically transmissivity (T) and specific yield (S).

Pumping Test Results

The attached drawdown versus time with discharge plot shows groundwater depth (measured from the top of casing) for observation well 6. Two drawdowns and one recovery are shown in the plot. The drawdowns correspond to well 6 pumping starts on November 25, 2002 (referred to as drawdown #1) and December 2, 2002 (referred to as drawdown #2), and a recovery corresponding to well 6 shutdown on November 28, 2002. The partial recovery near the end of the test (about 11,000 min) represents a change in discharge rate at well 6 from 371 to 340 gpm. The plot shows that the drawdowns did not become asymptotic with or stabilize at a particular groundwater level indicating that equilibrium between recharge and discharge was not achieved and that the discharge rate exceeded the recharge rate during the pumping test.

The attached Cooper-Jacob drawdown semi-log plots for drawdowns #1 and #2 shows the log intervals used for the Cooper – Jacob straight-line approximation of T from the time-drawdown data at the observation well. The calculated T values, $1.48 \times 10^{+4}$ ft^2/day and $1.55 \times 10^{+4}$ ft^2/day for drawdown #1 and #2, respectively, are presented in the analysis report results sections and are included in the Summary of Calculated Hydraulic Parameters Table 1 below.

Recovery data from the pump test was used to calculate T by plotting residual drawdown (s′) versus the ratio of t/t′ where t is the time since pumping started and t′ is the time since pumping stopped. The attached semi-log recovery plot for observation well 6 produced a T value of $1.10 \times 10^{+4}$ ft^2/day.

Well lithological logs suggest that the underlying aquifer is unconfined. Consequently, the Neuman method was used to estimate the T and S values for the two drawdown curves. The wells were assumed to be fully penetrating the aquifer. Plot of observation well 6 drawdown data and the least squares regression fit to Neuman-type curves produced T and S values from drawdown #1 and #2 of $6.73 \times 10^{+3}$ ft^2/day and 10.6, and $5.82 \times 10^{+3}$ ft^2/day and 8.26, respectively.

Table 1 below summarizes the aquifer hydraulic parameters estimated from the various analytical methods described above.

Table 1 - Summary of Calculated Hydraulic Parameters

Transmissivity (gpd/ft)	Transmissivity (ft^2/day)	Specific Yield	Portion of Data	Analytical Method Used	Program
110,700	14,800		Drawdown #1	Cooper-Jacob	AquiferTest
115,900	15,500		Drawdown #2	Cooper-Jacob	AquiferTest
82,300	11,000		Drawdown #1	Recovery	AquiferTest
50,100	6,700	10.6	Drawdown #1	Neuman	AquiferTest
43,400	5,800	8.3	Drawdown #2	Neuman	AquiferTest

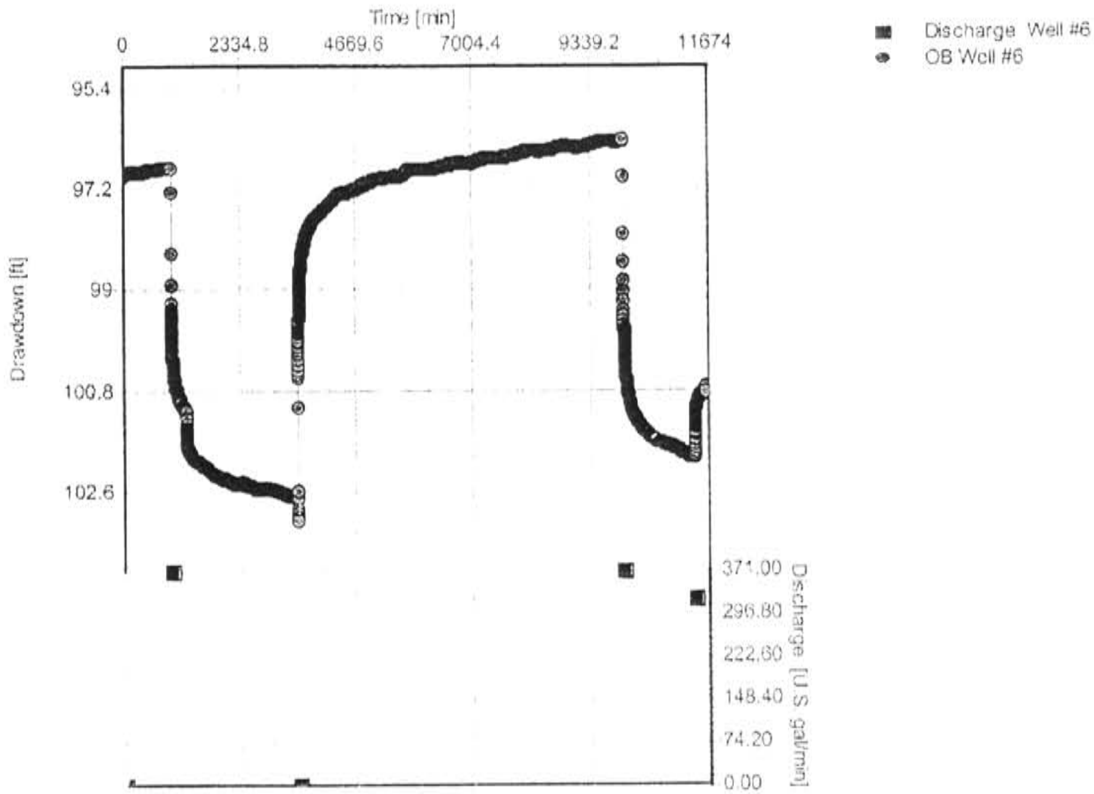
The attachment plot of observation well #5 recovery verses time shows no change in water level as a result of the shutdown of well #6.

attachments

BOOKMAN-EDMONSTON
ENGINEERING

BOOKMAN - EDMONSTON	**Bookman-Edmonston**		**Pumping Test Analysis Report**
	225 W. Broadway, #400	Project:	U.S. Gypsum Well #6 Test
	Glendale, CA 91204	Number:	111320
	818-244-0117	Client:	U.S. Gypsum

Thanksgiving 2002 [Drawdown vs. Time with Discharge]



Pumping Test: **Thanksgiving 2002**

Analysis Method: **Drawdown vs. Time with Discharge**

Analysis Results:

Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]		
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		

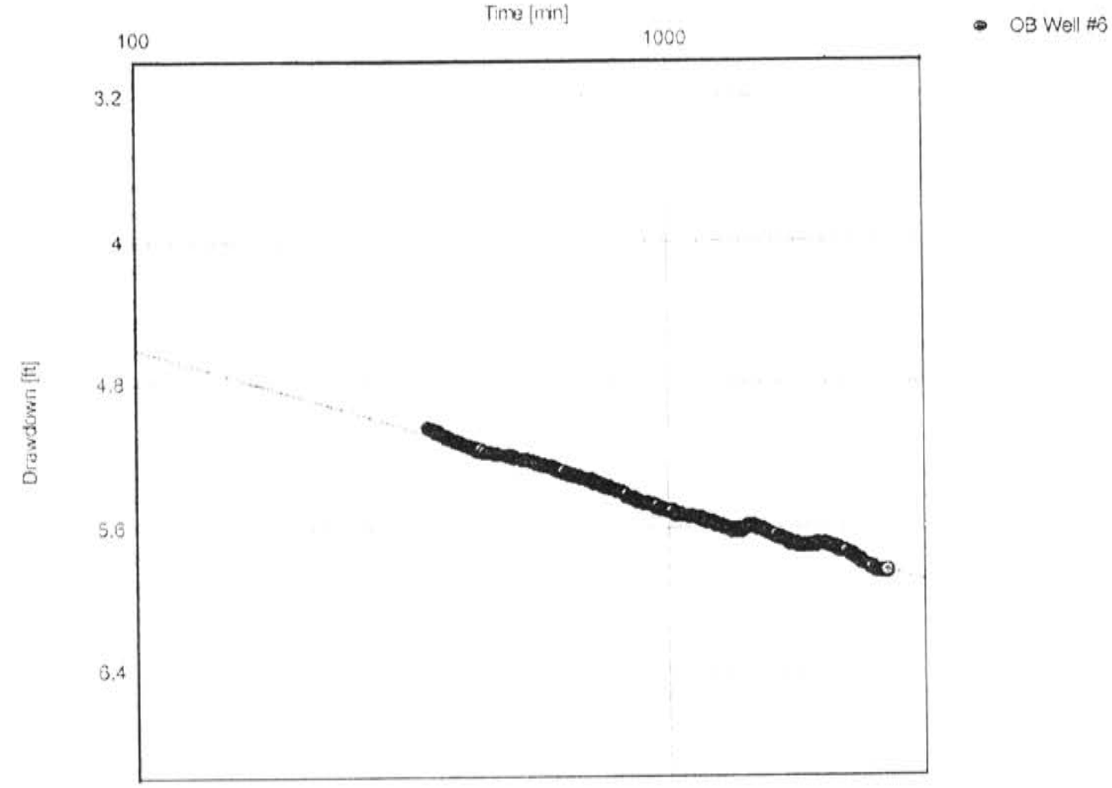
Comments:

Evaluated by: Ron Schnabel

Evaluation Date: 12/4/2002

BOOKMAN - EDMONSTON	Bookman-Edmonston 225 W. Broadway, #400 Glendale, CA 91204 818-244-0117	Pumping Test Analysis Report Project: U.S. Gypsum Well #6 Test Number: 111320 Client: U.S. Gypsum

11/25/02 Draw dow n #1 [Cooper-Jacob Time-Draw dow n]



Pumping Test: **11/25/02 Drawdown #1**

Analysis Method: **Cooper-Jacob Time-Drawdown**

Analysis Results:	Transmissivity:	1.48E+4 [ft²/d]	Conductivity:	3.22E+1 [ft/d]
Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]	Unconfined Aquifer	
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		

Comments: Cooper-Jaccob Straght Line Approximation For Drawdown #1 on 11/25/02. Time 350 to 2,500 min.

Evaluated by: Ron Schnabel

Evaluation Date: 12/5/2002

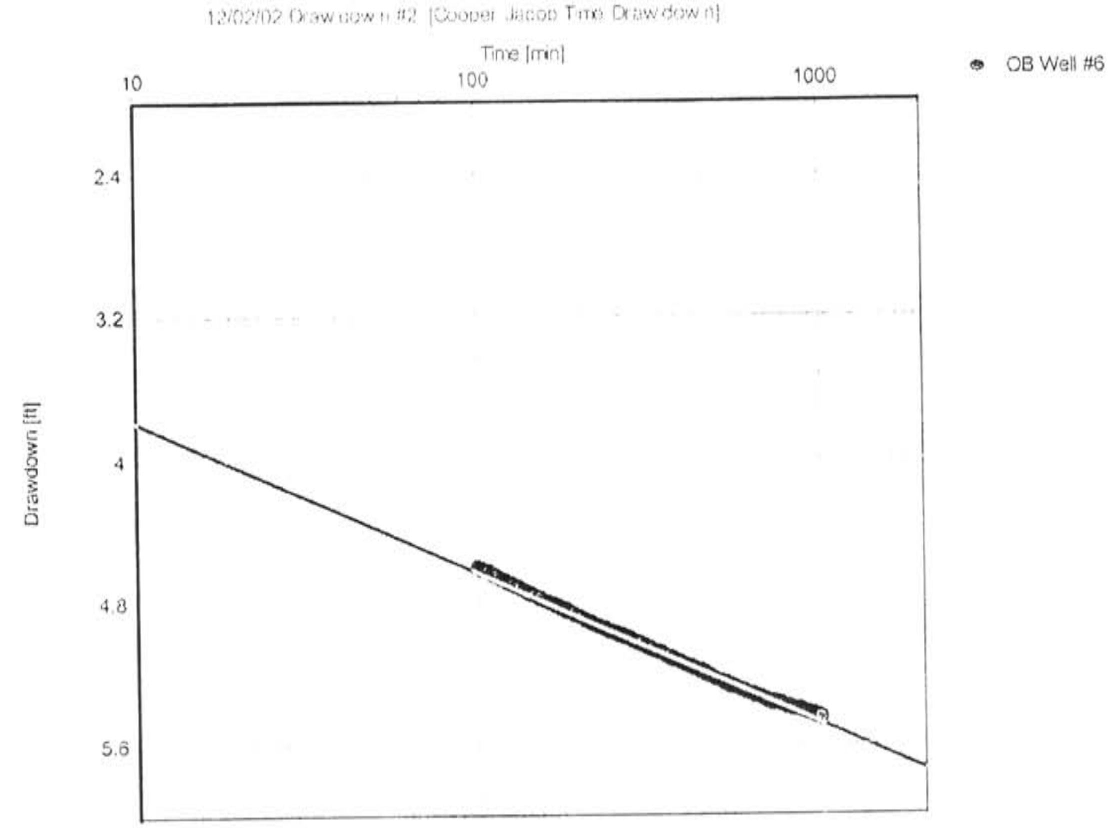
BOOKMAN - EDMONSTON

Navigant

Bookman-Edmonston
225 W. Broadway, #400
Glendale, CA 91204
818-244-0117

Pumping Test Analysis Report

Project: U.S. Gypsum Well #6 Test
Number: 111320
Client: U.S. Gypsum

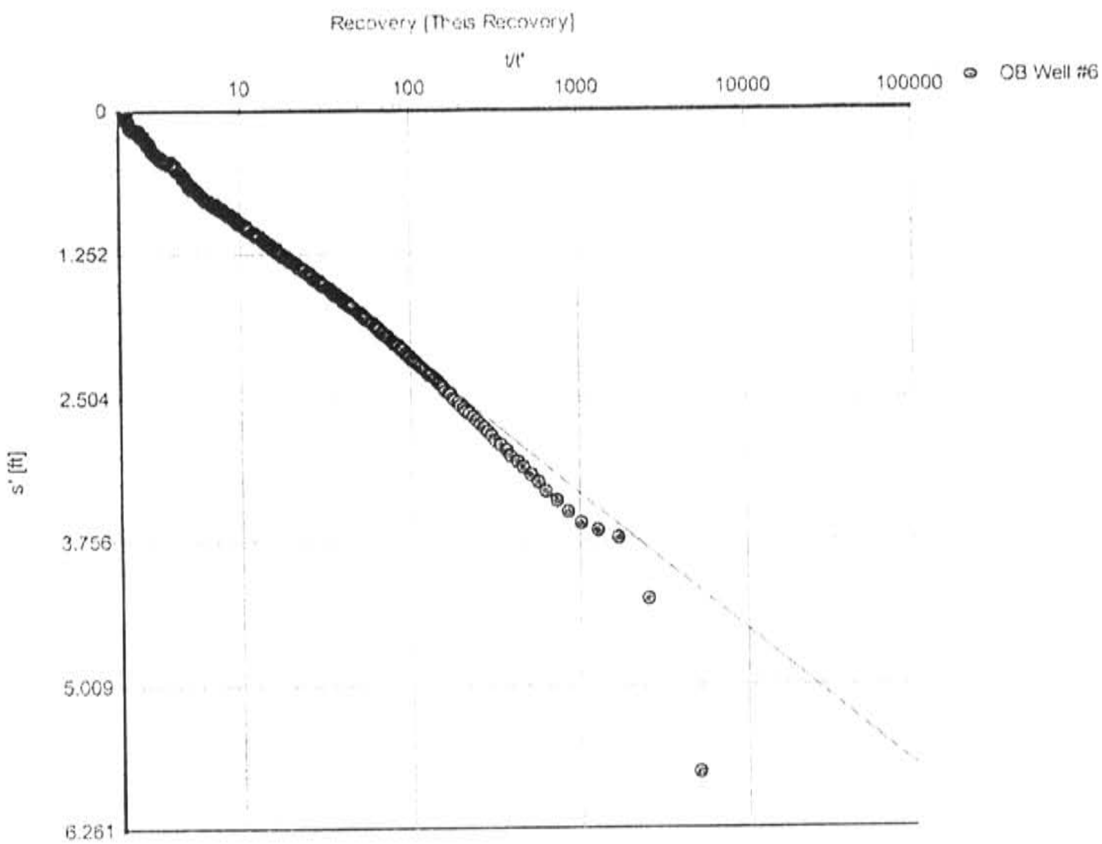


Pumping Test:	12/02/02 Drawdown #2			
Analysis Method:	Cooper-Jacob Time-Drawdown			
Analysis Results:	Transmissivity:	1.55E+4 [ft²/d]	Conductivity:	3.36E+1 [ft/d]
Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]	Unconfined Aquifer	
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		

Comments: Cooper-Jaccob Straght Line Approximation For Drawdown #2 on 12/02/02. Time 100 to 1,000 min.

Evaluated by: Ron Schnabel
Evaluation Date: 12/5/2002

Bookman-Edmonston	Pumping Test Analysis Report
BOOKMAN - EDMONSTON 225 W. Broadway, #400 Glendale, CA 91204 818-244-0117	Project: U.S. Gypsum Well #6 Test Number: 111320 Client: U.S. Gypsum



Pumping Test: Recovery

Analysis Method: Theis Recovery

Analysis Results: Transmissivity: 1.10E+4 [ft²/d] Conductivity: 2.39E+1 [ft/d]

Test parameters:				
	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]	Unconfined Aquifer	
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		
	Pumping Time	2579 [min]		

Comments:

Evaluated by: Ron Schnebel

Evaluation Date: 12/4/2002

BOOKMAN - EDMONSTON

Navigant

Bookman-Edmonston

225 W. Broadway, #400

Glendale, CA 91204

818-244-0117

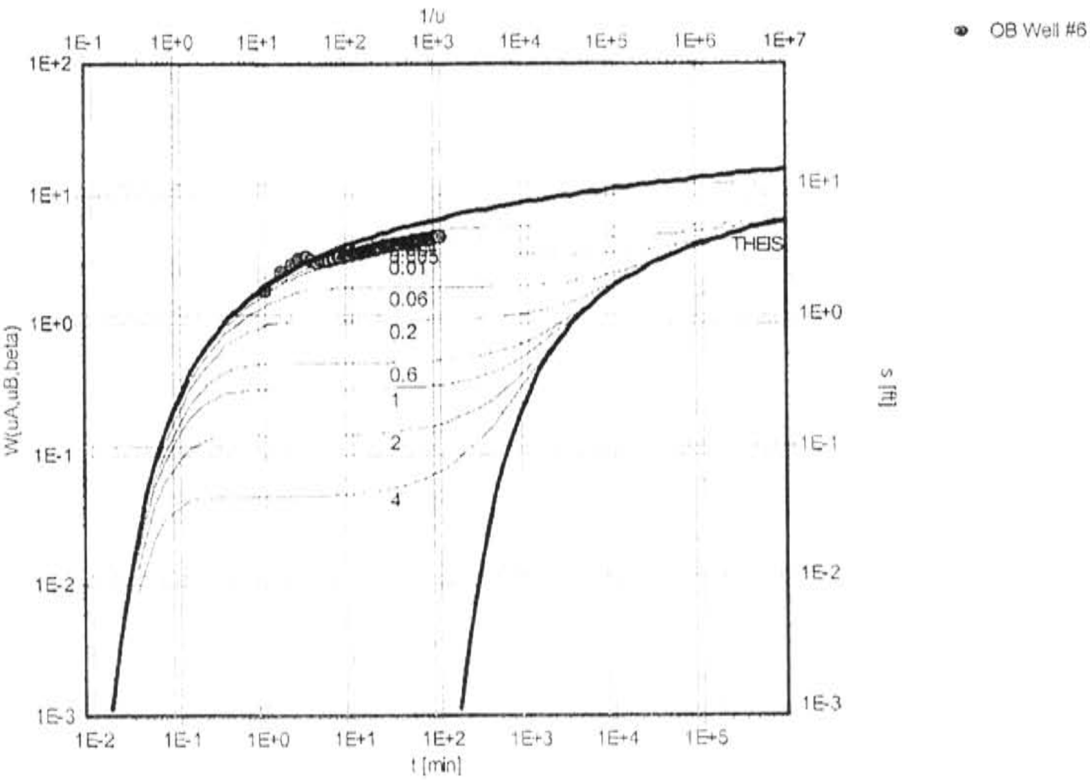
Pumping Test Analysis Report

Project: U.S. Gypsum Well #6 Test

Number: 111320

Client: U.S. Gypsum

11/25/02 Drawdown #1 [Cooper-Jacob Time-Drawdown]



Pumping Test: **11/25/02 Drawdown #1**

Analysis Method: **Neuman**

Analysis Results:	Transmissivity:	6.73E+3 [ft²/d]	Conductivity:	1.46E+1 [ft/d]
	Storativity:	1.06E-3	Specific Yield:	1.06E+1
Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]	Beta:	0.005
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		
	LOG(Sy/S)	4		

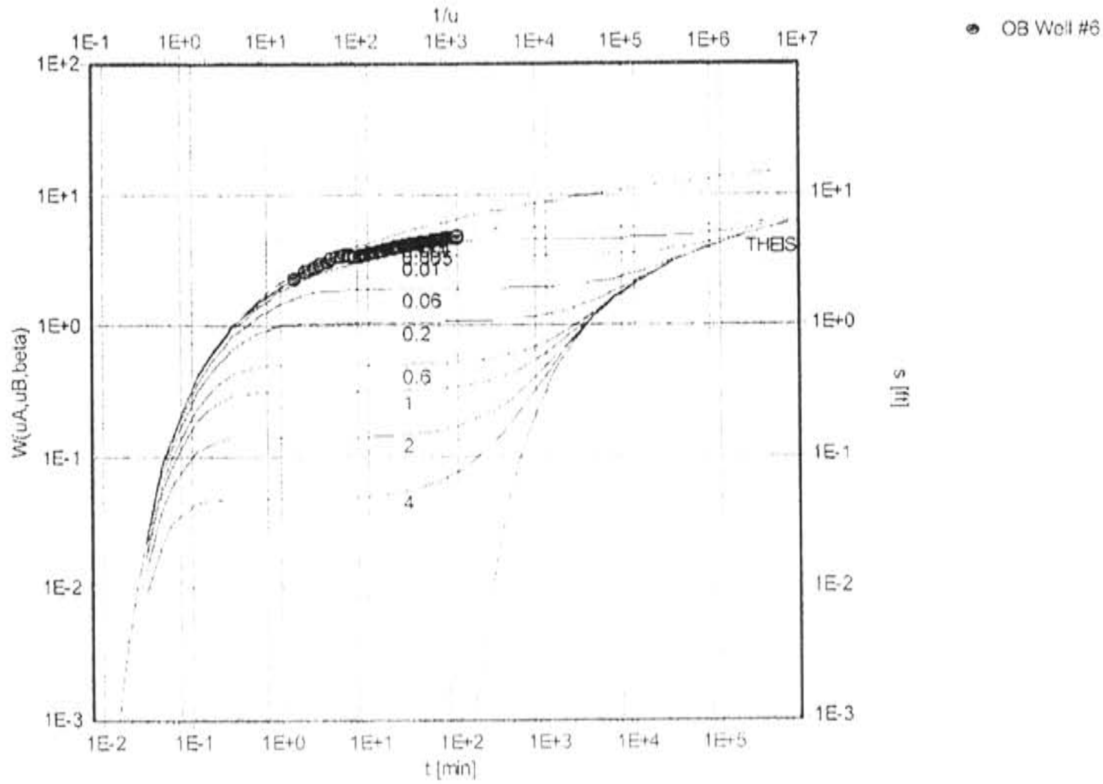
Comments: Automatic Least Squares Regression Fit To Curve

Evaluated by Ron Schnabel

Evaluation Date 12/4/2002

BOOKMAN - EDMONSTON	Bookman-Edmonston	Pumping Test Analysis Report	
Navigant	225 W. Broadway, #400	Project:	U.S. Gypsum Well #6 Test
	Glendale, CA 91204	Number:	111320
	818-244-0117	Client:	U.S. Gypsum

12/02/02 Drawdown #2 [Neuman]



Pumping Test:	12/02/02 Drawdown #2			
Analysis Method:	Neuman			
Analysis Results:	Transmissivity:	5.82E+3 [ft²/d]	Conductivity:	1.27E+1 [ft/d]
	Storativity:	8.26E-4	Specific Yield.	8.26E+0
Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]	Beta:	0.005
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		
	LOG(Sy/S):	4		
Comments:	Automatic Least Squares Regression Fit To Curve			

Evaluated by: Ron Schnabel
Evaluation Date: 12/4/2002

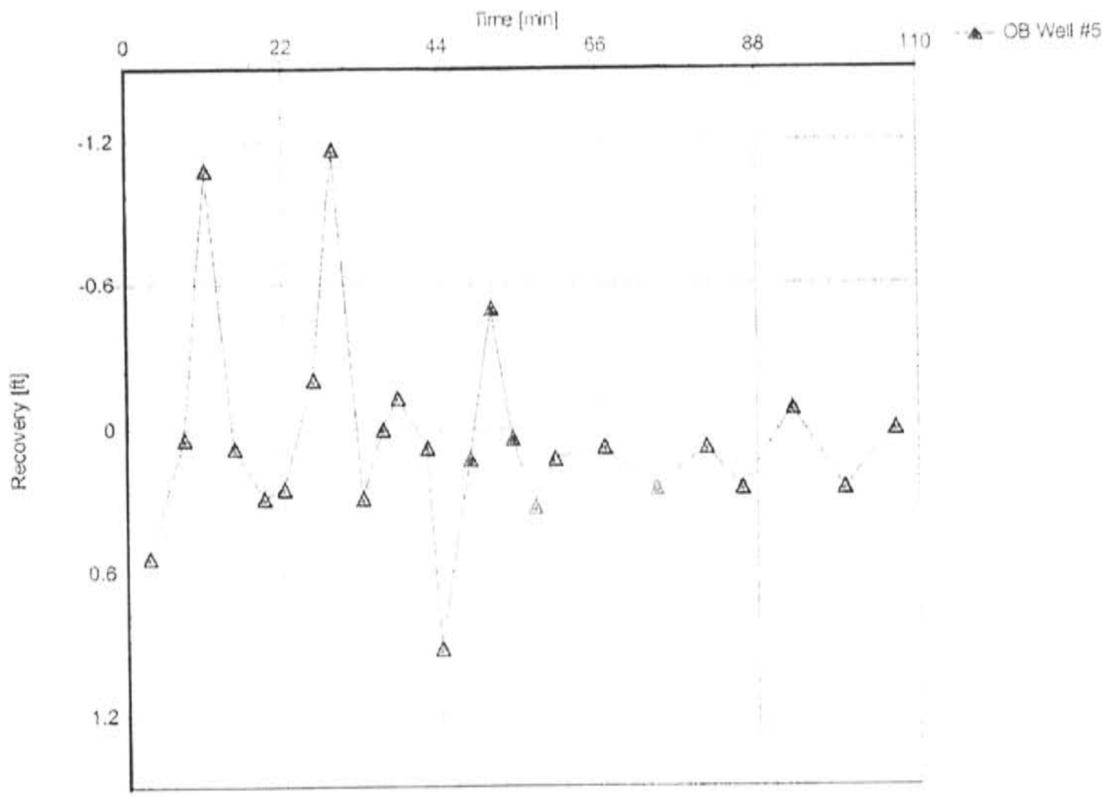
BOOKMAN-EDMONSTON
Navigant

Bookman-Edmonston
225 W. Broadway, #400
Glendale, CA 91204
818-244-0117

Pumping Test Analysis Report

Project: U.S. Gypsum Well #6 Test
Number: 111320
Client: U.S. Gypsum

OB Well #5 Recovery [Recovery vs. Time]



Pumping Test: **OB Well #5 Recovery**

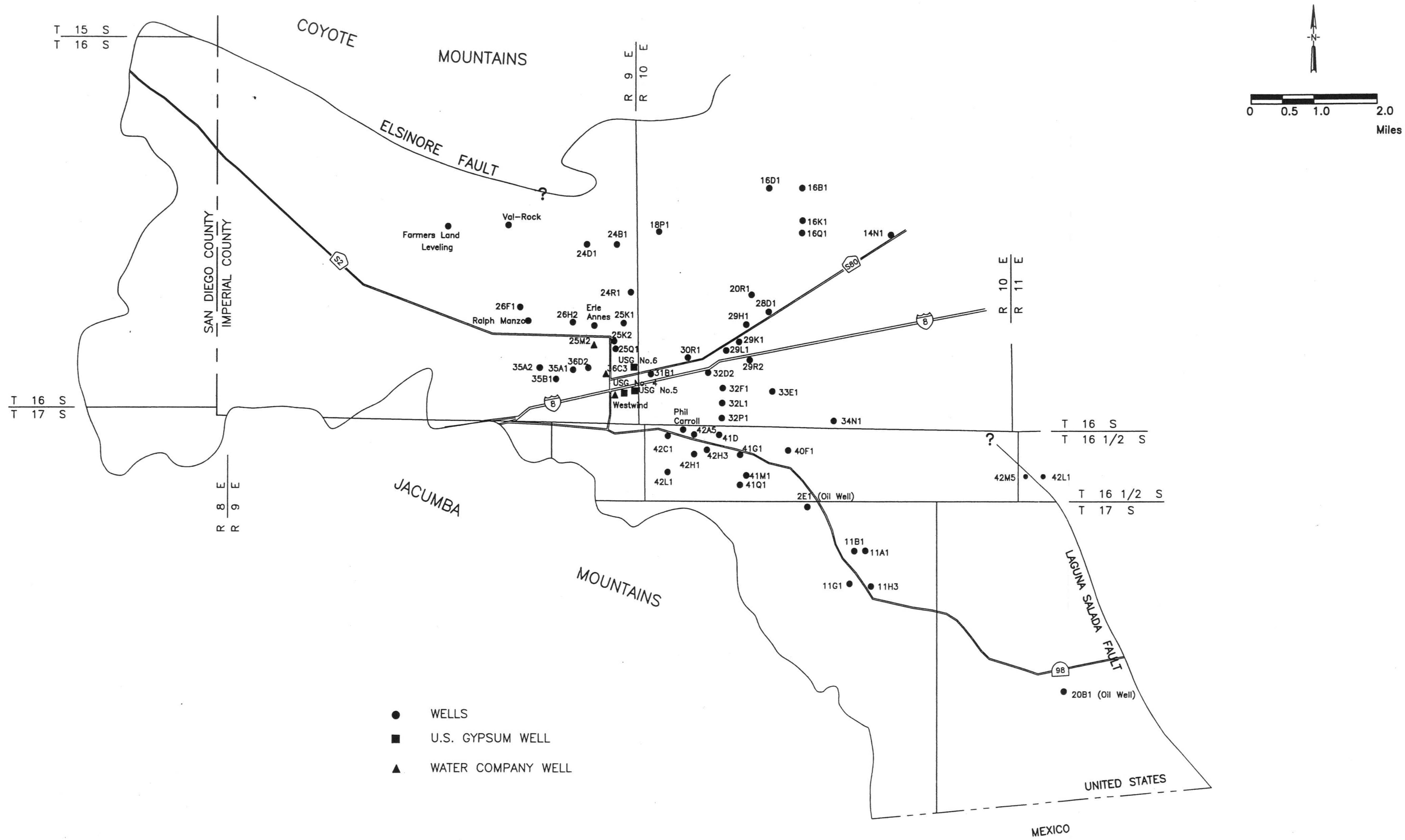
Analysis Method: **Drawdown vs. Time**

Analysis Results:

Test parameters:	Pumping Well:	Well #6	Aquifer Thickness:	460 [ft]
	Casing radius:	0.417 [ft]		
	Screen length:	360 [ft]		
	Boring radius:	1 [ft]		
	Discharge Rate:	371 [U.S. gal/min]		

Comments: Recovery at OB Well #5 From Pumping Well #6

Evaluated by: Ron Schnabel
Evaluation Date: 12/5/2002



Bookman-Edmonston
A Division of GEI Consultants, Inc.

Ocotillo/Coyote Wells Groundwater Study
Location of Wells

11/19/03

PLATE 1

PROJECT NUMBER 33890

Appendix C Biological Resources

Appendix C1 United States Gypsum Company Plaster City Plant: Biological Technical Report

UNITED STATES GYPSUM COMPANY PLASTER CITY PLANT: BIOLOGICAL TECHNICAL REPORT

Prepared for:

LILBURN CORPORATION
1905 Business Center Drive, San Bernardino, CA 92408

Prepared by:

Scott D. White and Brian Leatherman
WHITE & LEATHERMAN BIOSERVICES
201 North First Ave., No. 102, Upland, CA 91786

Revised February 2005

CERTIFICATION: I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNATURE: Scott D White DATE: 17 Feb 2005

UNITED STATES GYPSUM COMPANY PLASTER CITY PLANT: BIOLOGICAL TECHNICAL REPORT

Prepared for:

LILBURN CORPORATION
1905 Business Center Drive, San Bernardino, CA 92408

Prepared by:

Scott D. White and Brian Leatherman
WHITE & LEATHERMAN BIOSERVICES
201 North First Ave., No. 102, Upland, CA 91786

Revised February 2005

CERTIFICATION: I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNATURE: DATE:

UNITED STATES GYPSUM COMPANY PLASTER CITY PLANT: BIOLOGICAL TECHNICAL REPORT

WHITE & LEATHERMAN BIOSERVICES
Revised February 2005

TABLE OF CONTENTS

MAPS AND APPENDICES

UNITED STATES GYPSUM COMPANY PLASTER CITY PLANT: BIOLOGICAL TECHNICAL REPORT

WHITE & LEATHERMAN BIOSERVICES
Revised February 2005

I. SITE DESCRIPTION

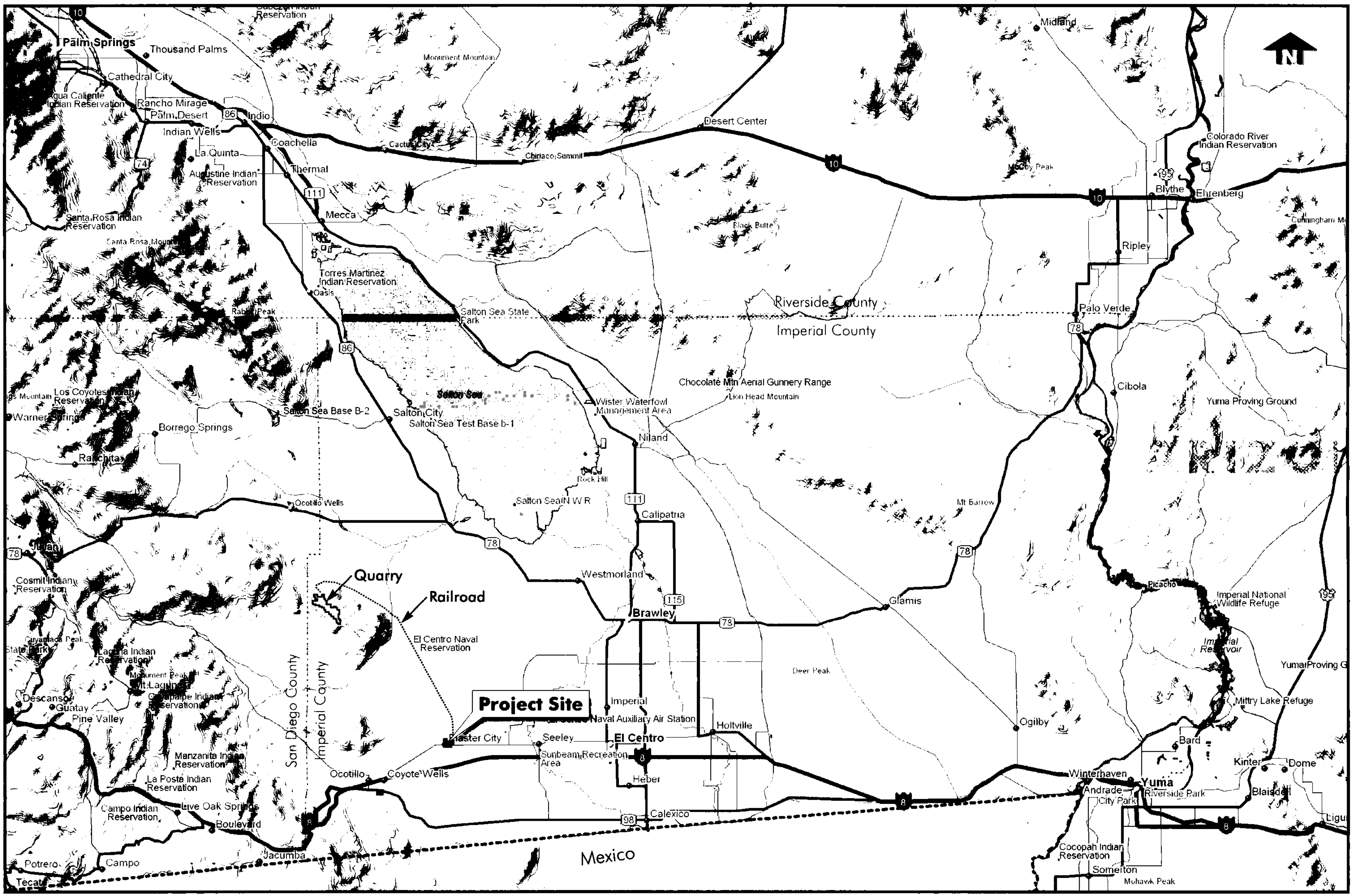
The United States Gypsum Company (USG) operates a manufacturing plant for gypsum products (chiefly wallboard) at Plaster City in Imperial County, California (Maps 1 and 2). The plant is serviced by two rail lines: A narrow gauge line owned and operated by USG delivers raw materials from a quarry in the Fish Creek Mountains about 26 miles northwest, and a standard gauge line operated by Union Pacific provides the plant with commercial rail service. The plant is also served by a water line, which delivers water from Ocotillo, about 8 miles southwest. This report documents biological resources occurring or potentially occurring at the plant site, along the narrow gauge rail line, and the water line (collectively referred to as "project areas"). Biological resources of the USG Plaster City Quarry are addressed in a separate report (White & Leatherman BioServices 2002).

The USG Plaster City plant site is on the desert floor at about 100 feet elevation. The plant was expanded and upgraded from 25 acres to 54 acres in 2000. No descriptions of the habitat and vegetation on the land affected by plant site expansion are available. The existing narrow gauge rail line alignment is from the Fish Creek Mountains near the Plaster City Quarry, at about 350 feet elevation; it follows a northwesterly direction from the quarry for about 1 mile, then turns to the east and southeast, following the bajada of the Fish Creek Mountains and descends to just below sea level after about another 5 miles; it continues to the south-southeast, generally at about 100 ft. elevation to Plaster City. The rail line crosses a designated Flat-tailed horned lizard management area (Foreman 1997) and a US Naval Reservation Target area (USDI BLM 1998), and parallels the Juan Bauptista DeAnza National Historic Trail and the northwestern boundary of the Fish Creek Mountains Wilderness (USDI BLM 1998). These land uses are shown on Map 3. The proposed project would not alter the existing railway itself, but USG proposes to increase ore train frequency from 3 trains per day to 5 trains per day as a part of the project.

The existing water line originates at a well field just south of the I-8 freeway in Ocotillo at about 375 feet elevation. It crosses beneath the freeway, and parallels Imperial County Route S80 to the north and east to Plaster City. Along its entire length, the water line is within the existing road right of way, on the south side of the road. The eastern 5 miles of the water line are at the boundary of the Bureau of Land Management's "Plaster City Open Area" for off-highway vehicles (OHVs) (USDI BLM 1998), and a designated OHV staging area is found on the north side of Route S80 west of the Plaster City Plant. The proposed project would replace the existing water line by installing a larger line within approximately twenty feet of the existing alignment.

II. METHODS

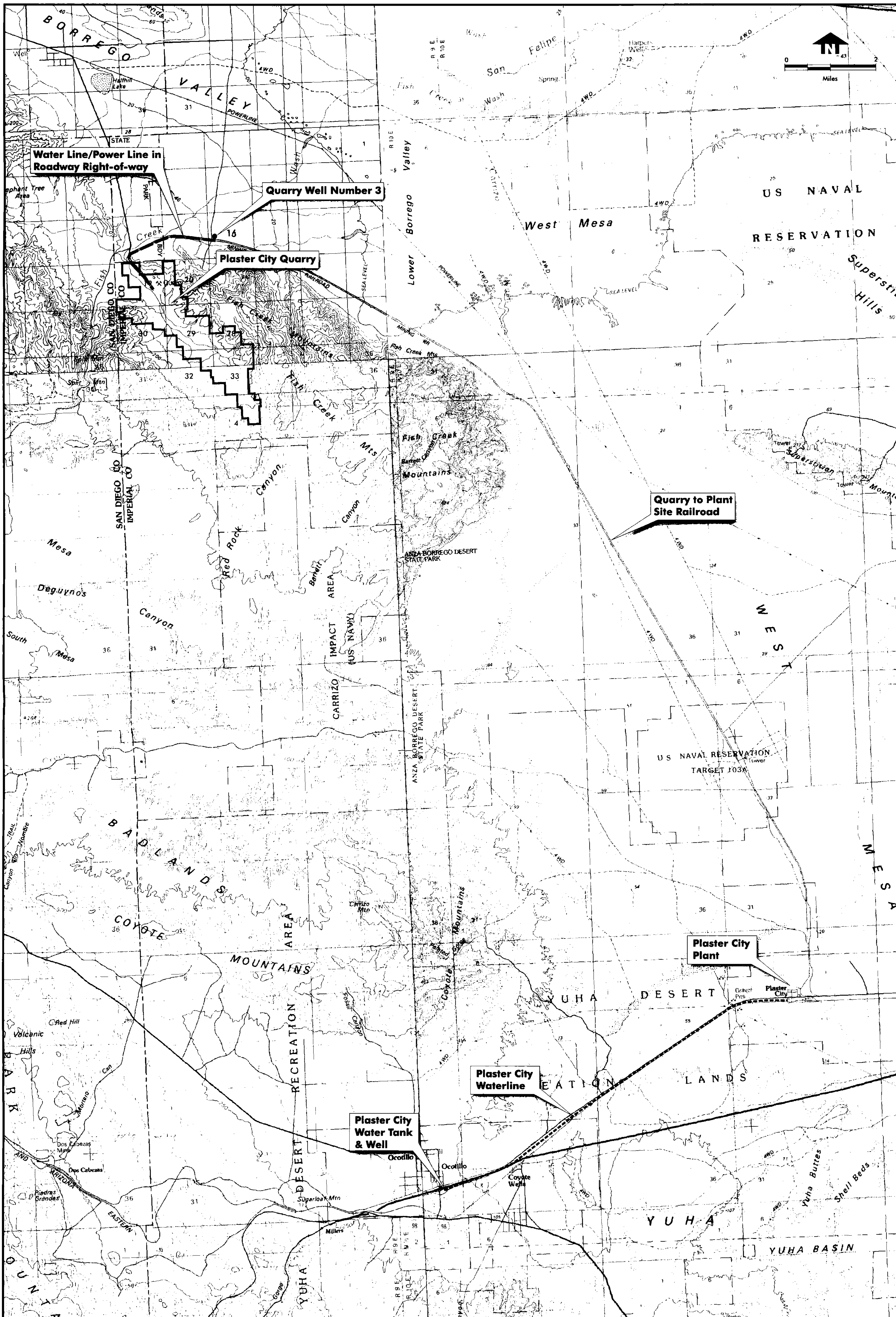
Scott White reviewed available literature to identify special status animals, plants, and plant communities known from the project areas and vicinity. Literature reviewed included compendia provided by resource agencies (California Department of Fish and Game 2002a, 2002b; US Fish and Wildlife Service 1999), California Native Plant Society's (CNPS) *Inventory of Rare and Endangered*



Map 1: Vicinity Map

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By
LILBURN CORPORATION

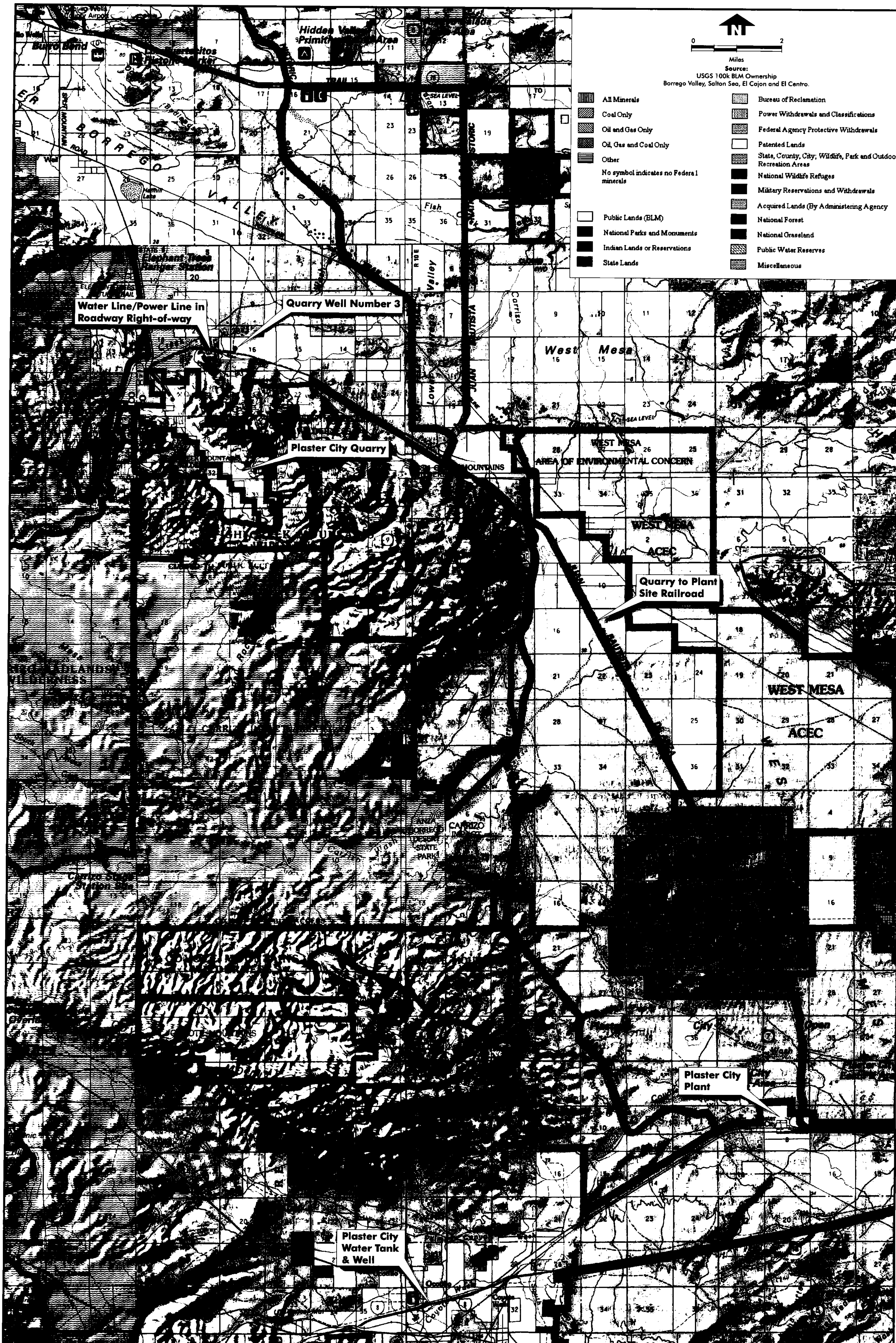


Source: USGS 100k Borrego Valley, Salton Sea, El Cajon and El Centro.

Map 2: Project Site Map

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By
LILBURN CORPORATION



Map 3: Land Uses

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By:
LILBURN CORPORATION

Vascular Plants of California (Tibor 2001), the CNPS Electronic Inventory (2002) and California Natural Diversity Data Base (2001) reports for all USGS 7½-minute quads on which the Plaster City plant, rail line, or water line occur (Borrego Mountain SE, Harper's Well, Plaster City NW, Painted Gorge, Plaster City, and Coyote Wells) and several adjacent quads (Carrizo Mountain NE, Superstition Mountain, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge). White also reviewed known flat-tailed horned lizard occurrences on digital maps provided by the Bureau of Land Management (reproduced here as Map 4). All special status plants or animals reported on any of these eleven USGS quads, as well as others known from the general area, are listed in Appendix 1, along with brief descriptions of their habitats, geographic ranges, agency status, and probability of occurring on the project site.

White and Leatherman drove the length of the rail line on 23 April 2002, and White drove the length of the water line alone on 19 June 2002 to document plant species and wildlife habitat occurring along both routes. The Plaster City plant site was viewed on both dates. White and Leatherman again drove the length of the water line on 24 July 2002 to evaluate potential habitat for flat-tailed horned lizard. On 24 July, we surveyed all marginally suitable flat-tailed horned lizard habitat along the water line (Map 4), following survey protocol recommended by the Bureau of Land Management (Foreman 1997, Appendix 7). Suitable habitat for flat-tailed horned lizards also occurs along the existing narrow gauge rail line, but we did not do focused surveys along the line because no new soil disturbance or other new development is proposed, and the BLM has documented flat-tailed horned lizards along the route in earlier surveys (G. Wright, BLM El Centro office, personal communication). A total of about 28 person-hours were spent surveying the routes and plant site. Weather conditions during these surveys were similar, generally hot (90 to 100° F) and dry with moderate winds (5-15 mph) by mid-afternoon.

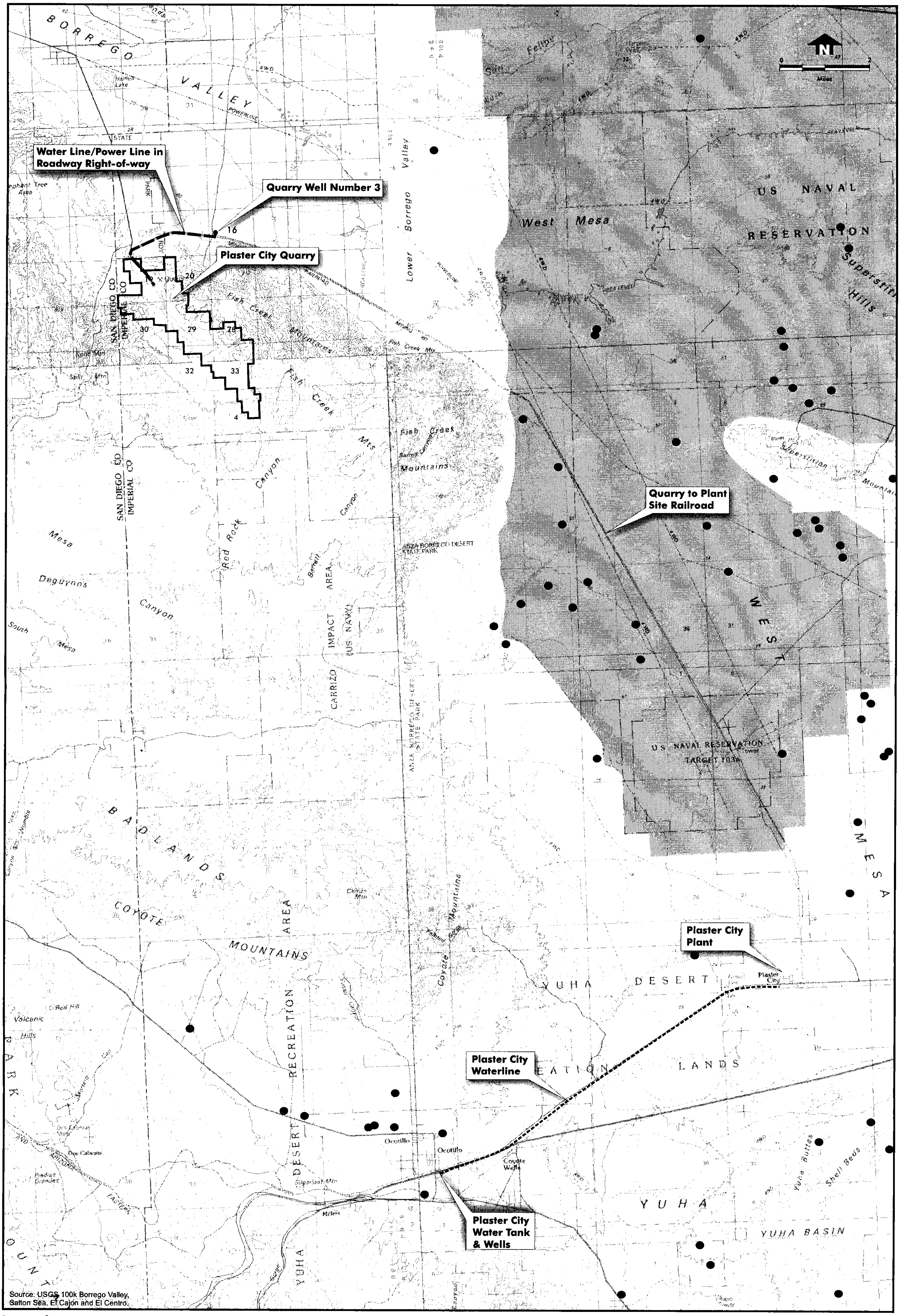
During the flat-tailed horned lizard surveys, we drove the entire length of the water line to identify any potential habitat. We then repeatedly drove an unpaved road parallel to County route S80 along the portion of the route which seemed to provide potential habitat, searching for active horned lizards. We drove this portion of the route slowly four times, while the ground's surface temperature was between 35 and 50° Celsius. When the surface temperature went above 50°C, we ceased searching for active lizards and switched to walking transects along the same area, searching for flat-tailed horned lizard scat (feces), which are identified by their size and composition (ants).

During the field surveys, all plant and wildlife species noted were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations in Abrams (1923-1969), Hickman (1993), and Munz (1974).

III. RESULTS

III. A. Vegetation and Habitat

The USG Plaster City plant site is on the desert floor, where vegetation is desert shrubland dominated by creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and saltbush (*Atriplex* spp.). The narrow gauge rail line is entirely along an existing right of way, crossing through similar vegetation along much of its length, though it also crosses stabilized and active blowsand along several miles of its length. Some dense patches of mesquite (*Prosopis glandulosa*) occur adjacent to the rail line.



Legend

- FTHL Recent Occurences
- FTHL West Mesa Management Area

Map 4: Flat Tailed Horned Lizard Occurences

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By LILBURN CORPORATION

USG water line route, view east from Ocotillo area. County road at left, powerline ROW at center, freeway at right.

USG water line route, view west from near midpoint. Rail line at left, disused road at center, county road at right.

The water line is within an established right of way, and also crosses through desert shrubland and, in some places near washes and small patches of windblown sand. Both the rail line and water line cross intermittent drainageways at several points.

There is little native vegetation along the water line's route due to its location alongside a well-traveled highway, parallel to a railway line and a powerline, and largely adjacent to a designated OHV open area, including a designated OHV staging area.

Undisturbed uplands adjacent to the rail line and water line support desert shrubland matching Sawyer and Keeler-Wolf's (1995) descriptions of creosote bush series, and creosote bush – white bursage series. They also match Holland's (1986) description of Sonoran creosote bush scrub, and the desert scrub described by Laudenslayer and Boggs (1988). Washes also are generally covered by creosote bush and creosote bush – white bursage series. They have higher occurrence of cheesebush (*Hymenoclea salsola*) and indigo bush (*Psorothamnus schottii*). Some larger channels also support catclaw (*Acacia greggii*), smoke tree (*Psorothamnus spinosus*), and desert lavender (*Hyptis emoryi*). Vegetation in the larger washes matches Sawyer and Keeler-Wolf's (1995) description of the catclaw acacia series; Holland's (1986) description of dry desert wash woodland, and desert wash described by Laudenslayer (1988). Annual plants and perennial herbs occur in all these vegetation types, but they generally could not be identified with confidence due to very low rainfall this year.

Three special status plant communities are reported in the area by the California Natural Diversity Data Base: desert fan palm oasis, mesquite bosque, and transmontane alkali marsh. Mesquite bosque occurs in a few patches near the rail line, but not at the plant site or along the water line. No desert fan palm oasis or transmontane alkali marsh occur anywhere in the project areas.

III. B. Wildlife

The vegetation and habitats described above provide habitat for numerous resident and migrant wildlife species. Wildlife and wildlife sign observed during the field surveys included species common to the open, xeric Colorado Desert. These included zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Cnemidophorus tigris*), red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and coyote (*Canis latrans*).

Other common wildlife species of desert shrubland throughout the region likely also occur in the Plaster City plant vicinity and along the rail line and water line routes but were not observed during field work reported here. These include secretive reptiles (e.g., snakes), burrowing mammals, and uncommon wide-ranging species such as badger and golden eagle.

III. C. Wildlife Movement

The effects of habitat fragmentation and importance of corridors were reviewed by Harris and Gallagher (1989) and Soulé (1991), among many others. In many regions, land development and linear structures (e.g., roadways) have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations (including California gnatcatcher) become extinct when their habitat is fragmented by urban development in San Diego (Soulé et al. 1988).

The Plaster City Plant site is in an area that has not been significantly fragmented by land uses. There are no true barriers to wildlife movement in the immediate area, though roadways and other linear development (including the rail line addressed here) probably have some effect on wildlife movement. Expanded plant operations would tend to dissuade most terrestrial animals from crossing the plant site itself due to the removal of vegetation and soil which would otherwise provide food, shade, burrowing substrate, and most other native habitat elements. Indirect impacts, including light, noise, and equipment traffic, could also tend to reduce wildlife dispersal across the site. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed plant operations.

Increased operation of the existing narrow gauge rail line would have an incremental effect on wildlife movement by increasing noise and, perhaps, wildlife fatalities that may occur if animals are struck by trains. Construction of the proposed plant water line would probably have a temporary effect on wildlife movement during its construction, but would be unlikely to have long-term effects beyond those already resulting from the existing water line and adjacent Highway S80.

The interagency Flat-tailed horned lizard management strategy and conservation agreement requires signatory agencies to maintain potential habitat corridors between West Mesa and Yuha Desert flat-tailed horned lizard management areas. The Plaster City Plant and water line alignment are between these two management areas. The plant site is outside suitable flat-tailed horned lizard habitat and is surrounded by undisturbed habitat, and thus would not interfere with potential movement between the two management areas. The water line alignment is within an existing road right of way and pipeline construction would not alter habitat suitability or movement opportunities for flat-tailed horned lizards, except during construction itself.

Sign potentially attributed to Peninsular bighorn sheep was found in the northeastern margin of the Fish Creek Mountains (White and Leatherman 2002). The sheep evidently wander in this area infrequently, and it is possible that they could (very rarely) wander across the rail line to emigrate between the Fish Creek Mountains and other mountain ranges in the region. Potential project impacts to bighorn sheep movement are discussed below in the sections addressing special status wildlife.

IV. RARE, THREATENED, ENDANGERED, OR SENSITIVE SPECIES AND HABITATS

IV. A. Special Status Plants

Based on our literature review, we identified 51 special status plant species occurring or potentially occurring in the general region (Appendix 1). One of these, San Diego button celery (*Eryngium aristulatum* var. *parishii*), is a state and federally listed endangered species. This is a species occurring only in vernal pools in San Diego and Riverside Counties, inland as far as the In-Ko-Pah Gorge area, but we conclude that it is absent from the project areas due to absence of any suitable habitat. No other plants known from the region are listed, proposed for listing, or candidates for listing as threatened or endangered.

The 2001-2002 rainfall year (beginning July 2001) was one of the driest on record for much of southern California. For example, average annual rainfall at Anza Borrego State Park is 6.09 inches (Desert Research Institute Western Regional Climate Center), but the rainfall total for the 2001-2002 was only 1.66 inches (telephone contact with Anza Borrego State Park Visitor's Center), or 27% of average.

During our field surveys we did not note any special status plants on the project areas. However, very few annual plants germinated or flowered this year, very few perennial herbs put on growth this year, and most drought-deciduous shrubs did not put on leaves this year, presumably all due to the extremely poor rainfall year. Therefore, we cannot determine the presence or absence of special status plants whose habitat occurs on the project site.

We estimate a moderate or greater probability that any of the following special status plants might occur on or near the narrow-gauge rail line, plant water line alignment, or plant site(see Appendix 1): Salton Sea milk vetch, Harwood's milk vetch, Borrego milk-vetch, Ayenia, Sand evening-primrose, Pierson's pincushion, Arizona spurge, spiny abrojo, ribbed cryptantha, winged cryptantha, California ditaxis, glandular ditaxis, Alverson's foxtail cactus, pink velvet-mallow, Newberry velvet-mallow, Baja California ipomopsis, slender-leaved ipomopsis, Parish's desert-thorn, Coulter's lyrepod, brown turbans, hairy stickleaf, slender-woolly-heads, Thurber's pilostyles, Unicorn plant, Orocopia sage, Orcutt's woody aster. None of these plants is listed threatened or endangered, or is a candidate or proposed for listing. Three of them (Pierson's pincushion, Orocopia sage, and Orcutt's woody aster) are on the California Native Plant Society's List 1B, plants considered rare and endangered in California and throughout their ranges. Another ten (Harwood's milk vetch, Ayenia, Arizona spurge, glandular ditaxis, Baja California ipomopsis, slender-leaved ipomopsis, Parish's desert-thorn, brown turbans, hairy stickleaf, and slender woolly-heads) are on CNPS's List 2 (considered rare and endangered in California but more common elsewhere in their ranges).

<u>IV. B. Special Status Animals</u>

Based on our literature review, we identified 28 special status animal species occurring or potentially occurring in the general region (Appendix 1). Of these, four are state or federally listed threatened or endangered species (desert pupfish, desert tortoise, barefoot banded gecko, and peninsular bighorn sheep) and one (flat-tailed horned lizard) is a special-status wildlife species protected by an interagency management agreement (Foreman 1997). The following sections describe the potential of occurrence for these species by group.

<u>Fish</u>: Desert pupfish (*Cyprinodon macularius*), a listed endangered species, historically occurred in stream margins, marshes, and springs of the lower Colorado River Basin. It is endangered due to habitat loss and the introduction of non-native fish (particularly *Tilapia*) into its habitat (Minckley et al. 1991). The nearest location is in San Felipe Creek, about 11 miles northeast of the Plaster City Quarry site (CNDDB 2001; Map 3). This is one of only three known extant occurrences in natural habitat in California, though desert pupfish populations also persist in irrigation canals near the Salton Sea and in a few introduced "refugia" sites (Moyle 2002). We conclude that desert pupfish is absent from the project areas due to the absence of any perennial surface water.

<u>Reptiles</u>: Several special status reptile species are known from the general region but none of these was noted or detected on the project areas.

We conclude that desert tortoise, a state and federally listed threatened species, is unlikely to occur on the site because of its geographic range. The only portion of the desert tortoise's range west of the Salton Sea is a disjunct area in the southern Santa Rosa Mountains, San Diego County, north of Highway S22 (Zeiner et al. 1988). The nearest part of the proposed project is the northernmost part of the rail line, about 14 miles south of this occurrence, and about 35 miles southwest of the Chocolate Mountains where the nearest designated critical habitat is mapped (USFWS 1994). No desert tortoise or sign attributable to desert tortoise was observed in the project areas during field surveys for this report, though we did not perform a focused desert tortoise survey.

The barefoot banded gecko is a rare species occurring in massive rock outcrops and crevices in San Diego and Imperial Counties and southward in the steep eastern-facing mountains of Baja California (Steinhart 1990, Grismer 1994). Its distribution in California is poorly known because the animal is sought after for the trade in reptiles, and collectors are secretive about collection sites (Zeiner et al. 1988). Stebbins (1985) cites an unverified report as far north as the Santa Rosa Mountains, though maps published by Stebbins (1985) and Zeiner et al. (1988) indicate its distribution no farther north than Anza-Borrego State Park in San Diego County. It is listed as threatened under the California Endangered Species Act due to the destruction of crevice habitat by collectors (Steinhart 1990). We conclude that barefoot banded gecko is absent from the project areas due to the absence of rocky outcrops and boulders along the rail line, water line, and at the Plaster City Plant site.

Flat-tailed horned lizard, occurs in windblown sand along the narrow gauge rail line from roughly the USN Target area to the eastern foothills of the Fish Creek Mountains and around Ocotillo at the western end of the proposed water line but not in or around the Plaster City Plant (Map 4). Flat-tailed horned lizards occur almost exclusively in windblown sand dunes and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 20 cm (8 in.). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period. This horned lizard "is a specialized sand-dweller that has not been observed outside of areas with a shifting sand substrate" (reviewed by Jennings and Hayes 1994). Flat-tailed horned lizards had previously been proposed for federal listing as threatened (USFWS 2001a), but that proposal has been withdrawn (USFWS 2003). An interagency management strategy and conservation agreement for the flat-tailed horned lizard remains in place (Foreman 1997); its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command (together, these agencies manage most of the narrow gauge rail and pipeline alignments).

We found no suitable habitat at the plant site or along most of the water line's length between Ocotillo and the Plant, though about 3 miles at the western end of the water line appeared to provide marginally suitable habitat. During our focused surveys along this part of the water line route, we found no active lizards or scat. However, survey protocol guidelines (Foreman 1997, Appendix 7) would require a conclusion that flat-tailed horned lizards are "present" for sites within 2 miles of known occurrences where suitable habitat is contiguous between the Project site and the known habitat. We did not survey for flat-tailed horned lizards along the narrow gauge rail line.

<u>Birds</u>: No special status birds were observed during field surveys but suitable nesting habitat for three species [black-tailed gnatcatcher (*Polioptila melanura*), loggerhead shrike (*Lanius ludovicianus*), and LeConte's thrasher (*Toxostoma lecontei*)] occurs throughout the area. Several other special status birds, especially raptors (including golden eagles and prairie falcons). are likely to occur during winter or migration (Appendix 1). None of the birds occurring or potentially occurring in the project areas is listed, proposed for listing, or a candidate for listing threatened or endangered. Golden eagles are fully protected by CDFG, and almost all birds are considered protected by the Migratory Bird Treaty Act, which (among other things) prohibits killing them.

Black-tailed gnatcatchers generally nest in mesquite thickets or desert riparian scrub (e.g., in smoke trees or catclaw acacias) which occur occasionally in washes along the rail line and water line, but not at the Plaster City Plant site. They are considered common in the lower Colorado River watershed (most of Arizona and easternmost California; Rosenberg et al. 1991). Black-tailed gnatcatcher is on CDFG's list of Special Animals, but its Natural Diversity Data Base ranking of S4 indicates that it is "apparently secure in California."

Loggerhead shrikes are widespread in shrublands and open habitats throughout most of the United States. Its numbers have declined in the midwest and now appear to be declining in the southwest, including California; it is on CDFG's list of Special Animals, but its Natural Diversity Data Base ranking of S4 indicates that it is "apparently secure in California." It is common in winter and fairly common during breeding season in the lower Colorado River Valley (Rosenberg et al. 1991).

LeConte's thrasher is uncommon but widespread in California deserts. It most often occurs in open sandy or alkaline habitats and nests in spiny shrubs including cactus, saltbush, or palo verde (Grinnell and Miller 1944). It is a CDFG Species of Special Concern but is not listed, proposed, or a candidate for state or federal listing. Habitat on the project site is suitable for this bird, but presents no special habitat components not widely available throughout the region.

Several special status raptors could forage over the area, particularly during winter or migration seasons. These include golden eagle, ferruginous hawk, sharp-shinned hawk, Cooper's hawk, merlin, and prairie falcon. These birds nest in dense woodlands, large trees, or cliffs. No suitable nesting habitat occurs at the plant site or along the rail and water lines. In general, these species are considered "sensitive" during breeding season, though golden eagle, ferruginous hawk, merlin are also considered sensitive during winter.

There is potential habitat for burrowing owls to breed in the Plaster City Plant area or along the rail or water lines, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls nor burrows suitable for nesting were observed during field surveys.

<u>Mammals</u>: Several special status bat species are likely to forage over the region, but there is only a low probability that any would roost or breed at the Plaster City plant site or along the rail or water lines (Appendix 1). In general, bat distributions and habits are poorly known. No caves, tunnels, or other significant roosting sites were found during field work. None of these species is listed or proposed for listing as threatened or endangered, but all are regarded as species of special concern by CDFG.

American badger is likely to occur in the area at least occasionally, but unlikely to live there year around due to an absence of surface water. Badgers are widespread but uncommon in desert shrublands similar to those on-site and throughout the region. They are not listed or proposed for listing as threatened or endangered and are not regarded as species of special concern by CDFG. The CDFG status S4 indicates that badger populations are apparently secure in California.

Colorado Valley woodrats (*Neotoma albigula venusta*) are found in arid regions of southwestern Arizona and extreme southeastern California (Ingles 1965). Their habitats include creosote bush and other arid shrublands and cactus flats in desert areas, including some areas with lava substrates. Dens are usually constructed of cactus pads and woody material from trees and shrubs; they may also nest in rock crevices or burrows under boulders (Mares 1999). In California, this woodrat is closely associated with patches of beavertail cactus (*Opuntia basilaris*) and mesquite (*Prosopis* spp.) (Williams 1986), and often burrows beneath mesquite trees (Ingles 1965). Colorado Valley woodrat is not listed or proposed for listing as threatened or endangered; it is not regarded as species of special concern by CDFG; Williams (1986) reported no evidence indicating that it was threatened. However, the CDFG status S2S3 indicates that Colorado valley woodrat distribution is very restricted in California, possibly to the point of endangerment. A few mesquite thickets occur along the rail line but not around the Plaster City Plant. We conclude there is only a low probability that

Colorado Desert woodrat may occur because there is only minimal suitable habitat and because the area is at the western margin of its geographic range.

Peninsular bighorn sheep (*Ovis canadensis*) is federally listed as an endangered species (USFWS 1998) and is designated as a "fully protected animal" by the California Department of Fish and Game. We observed probable sign of Peninsular bighorn sheep northeast of the Plaster City Quarry project area (White and Leatherman BioServices 2002) but not at the Plaster City Plant site, or along the rail or water lines. The decline of Peninsular bighorn sheep is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses associated with residential and commercial development; and high predation rates.

Peninsular bighorn sheep occur in desert mountain ranges from southern Riverside County southward into Baja California, usually on steep open slopes in hot and dry desert regions where rough rocky terrain, ridges, canyons, and washes support only sparse vegetation (USFWS 1998). These types of terrain are a crucial component of bighorn habitat, providing a diversity of slopes and exposures for escape from predators, lambing, and shelter in both excessive heat and severe storms (USFWS 2000b). Peninsular bighorn sheep tend to occur at lower elevations (about 300 to 4,000 feet) and to be more localized in distribution as summer progresses (roughly May through October), usually concentrating in the vicinity of permanent sources of water, which is a critical habitat element. When water is more available following rains in the fall, the sheep disperse to higher elevations and ridges.

The sheep sometimes emigrate between populations by traveling across desert lowlands. Land use conversions and linear developments (especially highways) have partially or completely eliminated the possibility of migrations between some mountain ranges and prevent genetic exchange and demographic "rescue" among populations (e.g., Interstate 10 prevents bighorn sheep from migrating between the San Bernardino Mountains and the San Jacinto Mountains, and is largely responsible for the recognition of Peninsular bighorn sheep as a "distinct population segment" by the US Fish and Wildlife Service and CDFG).

The project areas addressed here are not in mountainous habitat and have no permanent or long-lasting seasonal water sources (based on our field observations and absence of mapped springs or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn population. It is possible, however, that bighorn sheep could rarely wander across the rail line to emigrate between the Fish Creek Mountains and other mountain ranges in the region.

V. IMPACTS AND RECOMMENDATIONS

V. A. Anticipated Impacts to Special Status Plants and Animals

We conclude that no listed threatened or endangered plants occur on the USG Plaster City Plant site, rail line, or proposed water line, and that the only listed wildlife species which could occur is Peninsular bighorn sheep. Peninsular bighorn sheep could (rarely) wander across the rail line. Several other special status species are likely occur in the project areas but none of these is listed or proposed for listing as threatened or endangered under state or federal Endangered Species Acts.

Flat-tailed horned lizard is not listed as threatened or endangered but is managed under an interagency management strategy and conservation agreement. It is likely to occur in open windblown sand along the rail line and could occur along the western 2.5 miles of the Plant water line alignment but does not occur at the plant site.

No special status plants were observed in the project areas, but dry conditions this year prevent a conclusion of presence or absence for several species. Based on habitat and geographic and elevational ranges, we can conclude that no listed threatened or endangered plants would be affected by the proposed project. None of the special status plants which could occur has formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Some special status animals, including Crissal thrasher, LeConte's thrasher, loggerhead shrike, and black-tailed gnatcatcher, are likely to occur in the area, especially along the rail and Plant water lines. Continued operation of the rail line would have no new impact on these species or their habitats; some marginally suitable habitat may be lost or temporarily affected during construction of the Plant water line. None of these species has formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Special status raptors were not observed during field surveys but several could use the project areas seasonally for foraging. Several special status bats could forage over the project areas. These species have no formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Flat-tailed horned lizard occurs along portions of the narrow gauge rail line, and we consider them "present" along the western 2.5 miles of the Plant water line alignment due to proximity to known occurrences. We conclude that flat-tailed horned lizard does not occur at the Plaster City Plant site or along the remainder of the water line alignment, due to absence of suitable fine sandy habitat. About 11 miles of the existing narrow-gauge rail line is within the Flat-tailed horned lizard West Mesa Management Area (Foreman 1997; Map 4). Proposed Project would alter existing conditions narrow-gauge rail operation from about three to about five trains per day. Flat-tailed horned lizards have been observed basking on the rail line (G. Wright, BLM El Centro, personal communication). Presumably, increased train traffic would proportionally increase lizard mortality (if it occurs) along the rail line. According to the interagency working group on flat-tailed horned lizards (Foreman 1997), "flat-tailed horned lizards are less likely to be run over on railroads [than on highways]." There has been no documentation of flat-tailed horned lizard mortality on rail lines. We do not know whether they avoid train impacts by leaving the rails when they sense vibrations of approaching trains, though it seems likely that they would.

Peninsular bighorn sheep evidently wander infrequently on the ridge above the quarry and northern part of the rail line and may rarely cross the rail line itself. Proposed increased rail operation would minimally alter existing conditions in Peninsular bighorn sheep habitat and would not substantially affect bighorn movement through the area, since much of the surrounding area is open space and preferred travel habitat (ridgetops) does not occur in the project areas. However, part of the project area is within designated critical habitat for bighorn sheep, and Section 7 of the federal Endangered Species Act requires consultation with the USFWS by federal agencies that fund, authorize, or carry out projects that would result in "adverse modification" of critical habitat.

Desert pupfish does not occur on the project area, but occurs in San Felipe Creek, about 11 miles from the USG Plaster City Quarry site. Plant, rail and Plant water line activities would not alter existing conditions in desert pupfish habitat. Potential effects of quarry operations to the desert pupfish are addressed by White and Leatherman BioServices (2002) and in hydrology reports prepared by Bookman-Edmonston (2002a, 2002b).

V. B. Anticipated Cumulative Impacts

Expansion at the USG Plaster City Plant site has contributed incrementally to cumulative loss of desert shrublands throughout the region. Habitat that would be affected on the plant and water line sites is not locally or regionally unique or sensitive and does not support plants or animals listed or likely to become listed under state or federal Endangered Species Acts in the foreseeable future. Large tracts of similar vegetation and habitat are protected in state and federal public lands (e.g., Anza Borrego Desert State Park; BLM-managed wilderness). Therefore, the ongoing cumulative loss of desert shrublands in the region does not meet CEQA criteria as "significant." No direct loss of flat-tailed horned lizard habitat along the narrow-gauge rail line would occur, though increased rail traffic would indirectly affect habitat and could cause lizard mortality (depending on behavior of flat-tailed horned lizards). We are unaware of other direct or indirect impacts likely to occur in and near the West Mesa Management Area. The BLM and other cooperating agencies have implemented a Flat-tailed Horned lizard Rangewide Management Strategy (Foreman 1997) which would minimize adverse impacts and mitigate for residual impacts throughout the species' geographic range. By implementing applicable measures in the Management Strategy, potential project impacts to flat-tailed horned lizards or their habitat would be mitigated below a level of significance.

V. C. Mitigation Recommendations

Flat-tailed horned lizard: Expanded operation of the existing narrow-gauge rail line could cause increased mortality to flat-tailed horned lizards (though the likelihood of this is unknown) and ongoing maintenance probably has an adverse impact on their populations or habitat. We recommend mitigating these impacts by implementation of applicable measures as recommended in the flat-tailed horned lizard Rangewide Management Strategy (Foreman 1997), as detailed in Table 1 (below).

Peninsular bighorn sheep: Continued operation of the existing narrow gauge rail line is unlikely to change existing conditions or have adverse impacts on bighorn sheep habitat and would not meet criteria for mandatory findings of significance under CEQA. In a separate report (White and Leatherman BioServices 2002) we have recommended that USG initiate consultation with the USFWS regarding future impacts to critical habitat that may result from gypsum quarry operations.

Tamarisk removal: Where tamarisk (*Tamarix* spp.) trees or shrubs occur along the narrow gauge rail line, water line, or within the Plaster City Plant site, we recommend that USG eradicate them as a part of routine maintenance.

Agency contacts for impacts to streambeds: Prior to any new disturbances to ephemeral stream channels on the proposed water line alignment, we recommend that USG contact the California Department of Fish and Game and the US Army Corps of Engineers to determine whether either agency holds jurisdiction through Sections 1601-3 of the California Fish and Game Code or Section 404 of the federal Clean Water Act.

Table 1
Summary of Planning Actions, Standard Mitigation Measures, and Compensation Formula For Flat-tailed Horned lizard Rangewide Management Strategy (Foreman 1997/2003 Revision)

Source and measure	
Planning Actions (pp. 34-43)	
1	Delineate / designate flat-tailed horned lizard management areas (MAs)
2	Define and implement necessary actions
2.1	Mitigate and compensate (Appendices 3 and 4)
2.2	Limit land use authorizations that would cause surface disturbance within MAs
2.2.3	Maintenance of all existing rights-of-way facilities may continue within MAs
2.3	Limit and/or reduce surface disturbance in MAs from discretionary minerals actions
2.3.1	Allowable activities are . . . development and production in existing mineral material extraction sites in accordance with . . . laws and land use plans and subject to applicable mitigation . . . operation and maintenance of facilities shall be allowed on existing leases . . . subject to applicable mitigation and compensation
2.4	Limit vehicle access and route proliferation in MAs
2.4.1	Reduce new road construction
2.4.2	Routes to be designated "closed," "open," or "limited"; roads in MAs given high priority for signing
2.4.3	Reduce open and limited route density in MAs
2.4.4	Coordinate with Border Patrol
2.5	Limit recreation impacts
2.6	Make no sales and allow no commercial plant collecting
2.7	Allow off-road military activity only in designated sites
2.8	Fire suppression
2.9	No pesticide treatments
2.1	Other discretionary land uses within MAs
3	Rehabilitate damaged or degraded habitat
4	Attempt to acquire private lands within MAs
5	Maintain or establish effective habitat corridors between natural adjacent populations
5.1	. . . Potential habitat corridors . . . between West Mesa and Yuha Desert MAs . . .
6	Coordination among agencies
7	Law enforcement and education
8	Research
9	Inventory and monitoring

Standard Mitigation Measures (Appendix 3)	
1	In MAs, construction in unsuitable burrowing habitat limited to dormancy period
2	Worker education program
3	Locations of surface-disturbing projects
4	Field contact representative
5	Flagged areas; vehicle use; activity restriction
6	Biological monitor within MAs
7	CDFG authorization for handling of FTHLs
8	Field survey protocol
9	FTHL relocation
10	Minimize disturbance area
11	Use existing roads whenever possible
12	Restrict access to any new routes
13	Long-term disturbance areas fenced to exclude FTHL
14	Restoration plan
Compensation Formula (Appendix 4)	
Follow the following formula to calculate compensation acreage for any new disturbance: M = C + A + G + E + D (see Foreman 1997)	

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APPENDIX 1

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Abronia villosa var. *aurita* Chaparral sand verbena	Sand, mostly broad alluvial fans and benches, below about 5000 ft. elev., "Inland Empire, " adj. Colorado Des. and interior San Diego Co.	Feb. - July	Fed: none Calif: 3.1 CNPS: List 1B R-E-D:2-3-3	Low (geogr. range)
Antirrhinum cyathiferum Deep Canyon snapdragon	Washes, rocky places, desert shrubland; only Calif. records from Santa Rosa Mtn foothills below 2600 ft.; more comm. in Ariz., Baja, mainl. Mexico	Feb. - April	Fed: none Calif: S1.3 CNPS: List 2 R-E-D:3-1-1	Low (geogr. range, local rarity)
Astragalus crotalariae Salton Sea milk-vetch	Sandy flats and alluvial fans below about 1000 ft. elev.; Sonoran Desert, to Arizona and Baja Calif.	Jan - April	Fed: none Calif: S 3.3 CNPS: List 4 R-E-D:1-1-2	High (habitat suitable throughout)
Astragalus douglasii var. *perstrictus* Jacumba milk-vetch	Perennial herb; woodlands, grasslands, shrublands, about 3000-4500 ft. elev.; mostly cismontane; San Diego and Imperial Cos. and Baja Calif.	April - June	Fed: none Calif: S2.2 CNPS: List 1B R-E-D:2-2-2	Absent (elev. range)
Astragalus insularis var. *harwoodii* Harwood's milk-vetch	Primarily sand dunes, but also sandy washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora (Mexico)	Jan. - May	Fed: none Calif: S 2.2? CNPS: List 2 R-E-D:2-2-1	High (suitable habitat throughout)
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	Windblown or stabilized dune sand, E Mojave & S Sonoran deserts, Ariz., Baja, Son. (Mex.); below about 800 ft. elev.	Feb - May	Fed: none Calif: S 3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common, esp. along RR rt.)
Astragalus pachypus var. *jaegeri* Jaeger's milk vetch	Open sites in arid grasslands and shrublands; NW margin of Sonoran Desert, San Jacinto and Sta Rosa Mtn foothills; below about 2500 ft. elev.	Dec - June	Fed: none Calif: S 1.1 CNPS: List 1B R-E-D:3-3-3	Low (outside or margin of geogr. range)
Ayenia compacta Ayenia	Desert shrublands, gen. in washes below about 1500 ft. elev.; Sonoran desert margins, S. Calif., Baja, and Sonora (Mex.)	March - April	Fed: none Calif: S3.3 CNPS: List 2 R-E-D:2-1-1	Moderate - high (suitable habitat common)
Bursera microphylla Elephant tree	Drought deciduous tree; rocky slopes, about 600-2300 ft. elev.; scattered occurrences in Imp., Riv., San Diego Cos; to AZ, Baja, and mainl. Mexico	June - July	Fed: none Calif: S2.3 CNPS: List 2 R-E-D:3-1-1	Low (field survey)
Camissonia arenaria Sand evening-primrose	Desert shrublands, sandy or rocky washes or slopes below about 3000 ft. elev., Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Castela emoryi Crucifixion thorn	Widespread but rare, Calif. deserts, Ariz., Baja and Sonora (Mex.); slopes, washes, bajadas; gen. on fine-textured alluvial soil, about 350-2100 ft. elev.	June-July	Fed: none Calif: S2.2 CNPS: List 2 R-E-D:2-1-1	Low (local rarity)

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Special Status Plants	**Habitat and Distribution**[1]	**Flower season**[1]	**Status Designation**[2]	**Occurrence Probability**[3]
Chaenactis carphoclina var. *piersonii* Pierson's pincushion	Annual; open desert vegetation ; lower slopes of Santa Rosa Mts, San Diego, Riv. (?) and Imp. Cos; about sea level to 1700 ft. elev.	March - April	Fed: none Calif: S1.3 CNPS: List 1B R-E-D:2-1-3	High (suitable habitat throughout)
Chamaesyce arizonica Arizona spurge	Creosote bush scrub; stabilized sandy flats (in Calif.); Palm Springs and Borrego Valley areas in Calif.; E to Texas and mainl. Mexico, S to central Baja; below about 1000 ft. elev.	March - April	Fed: none Calif: S 1.3 CNPS: List 2 R-E-D:2-1-1	High (suitable habitat common, esp. along RR rt.)
Colubrina californica Las Animas colubrina	Joshua Tree Nat. Park, Eagle Mts; Sonoran desert shrubland, about 1100-3900 ft. elev.; rare in Calif., more common in Ariz. and Mexico	April - May	Fed: none Calif: S2S3.3 CNPS: List 2 R-E-D:2-1-1	Low (geogr. range)
Condalia globosa var. *pubescens* Spiny abrojo	Desert shrublands below about 3300 ft. elev.; Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	March - April	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-2-1	High (suitable habitat throughout)
Cryptantha costata Ribbed cryptantha	Windblown and stabilized sand, desert shrublands; in Calif., E Mojave and Sonoran Deserts , to Arizona & Baja; below about 1650 ft. elev.	Feb. - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-2	High (suitable habitat common, esp. along RR rt.)
Cryptantha holoptera Winged cryptantha	Desert shrublands, E Mojave Des., Sonoran Des., to W Arizona and Nevada (widely scattered); about 100 - 4000 ft. elev.	March - April	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-2	High (suitable habitat throughout)
Cynanchum utahense (= *Astephanus utahensis*) Utah vine milkweed	Sandy and gravelly soils, Mojave Des and W margin Sonoran Des, to S Nevada, NW Ariz., and SW Utah; below about 3300 ft. elev.	April-June	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	Low (probably outside geogr. range)
Delphinium parishii ssp. *subglobosum* Colorado Desert larkspur	Perennial herb; cismontane and Sonoran Des woodlands and shrublands, Riv., Imp., San Diego Cos.; Baja; about 2000-6000 ft. elev.	March - June	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-1-2	Absent (well below elev. range)
Ditaxis californica (= *Ditaxis serrata* var. *californica*) California ditaxis	Sandy washes and canyons, La Quinta E to Desert Center, also Anza Borrego; about 150-3250 ft. elev.	March, Oct. - Dec.	Fed: none Calif: S2.2 CNPS: List 3 R-E-D:?-2-3	Moderate - high (suitable habitat common)
Ditaxis clariana Glandular ditaxis	Windblown sandy soils below about 350 ft. elev.; Coachella Val, Colorado Riv Val, to Ariz. and mainland Mexico	Dec. - March	Fed: none Calif: S1S2 CNPS: List 2 R-E-D:3-2-1	High (suitable habitat common, esp. along RR rt.)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Eryngium aristulatum var. *parishii* San Diego button celery	Vernal pools or moist sites in coastal sage scrub or grasslands; W San Diego Co., Jacumba Mts area, W Riv. Co. (Sta Rosa Plateau), N Baja Calif. below about 2000 ft. elev.	April - June	Fed: **END** Calif: **END** S2.1 CNPS: List 1B R-E-D:2-3-2	Absent (no suitable habitat)
Escobaria vivipara var. *alversonii* (= *Coryphantha alversonii, C. vivipara* var. *alversonii*) Alverson's foxtail cactus	Desert scrub, S Mojave Desert and Sonoran Desert below about 2000 ft. elev.; Riverside, San Bernardino, and Imperial Cos., to Arizona	May - June	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-1-3	Moderate to high (suitable habitat throughout)
Eucnide rupestris Rock nettle	Annual; rock crevices & cliffs; Sonoran desert shrubland, about 1600-2000 ft. elev.; Imperial and San Diego Cos; Arizona, Baja Calif. & mainl. Mexico.	Dec - Apr	Fed: none Calif: S2.2 CNPS: List 2 R-E-D:3-2-1	Absent (no suitable habitat)
Geraea viscida Sticky geraea	Perennial herb; chaparral, often in disturbed openings, about 1500-5600 ft. elev.; San Diego and Imperial Cos, Baja Calif.	May - June	Fed: none Calif: S2.3? CNPS: List 2 R-E-D:2-1-1	Absent (no suitable habitat; below elev. range)
Herissantia crispa Curly herissantia	Annual or perennial herb; San Diego Co. (one locn. in desert scrub about 2300 ft. elev.) east to Texas; Baja Calif. and mainl. Mexico	Aug. - Sept.	Fed: none Calif: S1.3? CNPS: List 2 R-E-D:3-1-1	Absent (below elev. range; local rarity)
Horsfordia alata Pink velvet-mallow	Sonoran Desert shrublands, rocky canyons or sandy washes, below about 1700 ft. elev.; Riverside and Imperial Cos., Arizona, Baja, and Sonora (Mex.)	Winter or spring	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Horsfordia newberryi Newberry velvet-mallow	Rocky places, Sonoran Desert shrublands below about 2600 ft. elev.; Riverside, San Diego, Imperial Cos., Arizona, Baja, and Sonora (Mex.)	Winter or spring	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Hulsea mexicana Mexican hulsea	Annual or perennial herb; volcanic soils in chaparral, often disturbed places, incl. burns, about 3900 ft. elev.; San Diego Co. (Jacumba area) and Baja Calif.	April - June	Fed: none Calif: S1.3 CNPS: List 2 R-E-D:3-1-1	Absent (no suitable habitat)
Ipomopsis effusa Baja Calif. ipomopsis	Annual, Imperial Co. and Baja Calif.; Sandy places in chaparral and desert shrubland, about sea level to 300 ft. elev.	April - June	Fed: none Calif: S1.2? CNPS: List 2 R-E-D:3-3-1	High (suitable habitat throughout)
Ipomopsis tenuifolia Slender-leaved ipomopsis	Perennial herb; rocky or gravelly soils in chaparral, desert shrublands, pinyon or juniper woodlands about 300-4000 ft. elev.; San Diego and Imperial Cos; Baja	March - May	Fed: none Calif: S2.3? CNPS: List 2 R-E-D:2-1-1	High (suitable habitat throughout)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Lotus haydonii Pygmy lotus	Perennial herb; rocky places in desert scrub, pinyon or juniper woodlands, about 1700 - 4000 ft. elev.; San Diego and Imperial Cos., Baja Calif.	Jan - June	Fed: none Calif: S2.3 CNPS: List 1B R-E-D:2-1-2	Low (soils, elev.)
Lupinus excubitus var. *medius* Mountain Springs bush lupine	Shrub; desert shrubland, pinyon or juniper woodland, about 1400 - 4500 ft. elev.; San Diego and Imperial Cos., Baja Calif.	March - May	Fed: none Calif: S2.3 CNPS: List 1B R-E-D:2-1-2	Low (below elev. range)
Lycium parishii Parish's desert thorn	Arid slopes and sand flats, below about 3300 ft. elev.; W low desert (Riv., Imp. and San Diego Cos.), and (historically) interior valleys (Riv Co.); disjunct to Ariz. and Sonora (Mex.)	March - April	Fed: none Calif: S2S3 CNPS: List 2 R-E-D:2-1-1	High (suitable habitat common)
Lyrocarpa coulteri v. *palmeri* Coulter's lyrepod	Annual; rocky slopes, washes, gravelly flats; Sonoran desert shrubland, about 400 - 2600 ft. elev.; San Diego, Imp. and Riv. (?) Cos, N and cent. Baja Calif.	Dec - Apr	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Malperia tenuis Brown turbans	Annual; sandy soils in desert shrublands; about sea level to 1100 ft. elev.; Sonoran Desert; few locns in Calif (incl. Split Mtn); N Baja Calif.	March - April	Fed: none Calif: S1.3 CNPS: List 2 R-E-D:3-1-1	High (suitable habitat com-mon; near known locn.)
Mentzelia hirsutissima Hairy stickleaf	Annual species of desert washes, alluvial fans, and talus slopes, below about 2000 ft. elev.; scattered Sonoran Desert locns in Calif. and Baja Calif.	March - April	Fed: none Calif: S2 S3 CNPS: List 2 R-E-D:2-1-1	High (suitable habitat common)
Mirabilis tenuiloba Slender-lobed four o'clock	Rocky slopes; Sonoran Desert shrublands about 1000 to 3600 ft. elev.; Riverside, San Diego, Imperial Cos., Arizona, Baja, and Sonora (Mex.)	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	Low (margin of geog. range, marginal habitat)
Nemacaulis denudata var. *gracilis* Slender woolly-heads	Coastal and desert dunes, desert shrub-land below about 2600 ft. elev.; Coa-chella Val and (disjunct) San Diego Co. coast; Ariz., Baja, and Sonora (Mex.)	March - May	Fed: none Calif: S2S3 CNPS: List 2 R-E-D:2-2-1	High (suitable habitat common)
Opuntia wigginsii Wiggins cholla	Probably a hybrid (*O. ramisissima* x *echinocarpa*), desert shrubland below about 3000 ft. elev., eastern Colorado Des. to Arizona	March	Fed: none Calif: S1.2? CNPS: List 3 R-E-D:3-1-2	Low - moderate (margin of geogr. range)
Penstemon clevelandii var. *connatus* San Jacinto Mtn. penstemon	Rocky slopes and crevices, desert slopes of San Jacinto and Sta Rosa Mts, to Baja Calif.; desert shrubland to pinyon woodland, about 1300 - 5500 ft. elev.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Low (lower margin of elev. range, poor habitat)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Penstemon thurberi Thurber's beardtongue	Sandy/gravelly slopes and mesas, desert shrublands to pinyon woodland, about 1600-4000 ft. elev.; Riverside, San Bernardino, San Diego, Imperial Cos; Baja, 4-Corners states	Spring, summer or fall	Fed: none Calif: S3.2? CNPS: List 4 R-E-D:1-2-1	Low (at or below lower elev. range)
Pilostyles thurberi Thurber's pilostyles	Internal stem parasite on *Psorothamnus,* esp. *P. emoryi;* usually windblown or stabilized sand, below about 1000 ft. elev., Colorado Des., thr southwestern states and Sonora (Mexico)	Jan	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Moderate (main host plant occasional)
Proboscidea althaeifolia Unicorn plant	Low, generally sandy soils, desert shrubland, below about 3300 ft.; Sonoran Des (Imperial Co., eastern Riv. Co.), to Arizona and Mexico	Summer	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Moderate - high (potential habitat on alluvium)
Rhus trilobata var. *simplicifolius* Single-leaved skunkbrush	Winter-deciduous shrub; arid slopes in pinyon or juniper woodl.; about 4000-4500 ft. elev. (in Calif.); E San Diego Co.; NV, AZ, Baja Calif.	March - April	Fed: none Calif: 1.3? CNPS: List 2 R-E-D:3-1-1	Absent (well below elev. range)
Salvia eremostachya Desert sage	Rocky, gravelly places; desert shrublands to pinyon woodland, western Sonoran Desert in Riverside and San Diego Cos.; about 2300 to 4600 ft. elev.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Absent (below elev. range; margin of geogr. range)
Salvia greatae Orocopia sage	Desert shrubland, washes and alluvial fans, below about 600 ft. elev.; Riverside & Imperial Cos, Sonoran Des mts (Orocopias, Chocolates, etc.)	March - April	Fed: none Calif: S2.2 CNPS: List 1B R-E-D:2-1-3	High (suitable habitat common)
Selaginella eremophila Desert spike-moss	Rocks and crevices, about 600 - 3000 ft. elev.; lower desert-facing slopes of San Jacinto Mts and adjacent desert, to Texas and Baja	n/a	Fed: none Calif: S2.2? CNPS: List 2 RED:3-2-1	Absent (poor habitat, below elev. range)
Senna covesii (= *Cassia covesii*) Coves's cassia	Low, mostly herbaceous perennial; desert washes, about 1600 - 3500 ft. elev.; Colorado Des to Nevada, Arizona and Baja Calif.	April - June	Fed: none Calif: S2.2 CNPS: List 2 R-E-D:2-2-1	Low (below elev. range)
Stemodia durantifolia Purple stemodia	Moist canyons below about 1000 ft. elev.; desert slopes of San Jacinto Mts., San Diego area, Arizona, tropical Mexico	± year-around	Fed: none Calif: S2.1 CNPS: List 2 R-E-D:3-3-1	Absent (no suitable habitat)
Xylorhiza orcuttii (= *Machaeranthera orcuttii*) Orcutt's woody aster	Perennial herb; gen on gypsum soils; canyons or lower slopes, desert shrublands, sea level to about 1200 ft. elev.; Riverside, Imperial, and San Diego Cos., northern Baja Calif.	March - April	Fed: none Calif: S2.2 CNPS: List 1B R-E-D:2-2-2	High (habitat suitable; many local occurrences)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
FISH				
Cyprinodon macularis Desert pupfish	San Felipe Ck and Salt Ck (Imperial Co.); also several irrigation canals near Salton Sea; a few locns in Arizona and Mexico	year - around	Fed: **END** Calif: **END** S1	Absent (no aquatic habitat)
REPTILES				
Gopherus agassizii (= *Xerobates agassizi*) Desert tortoise	Desert shrublands where soil suitable for burrows; Mojave and Sonoran des. (E Calif., S Nevada, W Ariz., and Sonora, Mexico)	Spring - summer	Fed: **THR** Calif: **THR** S2	Absent (geographic range)
Coleonyx switaki Barefoot banded gecko	Massive rock outcrops and boulders, below about 2000 ft. elev.; Anza-Borrego State Park through much of NE Baja Calif.	Spring-summer	Fed: none Calif: S1 **THR**	Absent (no suitable habitat)
Phrynosoma mcallii Flat-tailed horned lizard	Open, sandy flats and dunes; Coachella Valley southward to N Baja Calif.	Spring-summer	Fed: none Calif: CSC S2	High (esp. along RR rt.; scattered places along pipeline)
Sauromalus obesus Common chuckwalla	Rock outcrops in desert shrublands; ± throughout deserts of Calif., S Nevada, W Ariz., and Baja Calif.	warm seasons	Fed: none Calif: S4	Low (no rock outcrops)
Crotalus ruber ruber (= *Crotalus exsul*) N red diamond rattlesnake	Coastal sage scrub, chaparral, desert scrub; SW Calif., Baja Calif.	Spring - summer	Fed: none Calif: CSC S2?	Low (no records this area of Imperial Co.)
BIRDS				
Circus cyaneus Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; N America and Eurasia	Winter; rare in summer	Fed: none Calif: CSC S3 (nesting)	Nesting: Absent Foraging: High (occas.)
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grass-lands; breeds throughout W N America, winters to E coast	Year-around	Fed: none Calif: CSC S3 (nesting, wintering)	Nesting: Absent Foraging: High
Buteo regalis Ferruginous hawk	Forages over grassland and shrub-land; winters in W and SW N Amer. (breeds in Great Basin and N plains)	Winter	Fed: none Calif: CSC S3S4 (winter)	Nesting: Absent Winter: High (infreq)
Accipiter striatus Sharp-shinned hawk	Nests and hunts in forests and woodlands, also forages in open areas; throughout N America, parts of S America	Spring - early summer	Fed: none Calif: CSC S3 (nesting)	Nesting: Absent Winter: Low

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
Falco columbaris Merlin	Uncommon wintering species in S Calif. desert and valleys (breeds in northern N America and Eurasia)	Winter	Fed: none Calif: CSC S3 (wintering)	Nesting: Absent Winter: Low
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	Fed: none Calif: CSC S3 (nesting)	Nesting: Absent Foraging: High
Athene cunicularia hypugea (= *Speotyto cunicularia*) Burrowing owl	Nests in rodent burrows, usually in grasslands; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico; sparse in desert scrub	Year-around	Fed: none Calif: CSC S2 (burrow sites)	Breeding: High (scarce) Foraging: High
Pyrocephalus rubinus Vermillion flycatcher	Desert riparian woodlands and shrublands; SE Calif., east through S Texas, and S through Baja and tropical mainland Mexico	Spring-summer; potential year-around	Fed: none Calif: CSC S2S3	Low (scattered patches of marginal habitat)
Toxostoma crissale Crissal thrasher	Nests in dense brushy thickets of mesquite, willow, or other desert shrubs; E Calif. to Texas, W mainland Mexico	Year - around	Fed: none Calif: CSC S3	Absent (poor habitat, margin of geogr. range [only regional occurrence at Borrego Valley]
Toxostoma lecontei LeConte's thrasher	Mojave and Colorado Deserts, SW Cent. Valley, Owens Valley; to Nevada, Utah, Arizona; open shrub-land, often sandy or alkaline flats	Year - around	Fed: none Calif: CSC S3	High (habitat suitable throughout)
Polioptila melanura Black-tailed gnatcatcher	Desert shrublands, gen. thickets of mesquite, palo verde, or acacia, occas. in open shrubland (mostly winter); Calif. deserts, thr. S Texas, Baja, and arid mainland Mexico	Year-around	Fed: none Calif: S4	High
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; widespread in N America (declining significantly in midwest)	Year-around	Fed: none Calif: CSC S4	High
Junco hyemalis caniceps Calif. gray-headed junco	Breed in arid pine woodlands of desert mts., Inyo-White Mts., and Great Basin; winter to S, through much of S Calif.	Winter	Fed: none Calif: CSC S1 (breeding)	Breeding: Absent Winter: High (infreq)
MAMMALS				
Antrozous pallidus Pallid bat	Rock outcrops of shrublands, gen below 6000 ft. elev.; Calif (exc high mts), SW N Amer through interior OR and Wash.; hibernates in winter	Warm season	Fed: none Calif: CSC, S3	Roosting: Absent Foraging: High

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
Eumops perotis californicus California mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., northern Mexico; roost in deep rock crevices, forage over wide area	Year-around	Fed: none Calif: CSC S3?	Roosting: Absent Foraging: High
Macrotus californicus (= *M. waterhousii*) California leaf-nosed bat	Desert shrublands and arid lowlands of W San Diego Co., to W Ariz., Baja Calif. and Sonora, Mex; gen. roost in mineshafts, forage over open shrublands	Year-around	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: High
Nyctinomops femorosaccus (= *Tadarida f.*) Pocketed free-tailed bat	Deserts and arid lowlands; E Riv and San Diego Cos, through SW US, Baja Calif., mainland Mexico; roost mainly in crevices of high cliffs	Year-around	Fed: none Calif: CSC S2S3	Roosting: Absent Foraging: High
Euderma maculatum Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N. Amer., but very rare; roosts in deep crevices in cliffs, feeds over open water	Unkn	Fed: none Calif: CSC S2S3	Roosting: Absent Foraging: Low
Plecotus townsendii pallescens (= *Corynorhinus t. pallescens*) Townsend's big-eared bat	Many habitats throughout Calif and W N Amer, scattered poulations in E; day roosts in caves, tunnels, mines; feed primarily on moths	Year-around	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: High
Neotoma albigula venusta Colorado Valley woodrat	Desert shrublands and pinyon woodlands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada. No documented Calif. occurrences in past 20 years.	Year-around	Fed: none Calif: SH	Low (edge of geogr. range)
Taxidea taxus American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer	Year-around	Fed: none Calif: S4	High (uncommon)
Ovis canadensis nelsoni "distinct population segment" (*O. canadensis cremnobates*) Peninsular bighorn sheep	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riverside Co. to N Baja Calif.	Year - around	Fed: **END** Calif: **THR** S1	See text

[1] **References and notes:**
Barbour & Davis 1969, CDFG 2002a, 2002b, Ehrlich et al. 1988, Garrett & Dunn 1981, Grinnell & Miller 1944, Hall 1981, Hickman (ed.) 1993, Ingles 1965, Jennings and Hayes 1994, Johnsgard 1988, Kearney & Peebles 1951, Moyle et al. 1995, Munz 1974, National Geographic Society 1987, Remsen 1978, Shreve and Wiggins 1964, Small 1994, Stebbins 1954, 1985, Swift et al. 1993, Tibor 2001, Turner et al. 1995, Unitt 1984, Williams 1986, FWS 1999, Zeiner et al. 1988.

[2] **Status Designations**

Federal designations (US Fish and Wildlife Service). Some agencies, but not FWS, continue to use "SOC" as a federal status designation. Until 1996, FWS maintained a list of "category 2 candidates," described as species of concern, but for which insufficient data were available to support listing. This list is no longer maintained and FWS has no "SOC" category.

END: Federally listed, endangered.
THR: Federally listed, threatened.
Proposed: Formally proposed by FWS for the federal status shown.
CAND: Candidate for federal listing; sufficient data are available to support listing, but not yet listed.
None: Not designated.

State designations (California Dept. of Fish and Game):

END: State listed, endangered.
THR: State listed, threatened.
RARE: State listed as rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
Proposed: Proposed for the state status shown.
None: Not designated.

CDFG Natural Diversity Data Base Designations: Applied to special status species and sensitive plant communities; where correct category is uncertain, CDFG uses two categories or question marks.

S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
- S1.1: Very threatened
- S1.2: Threatened
- S1.3: No current threats known

S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
S4: Apparently secure in California; clearly lower than S3 but factors exist to cause some concern, i.e., some threat or somewhat narrow habitat. No threat rank.
S5: Demonstrably secure or ineradicable in California. No threat rank.
SH: All California sites are historical (i.e., no known extant occurrences; generally presumed extinct)

California Native Plant Society (CNPS) designations: (Note: According to CNPS (Tibor 2001), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.)

List 1A: Plants presumed extinct in California.
List 1B: Plants rare and endangered in California and throughout their range.
List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
List 3: Plants about which we need more information; a review list.
List 4: Plants of limited distribution; a watch list.

CNPS R-E-D Code:

Rarity

1: Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
2: Occurrence confined to several populations or one extended population.
3: Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

Endangerment

1: Not endangered.
2: Endangered in a portion of its range.
3: Endangered throughout its range.

Distribution

1: More or less widespread outside California.
2: Rare outside California.
3: Endemic to California (i.e., does not occur outside California).

[3] **Occurrence Probabilities**

Occurrence probabilities are determined from field surveys and habitat analyses reported here, plus information in the references cited earlier.

Occurs: Observed on the site during this study, or recorded on-site by other qualified biologists.

Expected: Not observed or recorded on the site, but very likely present during at least a portion of the year.

High: Reported sighting(s) in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.

Moderate: Reported sighting(s) in surrounding region, or site is within the known range of the species and habitat on the site is marginally suitable or of a type occasionally used by the species.

Low: Site is within the species known range but habitat is rarely used by the species, and there are no reported sighting(s) of the species in the vicinity. It is unlikely that the species exists in substantial numbers if present.

Absent: A focused study failed to detect the species, the site is outside the known range, or no suitable habitat is present.

Unknown: No focused surveys have been performed in the region, and the species distribution and habitat are poorly known.

APPENDIX 2

USG PLASTER CITY PLANT SITE, RAIL LINE, WATER LINE SPECIES LIST

VASCULAR PLANTS[1]

Latin Name	Common Name
AMARANTHACEAE	AMARANTH FAMILY
Tidestromia oblongifolia	Honeysweet
ASTERACEAE	ASTER FAMILY
Ambrosia dumosa	White bursage
Bebbia juncea	Sweetbush
Chaenactis sp.	Pincushion
Encelia farinosa	Brittlebush
Hymenochlea salsola	Cheesebush
* *Lactuca serriola*	Prickly lettuce
Pluchea sericea	Arrow-weed
* *Verbesina encelioides*	Golden crownbeard
BORAGINACEAE	BORAGE FAMILY
Cryptantha sp.	Unid. Popcornflower
Cryptantha angustifolia	Narrowleaf cryptantha
Tiquilia plicata	Plicate tiquilia
BRASSICACEAE	MUSTARD FAMILY
* *Brassica tournefortii*	Wild turnip
CACTACEAE	CACTUS FAMILY
Opuntia echinocarpa (or O. acanthocarpa)	Silver cholla
CHENOPODIACEAE	GOOSEFOOT FAMILY
Atriplex canescens	Four-winged saltbush
Atriplex hymenelytra	Desert holly
Atriplex polycarpa	Allscale
* *Salsola tragus*	Russian thistle
Suadea moquinii	Bush seepweed
EUPHORBIACEAE	SPURGE FAMILY
Chamaesyce albomarginata (Euphorbia albomarginata)	Rattlesnake spurge
Chamaesyce polycarpa ssp. hirtella (Euphorbia polycarpa h.)	Sand mat
Croton californicus	California croton
FABACEAE	PEA FAMILY
Acacia greggii	Catclaw acacia
Cercidium floridum	Blue palo verde
Dalea mollissima (?)	Rust dalea
Prosopis glandulosa	Mesquite
Psorothamnus emoryi (Dalea emoryi)	Emory indigo-bush
Psorothamnus schottii	Indigo-bush
Psorothamnus spinosus	Smoke tree
FOQUIERACEAE	OCOTILLA FAMILY
Foquieria splendens	Ocotillo

1. Alien plants indicated by asterisk; special status species indicated by two asterisks. This list includes only species observed on the site. Other species may have been overlooked or unidentifiable due to season. Plants were identified using keys, descriptions, and illustrations in Abrams (1923-1951), Hickman (1993), Jaeger (1940), Munz (1974), and Shreve & Wiggins (1964). Taxonomy and nomenclature generally follow Hickman.

USG PLASTER CITY PLANT SITE, RAIL LINE, WATER LINE SPECIES LIST

	LOASACEAE	STICK-LEAF FAMILY
	Petalonyx thurberi	Sandpaper plant
	ONAGRACEAE	EVENING PRIMROSE FAMILY
	Camissonia spp.	2 unid. Annuals
	PLANTAGINACEAE	PLANTAIN FAMILY
	Plantago ovata	Desert plantain
	POLEMONIACEAE	PHLOX FAMILY
	Langloisia (or Loeseliastrum) sp.	Unid. annual
	POLYGONACEAE	BUCKWHEAT FAMILY
	Chorizanthe rigida	Rigid spine-flower
	Eriogonum inflatum	Desert trumpet
	RESEDACEAE	MIGNONETTE FAMILY
	Oligomeris linifolia	Narrowleaf oligomeris
	SOLANACEAE	NIGHTSHADE FAMILY
	Datura sp.	Jimsonweed, desert thorn-apple
	TAMARICACEAE	TAMARISK FAMILY
*	*Tamarix aphylla*	Athel
*	*Tamarix ramosissima*	Tamarisk
	ZYGOPHYLLACEAE	CALTROP FAMILY
	Larrea tridentata	Creosote bush
	POACEAE	GRASS FAMILY
	Pleuraphis rigida (Hilaria rigida)	Big galleta
*	*Phleum sp.*	Timothy
*	*Schismus barbatus*	Mediterranean schismus

WILDLIFE[2]

2. The following is a list of species observed or detected on the project site. Non-native species are indicated by an asterisk. Species on CDFG's Special Animals list are indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.). Taxonomy and nomenclature generally follow Fisher and Case (1997) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

Phrynosomatidae	Phrynosomatids
Callisaurus draconoides	Zebra-tailed lizard
Teiidae	Whiptail lizards
Cnemidophorus tigris	Western whiptail
AVES	Birds
Columbidae	Pidgeons and doves
Zenaida macroura	Mourning dove
Corvidae	Jays and crows
Corvus corax	Common raven
Fringillidae	Finches
Carpodacus mexicanus	House finch
MAMMALIA	Mammals
Leporidae	Hares and rabbits
Lepus californicus	Black-tailed jackrabbit
Heteromyidae	Pocket mice, kangaroo rats
Dipodomys sp.	Unid. kangaroo rat
Canidae	Dogs/wolves/foxes
Canis latrans	Coyote (scat, tracks)

Appendix C2 United States Gypsum Company Plaster City Quarry Site: Biological Technical Report

UNITED STATES GYPSUM COMPANY PLASTER CITY QUARRY SITE: BIOLOGICAL TECHNICAL REPORT

Prepared for:

LILBURN CORPORATION
1905 Business Center Drive, San Bernardino, CA 92408

Prepared by:

Scott D. White and Brian Leatherman
WHITE & LEATHERMAN BIOSERVICES
201 North First Ave., No. 102, Upland, CA 91786

Revised February 2005

CERTIFICATION: I hereby certify that the statements furnished in this report present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNATURE: Scott D White DATE: 17 Feb 2005

UNITED STATES GYPSUM COMPANY PLASTER CITY QUARRY SITE: BIOLOGICAL TECHNICAL REPORT

WHITE & LEATHERMAN BIOSERVICES
Revised February 2005

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MAPS AND APPENDICES

UNITED STATES GYPSUM COMPANY PLASTER CITY QUARRY SITE: BIOLOGICAL TECHNICAL REPORT

WHITE & LEATHERMAN BIOSERVICES
Revised February 2005

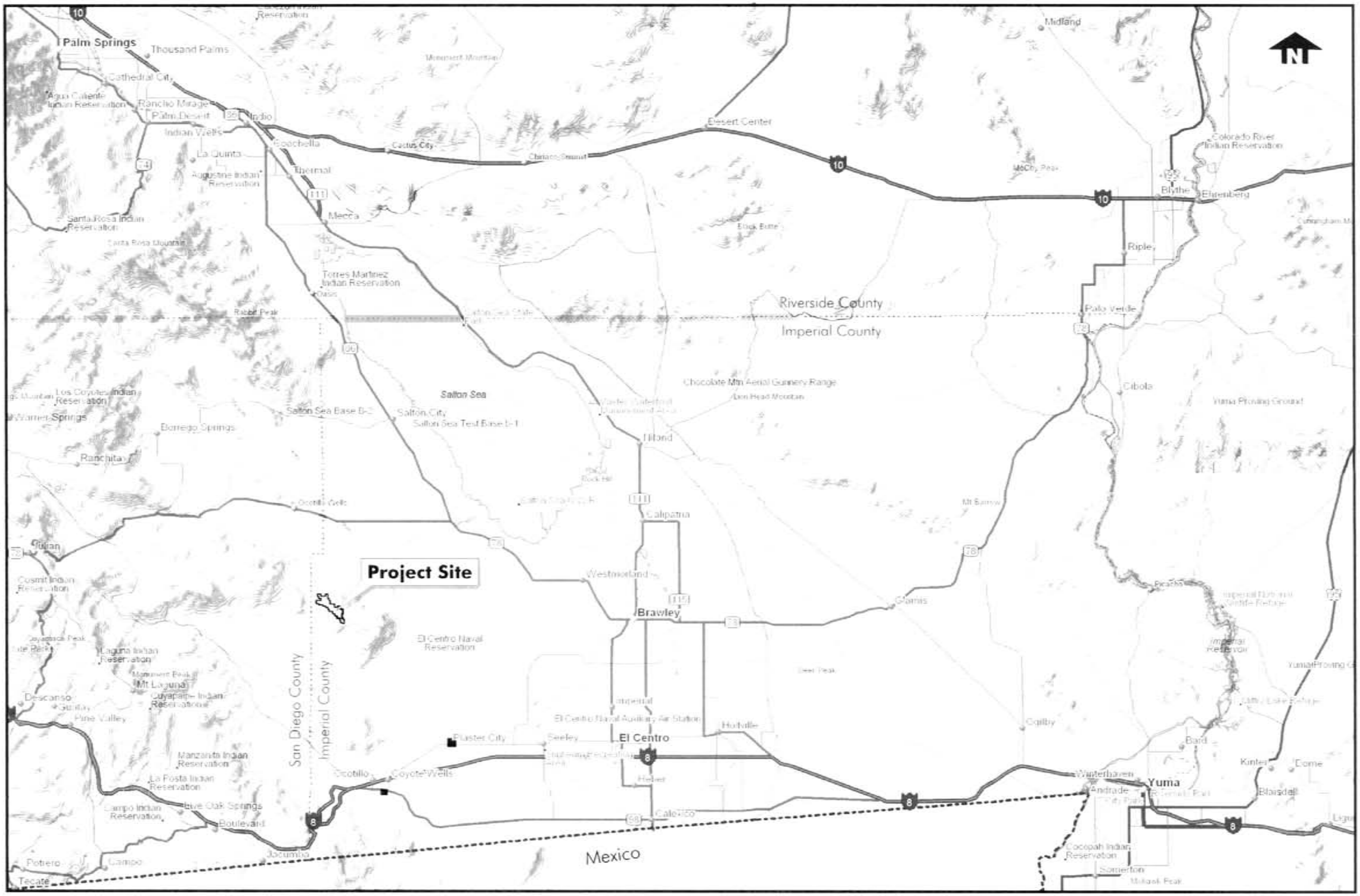
I. SITE DESCRIPTION

The United States Gypsum Company (USG) operates gypsum quarries and a processing plant on a 2,048 acre site area on the lower slopes of the Fish Creek Mountains in western Imperial County, California (Map 1). USG proposes to expand its quarry areas within portions of its privately owned land and onto a series of mining claims to the south and southeast of the existing quarries, and to drill a new well and construct a new pipeline to serve the quarry operation. This report documents biological resources occurring or potentially occurring within the areas considered for future expansion (Map 2). The project area is found on the USGS Borrego Mountain SE and Carrizo Mountain NE 7½ minute topographic maps in Township 13 South, Range 9 East, portions of Sections 19, 20, 28, 29, 30, 32, and 33; and Township 13 South, Range 10 East, a portion of Section 4. The proposed well site and pipeline alignment are located in portions of Sections 16, 17 and 18. Biological resources of the presently permitted area have been addressed earlier, in reports prepared by the Lilburn Corp. (1995; 1996).

The area under consideration for future quarrying is on middle and lower slopes and a broad alluvial wash in the northeastern Fish Creek Mountains. Elevation ranges from about 300 feet in the northwest corner of the site to 1,041 feet at a small peak near the eastern boundary of the study area. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops, and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by creosote bush on the igneous material and by pygmy cedar on the gypsum. The alluvial wash has a series of braided channels which evidently are scoured and redirected by infrequent flash flooding. Alluvial soils support desert shrublands composed primarily of creosote bush, with stands of smoke tree and catclaw acacia in the main channels. Substrates are coarsely mapped on Map 3.

The primary wash and several of its tributaries are shown as ephemeral streams on the USGS topographic maps. Runoff from the project site drains to the north into Fish Creek Wash and then to the Salton Sea, an intrastate lake.

The proposed well site is located on private land alongside the narrow-gauge rail line about 3 rail miles from the rail terminus at the quarry, near the point where an unnamed road crosses the rail line at a mapped benchmark, "BM 115." The proposed pipeline route is within the narrow-gauge railroad right of way, originating at the well site and paralleling the railway to the quarry site. Habitat at the proposed well site and pipeline alignment is relatively stable sandy desert bajada supporting desert shrubland dominated by creosote bush.

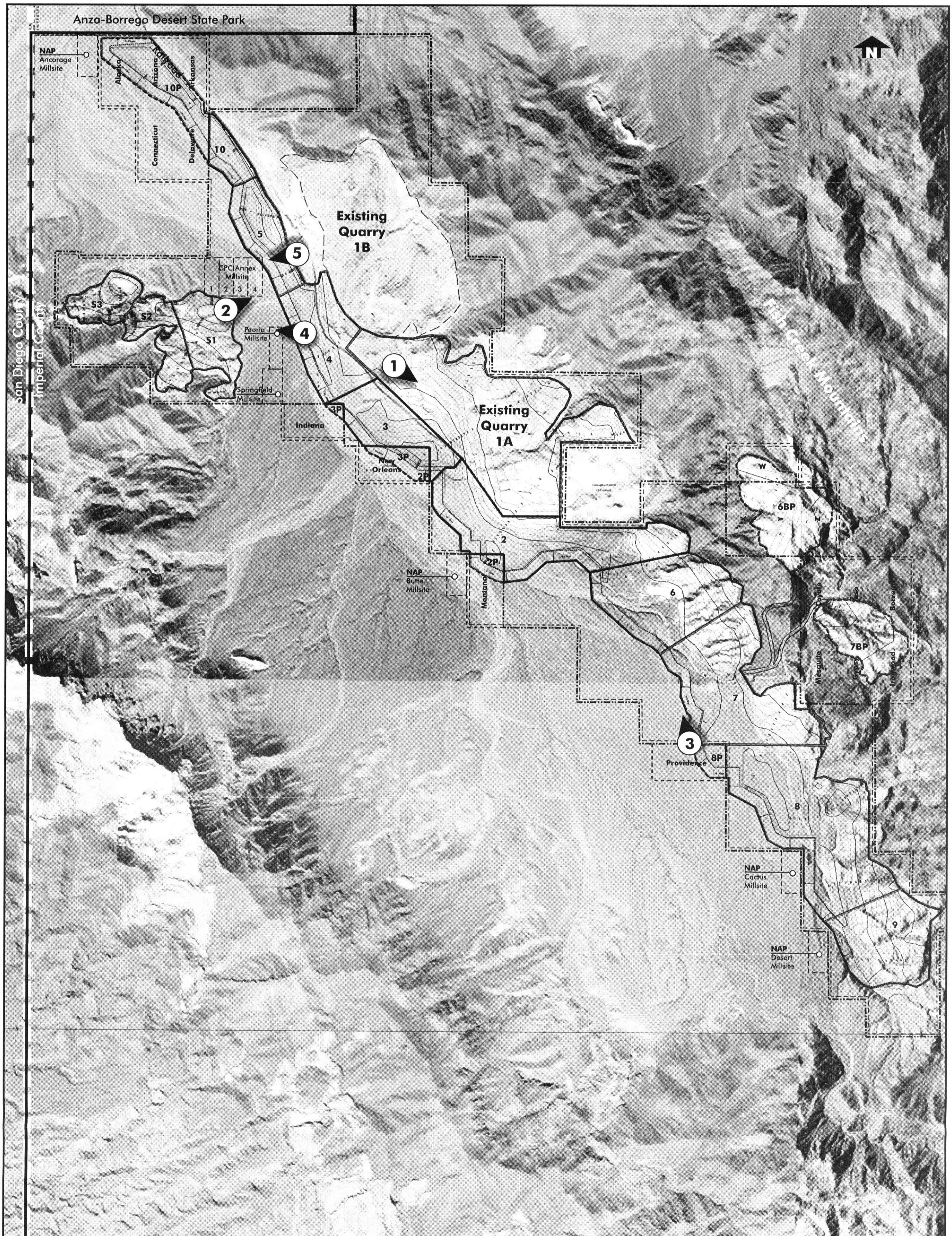


Map 1: Vicinity Map

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By
LILBURN CORPORATION

Figure 1



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

LEGEND

Plaster City Quarry Private Land Boundary

Plaster City Quarry Public Land Boundary

50' Quarry Setback

2 — Quarry Phase Boundary and Phase Number

1 — Photograph Location, Number and Direction of View

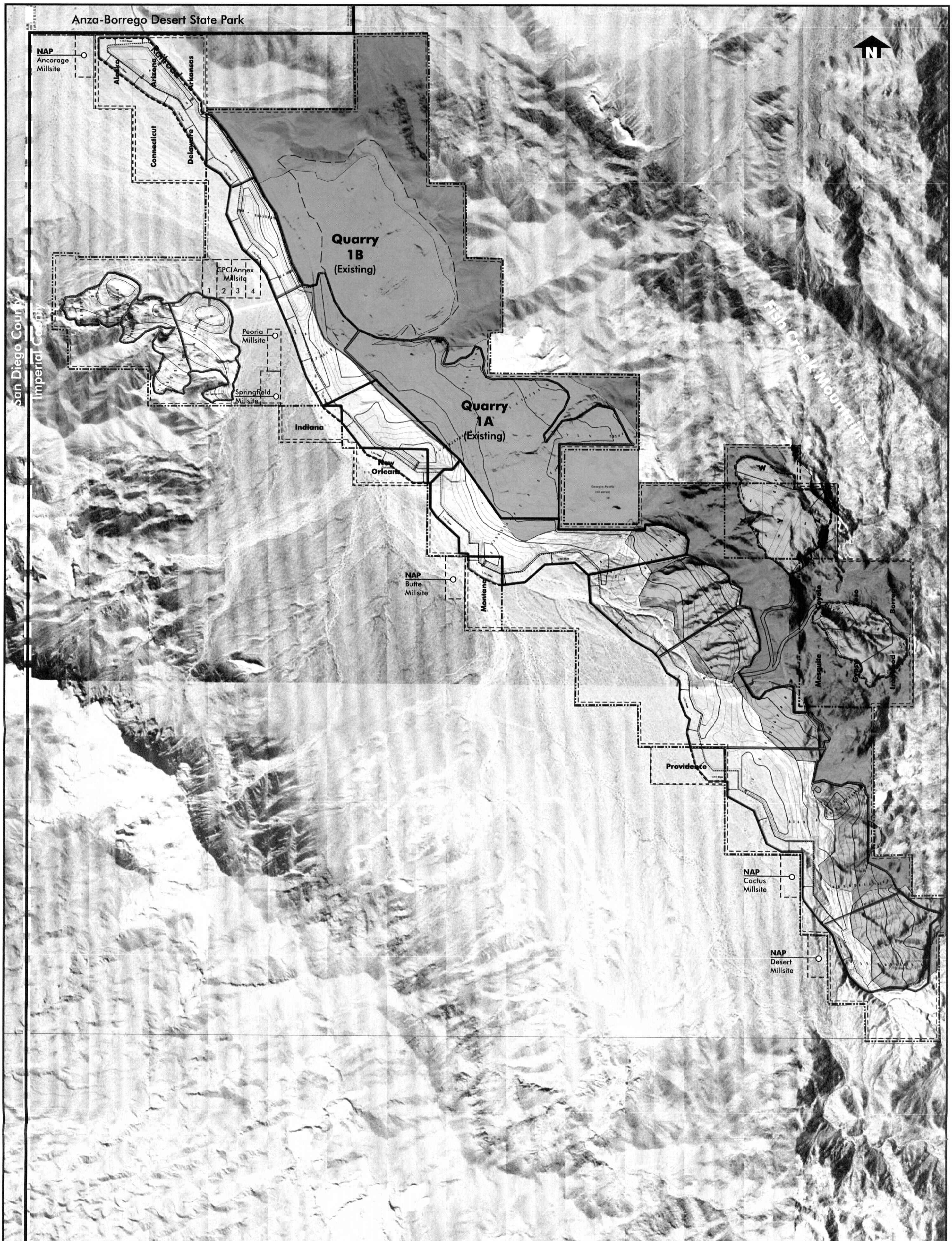
NAP — Not a Part

Map 2: Project Site

Prepared By
LILBURN
CORPORATION

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 2



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

LEGEND

- Plaster City Quarry Private Land Boundary
- Plaster City Quarry Public Land Boundary
- 100' Quarry Setback
- 2 — Quarry Phase Boundary and Phase Number
- Existing Quarry and Processing Plant
- Gypsum Outcrops
- Alluvium
- Non-gypsum Upland
- NAP — Not a Part

Map 3: Substrate

Prepared By:
LILBURN CORPORATION

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 3

II. METHODS

Scott White reviewed available literature to identify special status animals, plants, and plant communities known from the project site and vicinity. Literature reviewed included compendia provided by resource agencies (California Department of Fish and Game 2002a, 2002b; US Fish and Wildlife Service 1999), California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Tibor 2001), the CNPS Electronic Inventory (2002) and California Natural Diversity Data Base (2001) reports for the Borrego Mountain SE, Carrizo Mountain NE, and four adjacent quads (Arroyo Tapiado, Harper Canyonn, Harper's Well, and Plaster City NW), USG Plaster City Quarry Baseline Surveys (Lilburn 1995). All special status plants or animals reported on any of these six USGS quads, as well as others known from the general area, are listed in Appendix 1, along with brief descriptions of their habitats, geographic ranges, agency status, and probability of occurring on the project site.

The current rainfall year (beginning July 2001) has been one of the driest on record for much of southern California. Average annual rainfall at Anza Borrego State Park is 6.09 inches (Desert Research Institute Western Regional Climate Center), but the rainfall total for the 2001-2002 is only 1.66 inches (telephone contact with Anza Borrego State Park Visitor's Center), or 27% of average.

White visited the site with Paul Kielhold of Lilburn Corp. on 17 January 2002 for general reconnaissance; White and Brian Leatherman visited the site on 8 February and 23 April 2002 to document plants and animals occurring on the site and describe vegetation and habitat; and Leatherman visited the site from 27 to 29 March 2002 to further document wildlife and wildlife sign on the site. A total of about 40 person-hours were spent on the site. Weather conditions during these surveys were similar, generally hot (80 to 100° F) and dry with moderate winds (5-15 mph) by mid-afternoon.

During the first and second field visits, White drove passable roads and walked "meandering transects" along hillsides and the alluvial wash in several places with Kielhold (17 Jan) and Leatherman (8 Feb). White and Leatherman also drove the length of the narrow-gauge rail line that serves the quarry on 8 February, viewing the proposed well site and pipeline alignment. During the visits of 27-29 March, Leatherman used a variety of techniques to document wildlife use of the site as explained in more detail below. During the final field visit (23 April), White and Leatherman walked the length of the most active channels in the alluvial fan and walked several "meandering transects" along uplands, including both gypsum and metamorphic substrates.

During the field surveys, all plant and wildlife species noted were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations in Abrams (1923-1969), Hickman (1993), and Munz (1974).

The wildlife community on the project site was surveyed intensively using scent stations, small mammal trapping, bird surveys, road riding, wildlife transects, and periodic scans of ridgelines with a spotting scope and binoculars. Emphasis of the surveys was on terrestrial vertebrates (i.e. amphibians, reptiles, birds, and mammals).

Four transects of approximately 1000 feet were established in four different habitat types on the project site (Map 4). Each transect consisted of two scent stations (one at each end) to sample for carnivores and 25 Sherman live traps to sample small mammals. Transects were established on 27 March and sampled for two days/nights. Transect 1 was among outcrops of granite boulders along the base of the Fish Creek Mountains. Transect 2 crossed the broad alluvial valley, Transect 3 was within a sandy wash, and Transect 4 was along one of the many cobble-covered mesas between deeply incised washes. The transects crossed most of the site's width with Transect 1 located near the southeast end and Transect 4 located near the northwest end.

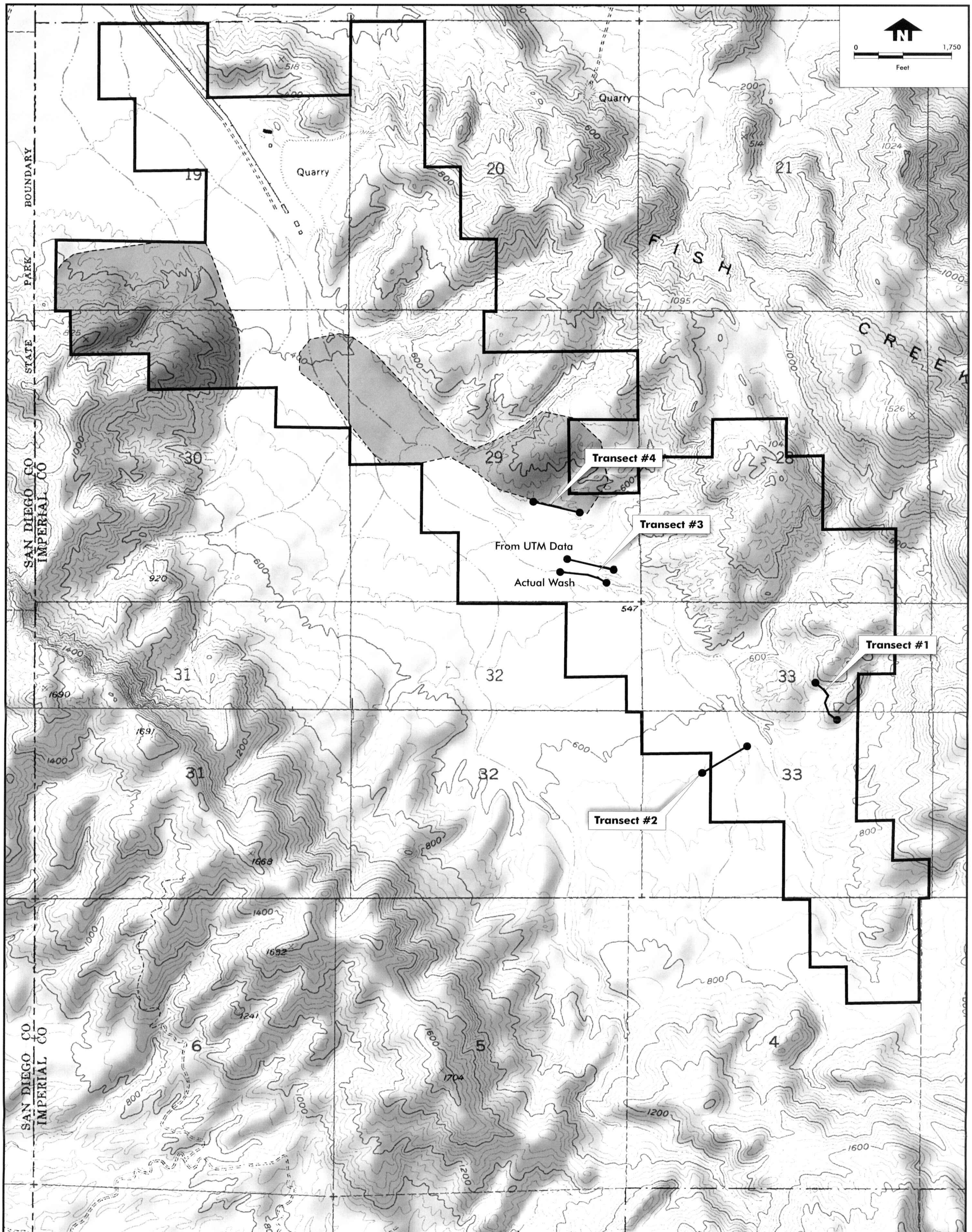
Scent stations were made of a thin layer of flour smoothed with a sheet of heavy plastic to form a circular station about 3 feet in diameter. Each scent station was baited with meat-based canned cat food. The stations were checked for visitation each morning, and cleared and re-baited each evening. All tracks and other pertinent data were recorded in field notes. Numbers of individuals crossing the scent stations were not noted because the same individual could visit the station multiple times, and because scent stations as used to sample here do not provide accurate information of population density (Wilson et al. 1996).

Sherman live traps (3in. x 3in. x 9in.) were used to assist in the inventory of small mammals. One trap line consisting of 25 traps was set along each transect. Traps were about 40 feet apart along each transect; they were baited with wild bird seed. Traps were checked for captures each morning, closed during the day, and reset and re-baited in the evening.

Surveys of the ridgelines surrounding the project site to search for peninsular bighorn sheep, raptor nests, and evidence of seeps or springs, were made several times over the course of the three day survey period. Ridgelines were scanned at 25x power using a Swift 15-60x zoom capability spotting scope. Western ridges were generally scanned in the morning and eastern ridges in the late afternoon to take advantage of the angle of the sun. Ridges were also scanned periodically throughout the day during other survey activities using 8 X 10 Bosch & Lomb Elite binoculars.

A single loop transect of approximately 7.5 miles that traversed the ridgeline immediately east of the project area was walked on 28 March. The primary intent of this transect was to search for bighorn sheep or their sign. In addition, the entire project area and all canyons draining into it were scanned for evidence of springs, ponds, seeps, or other surface water.

All navigable dirt roads in the project area were driven on the evening of 27 March to search for nocturnal mammals and herpetofauna. During all survey activities, including live trap and scent station set up and checking, travel between transects, road riding and perimeter transects, all sign and visual encounters of wildlife were noted and incorporated into the wildlife species list for the site, which is included in Appendix 2.



Source: USGS 7.5 min., Borrego Mtn. SE and Carrizo Mtn. NE Quads.

Legend

2002 Survey

1995 Survey

Map 4: Wildlife Transect Locations

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 4

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III. RESULTS

III. A. Vegetation and Habitat

The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. The wash slopes gently (about 2%), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and small washlets, and by sheet flow. In some areas, the washes are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the 3-10 inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. These soils present a poor substrate for burrowing wildlife.

Mountainsides are very steep (slopes are about 20%) and rocky with frequent areas of exposed bedrock and actively eroding talus. Exposed ridgetops have thin soil overlying bedrock.

Undisturbed uplands on the site support desert shrubland matching Sawyer and Keeler-Wolf's (1995) descriptions of creosote bush series, creosote bush – white bursage series, and (on metamorphic bedrock) ocotillo series. They also match Holland's (1986) description of Sonoran creosote bush scrub, and the desert scrub described by Laudenslayer and Boggs (1988). Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops are almost devoid of vegetation, and pygmy cedar was the only plant seen regularly on these soils.

The alluvial wash also is generally covered by creosote bush and creosote bush – white bursage series. Alluvial sites generally had little or no ocotillo, but had higher occurrence of cheesebush (*Hymenoclea salsola*) and indigo bush (*Psorothamnus schottii*). The larger braided channels also support catclaw (*Acacia greggii*), smoke tree (*Psorothamnus spinosus*), and desert lavender (*Hyptis emoryi*). Vegetation in the washes matches Sawyer and Keeler-Wolf's (1995) description of the catclaw acacia series; Holland's (1986) description of dry desert wash woodland, and desert wash described by Laudenslayer (1988). Annual plants and perennial herbs occur in these vegetation types, but they generally could not be identified with confidence due to very low rainfall this year.

Habitat at the proposed Quarry No. 3 well site and pipeline alignment is relatively stable sandy desert bajada supporting creosote bush and creosote bush – white bursage series, as described above for the alluvial wash within the quarry areas.

Three special status plant communities are reported in the area by the California Natural Diversity Data Base: desert fan palm oasis, mesquite bosque, and transmontane alkali marsh. None of these three communities occur on the project site or in adjacent areas visited or viewed during these surveys. About 0.9 miles east of the proposed Quarry No. 3 well site, the narrow gauge rail line crosses an intermittent stream channel supporting "mesquite bosque"; this vegetation is addressed in a separate report (White and Leatherman 2002).

III. B. Wildlife

The vegetation communities and habitats discussed above, in concert with abiotic features of the project site and its location between a steep ridgeline and alluvial valley result in an area that provides habitat for numerous resident and migrant wildlife species. Wildlife and wildlife sign observed during the field surveys included species common to the open, xeric Colorado Desert.

Common species (i.e., not special status) observed or detected included zebra-tailed lizard (*Callisaurus draconoides*), western whiptail (*Cnemidophorus tigris*), red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), rock wren (*Salpinctes obsoletus*), black-throated sparrow (*Amphispiza bilineata*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and coyote (*Canis latrans*).

Other common wildlife species that occur or forage in desert shrubland throughout the region likely also occur on the site, but were not observed during field work reported here. These include secretive reptiles (e.g., most snakes), burrowing mammals, and uncommon wide-ranging species such as badger and golden eagle. Drought conditions appear to have substantially reduced populations of species that otherwise would be expected to be common. The side-blotched lizard is a very common reptile throughout southern California, including the deserts. Not detecting this species on the project site is extremely unusual, and suggests that populations are unusually low. Only one western whiptail, another common lizard, was observed. No snakes were observed. Small mammal trapping success (in terms of both the number of species and number of individuals trapped) was also low, and several other species likely to occur went undetected.

III. C. Wildlife Movement

The effects of habitat fragmentation and importance of corridors were reviewed by Harris and Gallagher (1989) and Soule (1991), among many others. In many regions, land development and linear structures (e.g., roadways) have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations (including California gnatcatcher) become extinct when their habitat is fragmented by urban development in San Diego (Soule et al. 1988).

The Plaster City Quarry site is in an area that has not been significantly fragmented. Much of the surrounding land is either public open space managed by the Bureau of Land Management or California State Parks, or privately owned undeveloped land. Adequate habitat is available for wildlife movement throughout the general area, especially along ridgelines to the northeast and southwest and in large open areas to the south. In the immediate area, no true barriers to wildlife movement exist, but several man-made deterrents to wildlife movement include active mining and associated facilities, access roads and haul roads, and a railroad. Expanded quarry operations would tend to dissuade most terrestrial animals from crossing the site due to the removal of vegetation and soil which would otherwise provide food, shade, burrowing substrate, and most other native habitat elements. Indirect impacts, including light, noise, and equipment traffic, could also tend to reduce wildlife dispersal across the property. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed quarry operations.

IV. RARE, THREATENED, ENDANGERED, OR SENSITIVE SPECIES AND HABITATS

IV. A. Special Status Plants

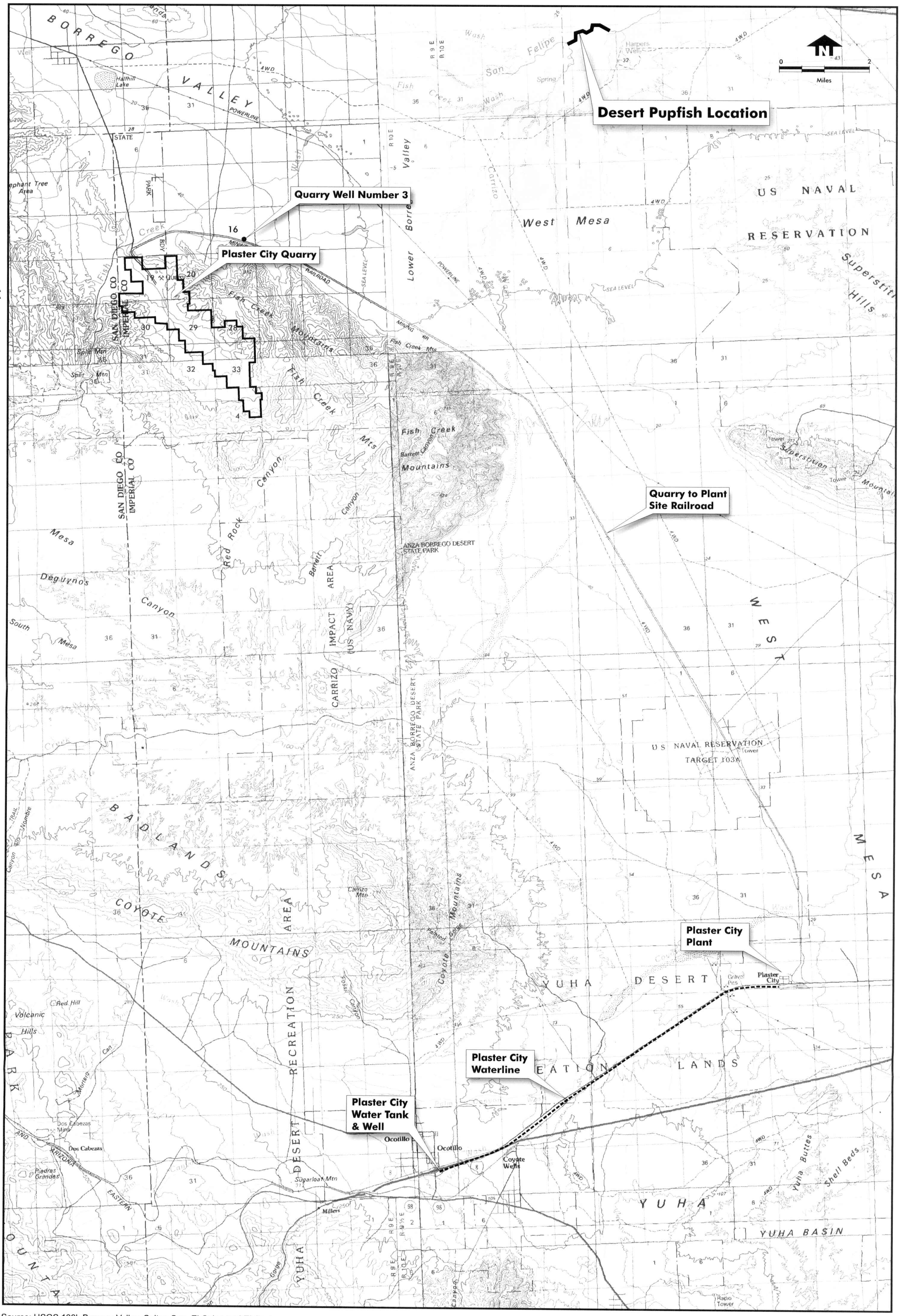
Based on our literature review, we identified 41 special status plant species occurring or potentially occurring in the general region (Appendix 1). None of these are state or federally listed threatened or endangered species. During our field surveys we did not note any of these special status plants on the site. However, very few annual plants germinated or flowered this year, very few perennial herbs put on growth this year, and most drought-deciduous shrubs did not put on leaves this year, presumably all due to the extremely poor rainfall year. Although previous studies of a portion of the site (Lilburn 1995) did not identify there presence we cannot make a conclusion about presence or absence for special status plants whose habitat occurs on the project site.

We estimate a moderate or greater probability that any of the following special status plants might occur on the site (see Appendix 1): Salton Sea milk vetch, Harwood's milk vetch, Ayenia, Sand evening-primrose, Pierson's pincushion, spiny abrojo, winged cryptantha, California ditaxis, Alverson's foxtail cactus, pink velvet-mallow, Newberry velvet-mallow, Parish's desert-thorn, Coulter's lyrepod, brown turbans, hairy stickleaf, slender-lobed four o'clock, slender woolly-heads, Wiggins's cholla, Thurber's pilostyles, Unicorn plant, Orocopia sage, desert spike-moss, and Orcutt's woody aster. None of these plants is listed threatened or endangered, or is a candidate or proposed for listing. Three of them (Pierson's pincushion, Orocopia sage, and Orcutt's woody aster) are on the California Native Plant Society's List 1B, plants considered rare and endangered in California and throughout their ranges. Another eight (Harwood's milk vetch, Ayenia, Elephant tree, Parish's desert-thorn, brown turbans, hairy stickleaf, slender woolly-heads, and desert spike-moss) are on CNPS's List 2 (considered rare and endangered in California but more common elsewhere in their ranges).

IV. B. Special Status Animals

Based on our literature review, we identified 27 special status animal species occurring or potentially occurring in the general region (Appendix 1). Of these, 3 are state or federally listed threatened or endangered species (desert pupfish, desert tortoise, and peninsular bighorn sheep) and one (flat-tailed horned lizard) is proposed for federal listing. The following sections describe the potential of occurrence for these species by group.

Fish: Desert pupfish (*Cyprinodon macularius*), a listed endangered species, historically occurred in stream margins, marshes, and springs of the lower Colorado River Basin. It is endangered due to habitat loss and the introduction of non-native fish (particularly *Tilapia*) into its habitat (Minckley et al. 1991). The nearest location is in San Felipe Creek, about 11 miles northeast of the site (CNDDB 2001) (Map 5). This is one of only three known extant occurrences in natural habitat in



Source: USGS 100k Borrego Valley, Salton Sea, El Cajon and El Centro.

Map 5: Desert Pupfish Location

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By
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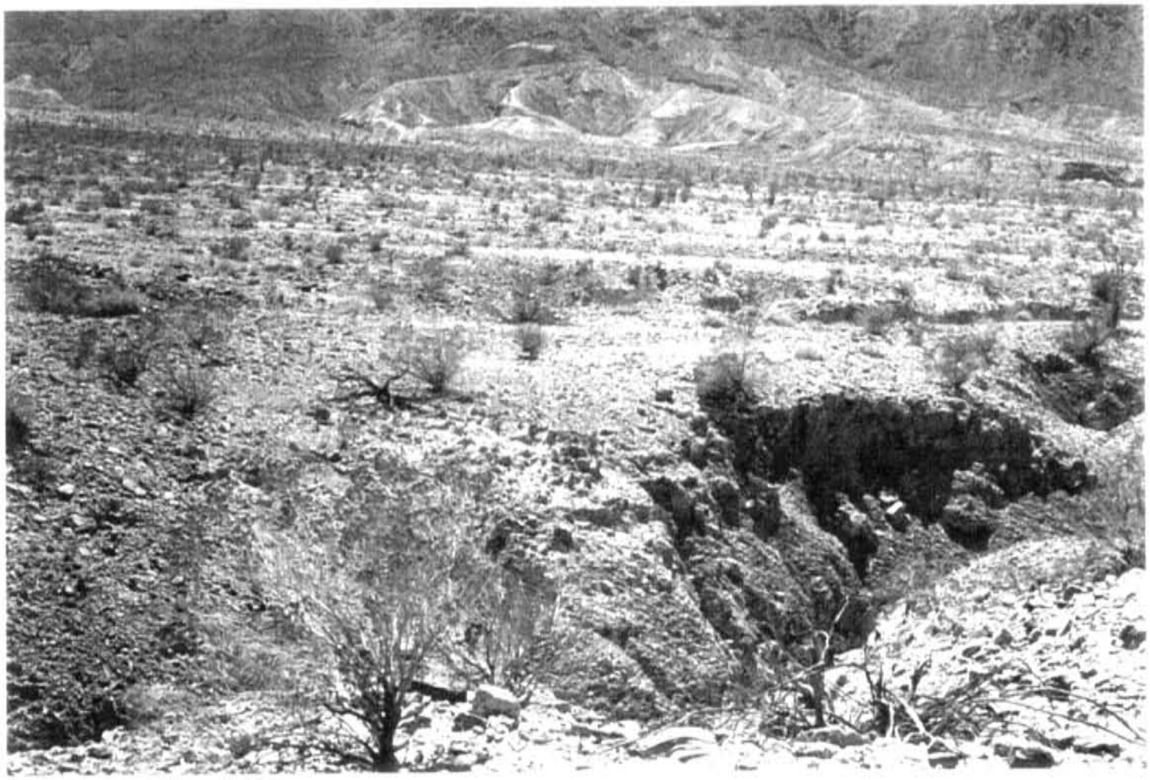
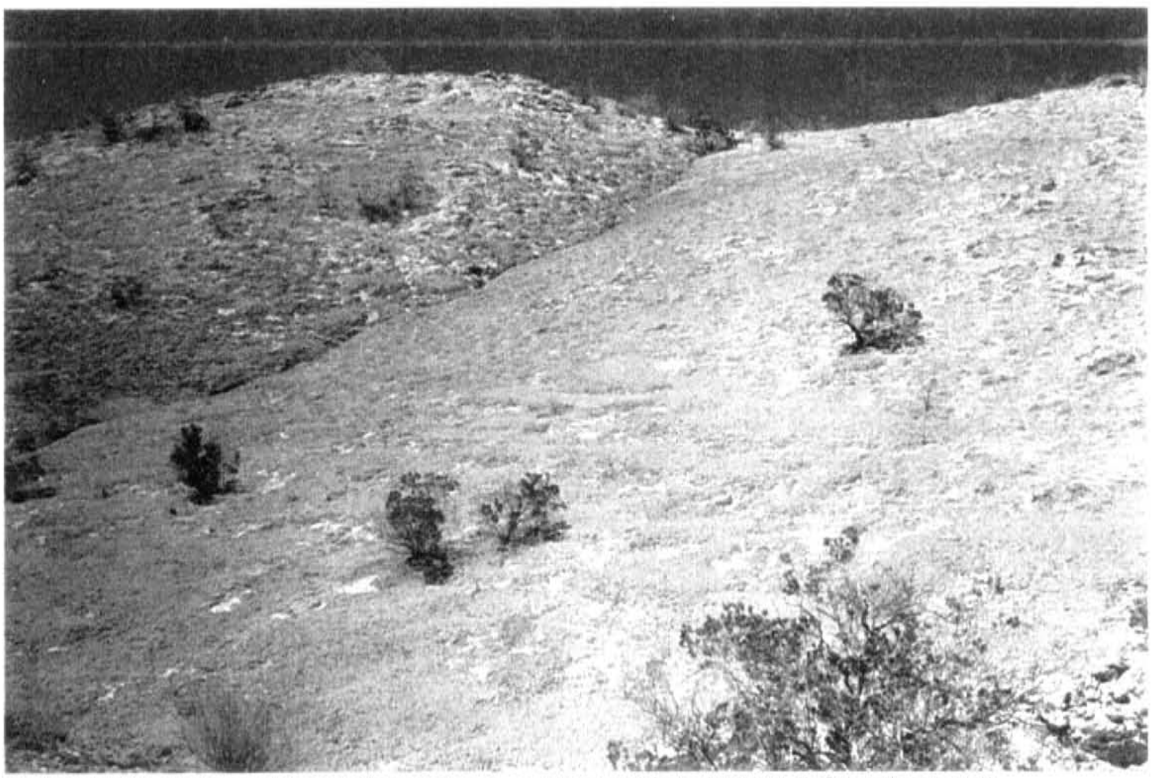
Figure 5



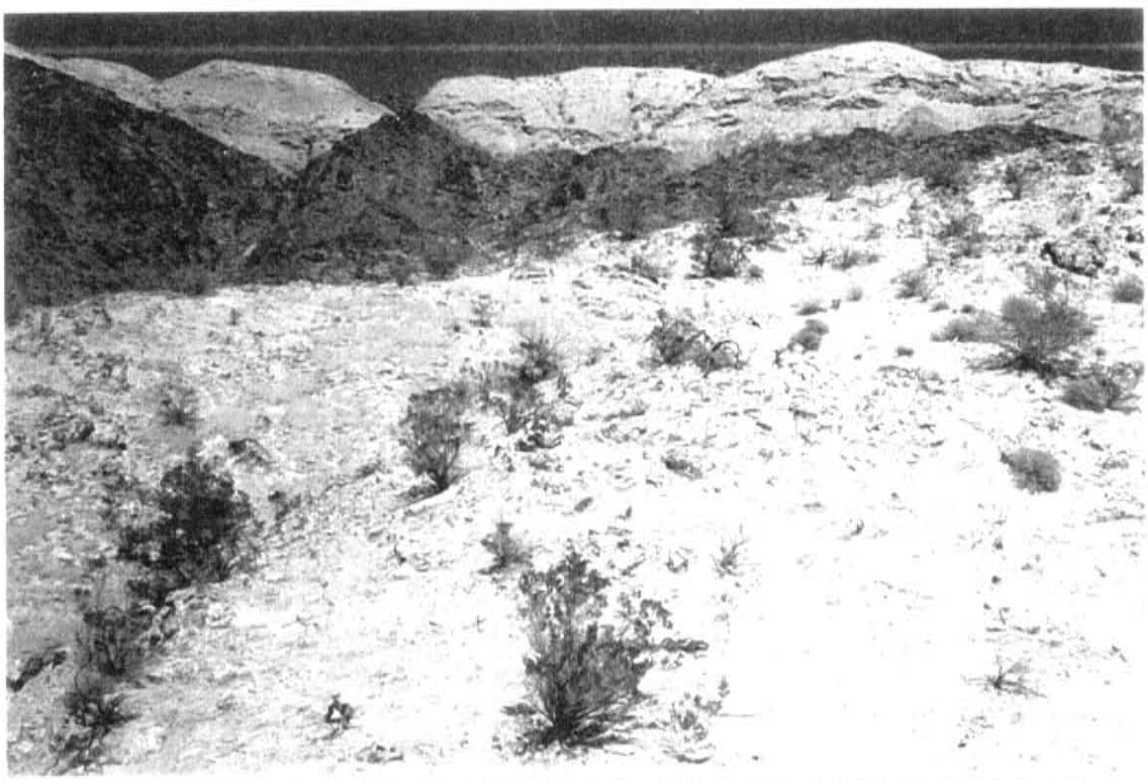
Typical view: alluvial fan.

Typical view: wash vegetation


Project site overview: gypsum outcrop (foreground); alluvial fan (middle view)


Typical view: gypsum outcrop (foreground); metamorphic substrate (left background)

Typical view: gypsum outcrop.



Typical view: gypsum outcrop (foreground and background); metamorphic substrate (middle).

California, though desert pupfish populations also persist in irrigation canals near the Salton Sea and in a few introduced "refugia" sites. We conclude that desert pupfish is absent from the project site due to the absence of any perennial surface water.

Reptiles: Several special status reptile species are known from the general region and at least one of these, common chuckwalla, was indirectly detected on the project site. We observed chuckwalla sign (scat) on rocky slopes southeast of the existing quarry. Chuckwallas are widespread throughout the California deserts, but generally not seen because they take shelter in crevices, rocky slopes and outcrops. They are considered a "special animal" by the California Department of Fish and Game (CDFG), but their Natural Diversity Data Base ranking, S4, indicates that they are "apparently secure" in California. The chuckwalla is not listed threatened or endangered, and is not a candidate or proposed for listing.

We conclude that desert tortoise, a state and federally listed threatened species, is unlikely to occur on the site because of its geographic range. The only portion of the desert tortoise's range west of the Salton Sea is a disjunct area in the southern Santa Rosa Mountains, San Diego County, north of Highway S22 (Zeiner et al. 1988). The project site is about 15 miles south of this occurrence, and about 35 miles southwest of the Chocolate Mountains where the nearest designated critical habitat is mapped (USFWS 1994). No desert tortoise or sign attributable to desert tortoise was observed within the project site during field surveys for this report, though we did not perform a focused desert tortoise survey.

Flat-tailed horned lizard, proposed for federal listing as threatened (USFWS 2001a), does not occur in the areas which may be quarried in the future, but is likely to occur at or near the proposed Quarry No. 3 well site and along a portion of the proposed pipeline route from the well to the plant. They occur almost exclusively in windblown sand dunes (which exist within 1/8 mile of the Quarry No. 3 well site) and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 20 cm (8 in.). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period. This horned lizard "is a specialized sand-dweller that has not been observed outside of areas with a shifting sand substrate" (reviewed by Jennings and Hayes 1994). Shifting sands occur north and northeast of the quarry, east of the proposed well and pipeline location, but no suitable habitat occurs on the quarry site.

The barefoot banded gecko is a rare species occurring in massive rock outcrops and crevices in San Diego and Imperial Counties and southward in the steep eastern-facing mountains of Baja California (Steinhart 1990, Grismer 1994). Its distribution in California is poorly known because the animal is sought after for the trade in reptiles, and collectors are secretive about collection sites (Zeiner et al. 1988). Stebbins (1985) cites an unverified report as far north as the Santa Rosa Mountains, though maps published by Stebbins (1985) and Zeiner et al. (1988) indicate its distribution no farther north than Anza-Borrego State Park in San Diego County. It is listed as threatened under the California Endangered Species Act due to the destruction of crevice habitat by collectors (Steinhart 1990). There are no CNDDB reports of barefoot banded gecko from the quads we queried in our literature review, but suitable habitat occurs on and around the project site and its geographic range may extend into the area. During baseline surveys for the existing USG Plaster City quarry, Lilburn

(1995) surveyed for barefoot banded geckos but did not find them. We conclude there is a low probability that barefoot banded gecko could occur in the project area, though none have been observed during field surveys.

Birds: Two special status birds [black-tailed gnatcatcher (*Polioptila melanura*) and loggerhead shrike (*Lanius ludovicianus*)] were observed on-site during field surveys and suitable nesting habitat for at least one other [LeConte's thrasher (*Toxostoma lecontei*)] occurs on the site. Several other special status birds, especially raptors (including golden eagles and prairie falcons), are likely to occur during winter or migration (Appendix 1). None of the birds occurring or potentially occurring on the site is listed, proposed for listing, or a candidate for listing threatened or endangered. Golden eagles are fully protected by CDFG, and almost all birds are considered protected by the Migratory Bird Treaty Act, which (among other things) prohibits killing them.

One or more pairs of black-tailed gnatcatchers were seen in and around smoke trees and catclaw acacias along washes in the alluvial valley. They are year-around residents, generally nesting in mesquite but also using also desert wash and upland habitats. They are considered common in the lower Colorado River watershed (most of Arizona and easternmost California; Rosenberg et al. 1991). Black-tailed gnatcatcher is on CDFG's list of Special Animals, but its Natural Diversity Data Base ranking of S4 indicates that it is "apparently secure in California."

One loggerhead shrike was seen in desert scrub in the southeastern part of the project site. Loggerhead shrikes are widespread in shrublands and open habitats throughout most of the United States. Numbers have declined in the midwest and now appear to be declining in the southwest, including California; it is on CDFG's list of Special Animals, but its Natural Diversity Data Base ranking of S4 indicates that it is "apparently secure in California.". It is common in winter and fairly common during breeding season in the lower Colorado River Valley (Rosenberg et al. 1991).

LeConte's thrasher is uncommon but widespread in California deserts. It most often occurs in open sandy or alkaline habitats and nests in spiny shrubs including cactus, saltbush, or palo verde (Grinnell and Miller 1944). It is a CDFG Species of Special Concern but is not listed, proposed, or a candidate for state or federal listing. Habitat on the project site is suitable for this bird, but presents no special habitat components not widely available throughout the region.

Several special status raptors could forage over the site, particularly during winter or migration seasons. These include golden eagle, ferruginous hawk, sharp-shinned hawk, Cooper's hawk, merlin, and prairie falcon. These birds nest in dense woodlands, large trees, or cliffs. Based on habitat and a survey of the cliffs to the east of the project site, we conclude that none of them nests within the area surveyed. In general, these species are considered "sensitive" during breeding season, though golden eagle, ferruginous hawk, merlin are also considered sensitive during winter.

The property provides potential habitat for burrowing owls to breed on-site (they are generally uncommon in desert shrublands), but the habitat is poor because of the high rock and cobble content, which makes it difficult to find suitable burrows (burrowing owls modify and use burrows dug by other animals). Burrows are scarce on the project site, whereas they are more common in broad desert valleys where sandy loam soils are available. Neither burrowing owls nor burrows suitable for nesting were observed during field surveys.

Mammals: Several special status bat species are likely to forage over the site and some are likely to roost or breed on-site (Appendix 1). In general, bat distributions and habits are poorly known. No caves, tunnels, or other significant roosting sites were found anywhere on the property during field work, but steep mountain slopes composed of metamorphic rock provide crevices suitable for some of these bats. None of these species is listed or proposed for listing as threatened or endangered, but all are regarded as species of special concern by CDFG.

American badger is likely to occur on-site at least occasionally, but unlikely to live on the site year around. Badgers are widespread but uncommon in desert shrublands similar to those on-site and throughout the region. They are not listed or proposed for listing as threatened or endangered and are not regarded as species of special concern by CDFG. The CDFG status S4 indicates that badger populations are apparently secure in California.

Colorado Valley woodrats (*Neotoma albigula venusta*) are found in arid regions of southwestern Arizona and extreme southeastern California (Ingles 1965). Their habitats include creosote bush and other arid shrublands and cactus flats in desert areas, including some areas with lava substrates. Dens are usually constructed of cactus pads and woody material from trees and shrubs; they may also nest in rock crevices or burrows under boulders (Mares 1999). In California, this woodrat is closely associated with patches of beavertail cactus (*Opuntia basilaris*) and mesquite (*Prosopis* spp.) (Williams 1986), and often digs burrows under mesquite trees (Ingles 1965). Colorado Valley woodrat is not listed or proposed for listing as threatened or endangered and is not regarded as species of special concern by CDFG. Furthermore, no evidence indicating that the species was threatened was found by Williams (1986). However, the CDFG status S2S3 indicates that Colorado valley woodrat distribution is very restricted in California, possibly to the point of endangerment. We noted woodrat nests in cacti on the alluvial valley portion of the project site. These were probably the nests of the more common desert woodrat (*Neotoma lepida*) because they were not associated with beavertail cactus or mesquite, but we cannot conclude whether some may have been nests of the Colorado valley woodrat. No woodrats of either species were captured during the two nights of trapping, and population numbers are likely very low due to drought conditions. No woodrat nests were observed on the gypsum deposits.

During our field surveys we observed probable sign of Peninsular bighorn sheep along the ridgeline northeast of the project site, but not on the site itself. The sign we noted was scat (feces) which appeared to be more than 1 year old. Distinguishing bighorn sheep scat from deer scat cannot be done with certainty, but we feel that the observed sign is better attributed to bighorn than to deer due to the extremely open and rocky terrain, its occurrence on a ridgetop (bighorn sheep are often found on open ridgetops, but deer rarely are), and the area's extreme aridity. We did not find tracks, well-established travel routes, or "beds," which all would have been seen if the site were used regularly by bighorn sheep. A map of bighorn sheep observations published by the USFWS (2000a) indicate several sightings in Imperial County in the area of the Fish Creek Mountains (the scale of the map precludes determination of exact locales). Peninsular bighorn sheep (*Ovis canadensis*) is federally listed as an endangered species (USFWS 1998) and is designated as a "fully protected animal" by the California Department of Fish and Game.

V. IMPACTS AND RECOMMENDATIONS

V. A. Anticipated Impacts to Special Status Plants and Animals

We conclude that no threatened or endangered plants or animals occur on the site, with the possible exception that Peninsular bighorn sheep may infrequently wander across it and barefoot banded gecko, which may occur in rocky areas around the quarry site. Flat-tailed horned lizard, proposed for federal listing, is likely to occur near the proposed Quarry No. 3 well site and pipeline route but not within the quarry area. Several other special status species are likely to occur on the site but none of these is listed or proposed for listing as threatened or endangered under state or federal Endangered Species Acts.

No special status plants were observed on the site, but dry conditions this year prevent a conclusion of presence or absence for several species. Based on habitat and geographic and elevational ranges, we can conclude that no listed threatened or endangered plants would be affected by the proposed project. None of the special status plants which might occur on-site has formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Three special status animals, common chuckwalla, loggerhead shrike, and black-tailed gnatcatcher have been documented on the project site. Depending on quarry design, occupied habitat and perhaps individual shrikes, gnatcatchers, or chuckwallas would be lost during quarry development. None of these species has formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Construction of the proposed Quarry No. 3 well and pipeline may affect flat-tailed horned lizard habitat. The site is not within the flat-tailed horned lizard management area (Foreman 1997). Without mitigation, this impact could cause the loss of individual lizards or their habitat. The species has been proposed for federal listing as threatened, and adverse impacts would be considered significant under CEQA. This potential impact can be reduced to a level below significance by implementing a series of mitigation recommendations prepared by the FTHL Interagency Working Group (Foreman 1997), described in Table 1 (below).

We cannot determine the likelihood that barefoot banded gecko may occur in the quarry area because of its poorly documented geographic range. Previous field studies in 1995 did not find them present. Habitat appears suitable, though, and new disturbance to rocky uplands in the quarry area could destroy geckos or their habitat if they occur. Due to the species status as a state-listed threatened species, adverse impacts would be considered significant under CEQA.

Special status raptors were not observed during field surveys but several could use the site seasonally for foraging. Several special status bats could roost or forage on the site. These species have no formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Peninsular bighorn sheep evidently wander infrequently on the ridge above the project site, and may also cross the project site itself, though we observed no bighorn sign on the site. Peninsular bighorn sheep occur in desert mountain ranges from southern Riverside County southward into Baja California. Documented populations occur in the Santa Rosa Mountains to the north; Vallecito Mountains to the west; and Jacumba Mountains to the south. Peninsular bighorn sheep's elevational range is about 300 to 4,000 feet elevation (much lower than bighorn sheep populations farther north). Its habitat is usually open slopes in hot and dry desert regions where rough rocky terrain on steep slopes, ridges, canyons, and washes support only sparse vegetation (USFWS 1998). Bighorn sheep typically do not outrun their predators, instead using their climbing abilities to escape in steep, rugged terrain. Predator evasion depends on the ability to detect danger from a distance, and they regularly use steep, open slopes and ridgelines which offer unobstructed views of wide areas. Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. These types of terrain are a crucial component of bighorn habitat, providing a diversity of slopes and exposures for escape from predators, lambing, and shelter in both excessive heat and severe storms (USFWS 2000b). Peninsular bighorn sheep tend to move to lower elevations and to be more localized in distribution as summer progresses (roughly May through October), usually concentrating in the vicinity of permanent sources of water, which is a critical habitat element. When water is more available following rains in the fall, the sheep disperse to higher elevations and ridges. Bighorn sheep also occasionally emigrate between mountain ranges by crossing desert lowlands, but there is no regular migration of sheep herds between local mountain ranges.

The decline of Peninsular bighorn sheep is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses to residential and commercial development; and high predation rates. Land use conversions and linear developments (especially highways) have partially or completely eliminated the possibility of migrations between some mountain ranges and prevent genetic exchange and demographic "rescue" among populations (e.g., Interstate 10 prevents bighorn from migrating between the San Bernardino Mountains and the San Jacinto Mountains, and is largely responsible for the recognition of Peninsular bighorn sheep as a "distinct population segment" by the US Fish and Wildlife Service and CDFG).

In 2001, the USFWS published a final rule designating critical habitat for the Peninsular bighorn sheep; the project site is included within the critical habitat area. Critical Habitat includes specific areas within and outside the geographic range occupied by a species at the time of its listing that are determined to be essential to the conservation of that species. Critical habitat is protected from destruction or adverse modification by the requirement that federal agencies that fund, authorize, or carry out projects consult with the USFWS under Section 7 of the Endangered Species Act. Destruction or adverse modification of critical habitat is defined as direct or indirect alteration that appreciably diminishes the value of critical habitat for the survival and recovery of the listed species. Critical habitat does not afford additional protection to activities on private or other non-federal lands that do not involve a federal nexus (i.e., a project requiring federal authorization).

The project site and adjacent mountains evidently have no permanent or long-lasting seasonal water sources (based on our field observations and absence of mapped springs or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn population. Bighorn sheep using the adjacent ridgetop (perhaps during emigration between mountain ranges) could also wander onto the USG project site. We believe, however, that they would be more likely to keep to ridgetops to the south, southwest, and northeast rather than to travel across the proposed project site itself.

Quarry development would not directly affect regularly-occupied Peninsular bighorn habitat or substantially affect bighorn movement through the area, since much of the surrounding area is open space and preferred travel habitat (ridgetops) is largely off-site to the northeast, south, and southwest. However, it could affect sheep use of the adjacent ridges, and the project area is within designated critical habitat for bighorn sheep. Section 7 of the federal Endangered Species Act requires consultation with the USFWS by federal agencies that fund, authorize, or carry out projects that would result in "adverse modification" of critical habitat. Destruction or adverse modification of critical habitat meets the criteria for mandatory findings of significance under CEQA, and would therefore be considered significant.

Desert pupfish does not occur on the project area, but occurs in San Felipe Creek, about 11 miles from the USG site. The San Felipe Creek watershed is extensive, draining many square miles of the Borrego Valley and Anza-Borrego Desert State Park. Hydrologic studies addressing the quarry area and the proposed new well indicate that neither aspect of the project would affect occupied pupfish habitat (Bookman-Edmonson 2002A, 2002B).

V. B. Anticipated Cumulative Impacts

Quarry operations at the USG Plaster City Quarry site would contribute to cumulative loss of desert shrublands throughout the region. Habitat that would be affected is not locally or regionally unique or sensitive and (with the exception of peninsular bighorn sheep, discussed above) does not support plants or animals listed or likely to become listed under state or federal Endangered Species Acts in the foreseeable future. Large tracts of similar vegetation and habitat are protected in Anza Borrego Desert State Park to the west and BLM-managed wilderness land to the east. Therefore, the ongoing cumulative loss of desert shrublands in the region does not meet CEQA criteria as "significant."

V. C. Mitigation Recommendations

Peninsular bighorn sheep: We recommend that USG, in coordination with the BLM, initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the federal Endangered Species Act to obtain authorization for adverse modification of critical habitat. The consultation process will result in the development of a Biological Opinion by the USFWS that will (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

Barefoot banded gecko: Suitable habitat occurs throughout much of the quarry area. Prior to expanding existing quarries or developing new quarries, we recommend contracting for focused barefoot banded gecko surveys to determine whether the species is present or absent from any proposed new disturbance areas. Surveys should be carried out in cooperation with the California Department of Fish and Game and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then we recommend applying to CDFG under Section 2081 of the California Endangered Species Act to "take" barefoot banded gecko.

Flat-tailed horned lizard: The proposed Quarry No. 3 well and pipeline is within 1/8 mile of suitable blow sand habitat. It is outside the designated FTHL Management Area. Due to the species pending status and low potential for harassment we recommend implementing the mitigation recommendations of the Flat-tailed Horned Lizard Rangewide Management Strategy (Foreman 1997), as outlined in Table 1 (below).

Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), we recommend preparing and implementing a revegetation plan. The plan should be based on the existing revegetation plan for the presently approved quarry, incorporating existing baseline data, success criteria, seeding and planting schemes, and monitoring schedule. The planting areas and reclamation schedule should be updated to reflect the new quarry plan and results of experimental revegetation plots on the existing quarry. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual quarry areas; wherever ongoing quarry operation may eliminate access to closed upper quarry benches, those benches should be revegetated while access is still available.

Phasing of quarry development and closure: To the extent feasible, we recommend that USG minimize the total acreage under active mining at any one time consistent with the reclamation plan. Wherever possible, quarry areas should be closed and revegetated to restore native habitat values concurrently or in advance of opening new quarry areas.

Migratory birds: In order to avoid incidental killing of birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, we recommend scheduling grading and brush removal of previously undisturbed habitat outside the breeding season of most migratory birds (i.e., avoid impacts to vegetation from late winter through early summer).

Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, we recommend that USG contact the California Department of Fish and Game and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the federal Clean Water Act.

Table 1
Summary of Planning Actions, standard mitigation measures, and compensation formula for Flat-tailed Horned lizard Rangewide Management Strategy (Foreman 1997/2003 Revision).

Source and measure	
Planning Actions (pp. 34-43)	
1	Delineate / designate flat-tailed horned lizard management areas (MAs)
2	Define and implement necessary actions
2.1	Mitigate and compensate (Appendices 3 and 4)
2.2	Limit land use authorizations that would cause surface disturbance within MAs
2.2.3	Maintenance of all existing rights-of-way facilities may continue within MAs
2.3	Limit and/or reduce surface disturbance in MAs from discretionary minerals actions
2.3.1	Allowable activities are . . . development and production in existing mineral material extraction sites in accordance with . . . laws and land use plans and subject to applicable mitigation . . . operation and maintenance of facilities shall be allowed on existing leases . . . subject to applicable mitigation and compensation
2.4	Limit vehicle access and route proliferation in MAs
2.4.1	Reduce new road construction
2.4.2	Routes to be designated "closed," "open," or "limited"; roads in MAs given high priority for signing
2.4.3	Reduce open and limited route density in MAs
2.4.4	Coordinate with Border Patrol
2.5	Limit recreation impacts
2.6	Make no sales and allow no commercial plant collecting
2.7	Allow off-road military activity only in designated sites
2.8	Fire suppression
2.9	No pesticide treatments
2.1	Other discretionary land uses within MAs
3	Rehabilitate damaged or degraded habitat
4	Attempt to acquire private lands within MAs
5	Maintain or establish effective habitat corridors between natural adjacent populations
5.1	. . . Potential habitat corridors . . . between West Mesa and Yuha Desert MAs . . .
6	Coordination among agencies
7	Law enforcement and education
8	Research
9	Inventory and monitoring

Standard Mitigation Measures (Appendix 3)	
1	In MAs, construction in unsuitable burrowing habitat limited to dormancy period
2	Worker education program
3	Locations of surface-disturbing projects
4	Field contact representative
5	Flagged areas; vehicle use; activity restriction
6	Biological monitor within MAs
7	CDFG authorization for handling of FTHLs
8	Field survey protocol
9	FTHL relocation
10	Minimize disturbance area
11	Use existing roads whenever possible
12	Restrict access to any new routes
13	Long-term disturbance areas fenced to exclude FTHL
14	Restoration plan
Compensation Formula (Appendix 4)	
Follow the following formula to calculate compensation acreage for any new disturbance: M = C + A + G + E + D (see Foreman 1997)	

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VI. CONCLUSION

CEQA requires the lead agency to reach findings regarding potentially significant impacts to biological resources. CEQA guidelines recommend addressing the six questions quoted below.

> Would the project:
>
> a) have a substantial adverse effect either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Possibly. Anticipated impacts to most sensitive species occurring or potentially occurring on the site would not be substantial. However, without mitigation, project impacts to designated critical habitat of the Peninsular bighorn sheep would likely meet CEQA criteria as "significant." USG could likely mitigate this impact below a level of significance by implementing the recommendations above.

> 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 Game or U.S. Fish and Wildlife Service?

Yes. Proposed quarry development would likely affect dry desert wash vegetation, which is regarded as "riparian" in the Sonoran Desert. Creosote bush shrublands and other vegetation types on the site are not considered sensitive plant communities (CDFG 2002).

> c) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No impacts to jurisdictional wetlands would result from the proposed project. Drainage courses within the project area would likely meet criteria as state jurisdictional ephemeral stream channels, subject to permitting under Section 1601-3 of the state Fish and Game Code, and possibly as waters of the US (depending on interpretation) subject to permitting under Section 404 of the Federal Clean Water Act.

> d) interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No substantial impacts to wildlife movement would result.

> e) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

White & Leatherman BioServices is unaware of any such conflict.

> 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?

White & Leatherman BioServices is unaware of any such conflict.

APPENDIX 1

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Abronia villosa var. *aurita* Chaparral sand verbena	Sand, mostly broad alluvial fans and benches, below about 5000 ft. elev., "Inland Empire, " adj. Colorado Des. and interior San Diego Co.	Feb. - July	Fed: none Calif: 3.1 CNPS: List 1B R-E-D:2-3-3	Low (geogr. range)
Antirrhinum cyathiferum Deep Canyon snapdragon	Washes, rocky places, desert shrubland; only Calif. records from Santa Rosa Mtn foothills below 2600 ft.; more comm. in Ariz., Baja, mainl. Mexico	Feb. - April	Fed: none Calif: S1.3 CNPS: List 2 R-E-D:3-1-1	Low (geogr. range, local rarity)
Astragalus crotalariae Salton Sea milk vetch	Sandy flats and alluvial fans below about 1000 ft. elev.; Sonoran Desert, to Arizona and Baja Calif.	Jan - April	Fed: none Calif: S 3.3 CNPS: List 4 R-E-D:1-1-2	Moderate - high (habitat suitable throughout)
Astragalus insularis var. *harwoodii* Harwood's milk vetch	Primarily sand dunes, but also sandy washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora (Mexico)	Jan. - May	Fed: none Calif: S 2.2? CNPS: List 2 R-E-D:2-2-1	Moderate (secondary habitat throughout)
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	Windblown or stabilized dune sand, E Mojave & S Sonoran deserts, Ariz., Baja, Son. (Mex.); below about 800 ft. elev.	Feb - May	Fed: none Calif: S 3.3 CNPS: List 4 R-E-D:1-1-1	Absent (no suitable soils)
Astragalus pachypus var. *jaegeri* Jaeger's milk vetch	Open sites in arid grasslands and shrublands; NW margin of Sonoran Desert, San Jacinto and Sta Rosa Mtn foothills; below about 2500 ft. elev.	Dec - June	Fed: none Calif: S 1.1 CNPS: List 1B R-E-D:3-3-3	Low (outside or margin of geogr. range)
Ayenia compacta Ayenia	Desert shrublands, gen. in washes below about 1500 ft. elev.; Sonoran desert margins, S. Calif., Baja, and Sonora (Mex.)	March - April	Fed: none Calif: S3.3 CNPS: List 2 R-E-D:2-1-1	Moderate - high (suitable habitat common)
Bursera microphylla Elephant tree	Drought deciduous tree; rocky slopes, about 600-2300 ft. elev.; scattered occurrences in Imp., Riv., San Diego Cos; to AZ, Baja, and mainl. Mexico	June - July	Fed: none Calif: S2.3 CNPS: List 2 R-E-D:3-1-1	Moderate (not seen; occurs just north of site)
Camissonia arenaria Sand evening-primrose	Desert shrublands, sandy or rocky washes or slopes below about 3000 ft. elev., Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Castela emoryi Crucifixion thorn	Widespread but rare, Calif. deserts, Ariz., Baja and Sonora (Mex.); slopes, washes, bajadas; gen. on fine-textured alluvial soil, about 350-2100 ft. elev.	June- July	Fed: none Calif: S2.2 CNPS: List 2 R-E-D:2-1-1	Low (local rarity)
Chaenactis carphoclina var. *piersonii* Pierson's pincushion	Annual; open desert vegetation ; lower slopes of Santa Rosa Mts, San Diego, Riv. (?) and Imp. Cos; about sea level to 1700 ft. elev.	March - April	Fed: none Calif: S1.3 CNPS: List 1B R-E-D:2-1-3	High (suitable habitat throughout)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Chamaesyce arizonica Arizona spurge	Creosote bush scrub; stabilized sandy flats (in Calif.); Palm Springs and Borrego Valley areas in Calif.; E to Texas and mainl. Mexico, S to central Baja; below about 1000 ft. elev.	March - April	Fed: none Calif: S 1.3 CNPS: List 2 R-E-D:2-1-1	Absent (no suitable habitat)
Colubrina californica Las Animas colubrina	Joshua Tree Nat. Park, Eagle Mts; Sonoran desert shrubland, about 1100-3900 ft. elev.; rare in Calif., more common in Ariz. and Mexico	April - May	Fed: none Calif: S2S3.3 CNPS: List 2 R-E-D:2-1-1	Low (geogr. range)
Condalia globosa var. *pubescens* Spiny abrojo	Desert shrublands below about 3300 ft. elev.; Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	March - April	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-2-1	High (suitable habitat throughout)
Cryptantha costata Ribbed cryptantha	Windblown and stabilized sand, desert shrublands; in Calif., E Mojave and Sonoran Deserts , to Arizona & Baja; below about 1650 ft. elev.	Feb. - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-2	Absent (no suitable habitat)
Cryptantha holoptera Winged cryptantha	Desert shrublands, E Mojave Des., Sonoran Des., to W Arizona and Nevada (widely scattered); about 100 - 4000 ft. elev.	March - April	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-2	High (suitable habitat throughout)
Cynanchum utahense (= *Astephanus utahensis*) Utah vine milkweed	Sandy and gravelly soils, Mojave Des and W margin Sonoran Des, to S Nevada, NW Ariz., and SW Utah; below about 3300 ft. elev.	April-June	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	Low (probably outside geogr. range)
Delphinium parishii ssp. *subglobosum* Colorado Desert larkspur	Perennial herb; cismontane and Sonoran Des woodlands and shrublands, Riv., Imp., San Diego Cos.; Baja; about 2000-6000 ft. elev.	March - June	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-1-2	Low (below elev. range)
Ditaxis californica (= *Ditaxis serrata* var. *californica*) California ditaxis	Sandy washes and canyons, La Quinta E to Desert Center, also Anza Borrego; about 150-3250 ft. elev.	March, Oct. - Dec.	Fed: none Calif: S2.2 CNPS: List 3 R-E-D:?-2-3	Moderate - high (suitable habitat common)
Ditaxis clariana Glandular ditaxis	Windblown sandy soils below about 350 ft. elev.; Coachella Val, Colorado Riv Val, to Ariz. and mainland Mexico	Dec. - March	Fed: none Calif: S1S2 CNPS: List 2 R-E-D:3-2-1	Absent (no suitable habitat)
Escobaria vivipara var. *alversonii* (= *Coryphantha alversonii, C. vivipara* var. *alversonii*) Alverson's foxtail cactus	Desert scrub, S Mojave Desert and Sonoran Desert below about 2000 ft. elev.; Riverside, San Bernardino, and Imperial Cos., to Arizona	May - June	Fed: none Calif: S3.2 CNPS: List 4 R-E-D:1-1-3	Moderate to high (suitable habitat throughout)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Horsfordia alata Pink velvet-mallow	Sonoran Desert shrublands, rocky canyons or sandy washes, below about 1700 ft. elev.; Riverside and Imperial Cos., Arizona, Baja, and Sonora (Mex.)	Winter or spring	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Horsfordia newberryi Newberry velvet-mallow	Rocky places, Sonoran Desert shrublands below about 2600 ft. elev.; Riverside, San Diego, Imperial Cos., Arizona, Baja, and Sonora (Mex.)	Winter or spring	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Lycium parishii Parish's desert thorn	Arid slopes and sand flats, below about 3300 ft. elev.; W low desert (Riv., Imp. and San Diego Cos.), and (historically) interior valleys (Riv Co.); disjunct to Ariz. and Sonora (Mex.)	March - April	Fed: none Calif: S2S3 CNPS: List 2 R-E-D:2-1-1	High (suitable habitat common)
Lyrocarpa coulteri v. *palmeri* Coulter's lyrepod	Annual; rocky slopes, washes, gravelly flats; Sonoran desert shrubland, about 400 - 2600 ft. elev.; San Diego, Imp. and Riv. (?) Cos. N and cent. Baja Calif.	Dec - Apr	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Malperia tenuis Brown turbans	Annual; sandy soils in desert shrublands; about sea level to 1100 ft. elev.; Sonoran Desert; few locns in Calif (incl. Split Mtn); N Baja Calif.	March - April	Fed: none Calif: S1.3 CNPS: List 2 R-E-D:3-1-1	High (suitable habitat common; near known locn.)
Mentzelia hirsutissima Hairy stickleaf	Annual species of desert washes, alluvial fans, and talus slopes, below about 2000 ft. elev.; scattered Sonoran Desert locns in Calif. and Baja Calif.	March - April	Fed: none Calif: S2 S3 CNPS: List 2 R-E-D:2-1-1	High (suitable habitat common)
Mirabilis tenuiloba Slender-lobed four o'clock	Rocky slopes; Sonoran Desert shrublands about 1000 to 3600 ft. elev.; Riverside, San Diego, Imperial Cos., Arizona, Baja, and Sonora (Mex.)	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D:1-1-1	High (suitable habitat common)
Nemacaulis denudata var. *gracilis* Slender woolly-heads	Coastal and desert dunes, desert shrubland below about 2600 ft. elev.; Coachella Val and (disjunct) San Diego Co. coast; Ariz., Baja, and Sonora (Mex.)	March - May	Fed: none Calif: S2S3 CNPS: List 2 R-E-D:2-2-1	High (suitable habitat common)
Opuntia wigginsii Wiggins cholla	Probably a hybrid (*O. ramisissima* x *echinocarpa*), desert shrubland below about 3000 ft. elev., eastern Colorado Des. to Arizona	March	Fed: none Calif: S1.2? CNPS: List 3 R-E-D:3-1-2	Low - moderate (margin of geogr. range)
Penstemon clevelandii var. *connatus* San Jacinto Mtn. penstemon	Rocky slopes and crevices, desert slopes of San Jacinto and Sta Rosa Mts. to Baja Calif.; desert shrubland to pinyon woodland, about 1300 - 5500 ft. elev.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Low (lower margin of elev. range)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Plants	Habitat and Distribution[1]	Flower season[1]	Status Designation[2]	Occurrence Probability[3]
Penstemon thurberi Thurber's beardtongue	Sandy/gravelly slopes and mesas, desert shrublands to pinyon woodland, about 1600-4000 ft. elev.; Riverside, San Bernardino, San Diego, Imperial Cos; Baja, 4-Corners states	Spring, summer or fall	Fed: none Calif: S3.2? CNPS: List 4 R-E-D:1-2-1	Low (at or below lower elev. range)
Pilostyles thurberi Thurber's pilostyles	Internal stem parasite on *Psorothamnus*, esp. *P. emoryi;* usually windblown or stabilized sand, below about 1000 ft. elev., Colorado Des., thr southwestern states and Sonora (Mexico)	Jan	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Low - moderate (main host plant scarce or absent)
Proboscidea althaeifolia Unicorn plant	Low, generally sandy soils, desert shrubland, below about 3300 ft.; Sonoran Des (Imperial Co., eastern Riv. Co.), to Arizona and Mexico	Summer	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Moderate - high (potential habitat on alluvium)
Rhus trilobata var. *simplicifolius* Single-leaved skunkbrush	Winter-deciduous shrub; arid slopes in pinyon or juniper woodl.; about 4000-4500 ft. elev. (in Calif.); E San Diego Co.; NV, AZ, Baja Calif.	March - April	Fed: none Calif: 1.3? CNPS: List 2 R-E-D:3-1-1	Absent (well below elev. range)
Salvia eremostachya Desert sage	Rocky, gravelly places; desert shrublands to pinyon woodland, western Sonoran Desert in Riverside and San Diego Cos.; about 2300 to 4600 ft. elev.	March - May	Fed: none Calif: S3.3 CNPS: List 4 R-E-D: 1-1-1	Absent (below elev. range; margin of geogr. range)
Salvia greatae Orocopia sage	Desert shrubland, washes and alluvial fans, below about 600 ft. elev.; Riverside & Imperial Cos, Sonoran Des mts (Orocopias, Chocolates, etc.)	March - April	Fed: none Calif: S2.2 CNPS: List 1B R-E-D:2-1-3	High (suitable habitat common)
Selaginella eremophila Desert spike-moss	Rocks and crevices, about 600 - 3000 ft. elev.; lower desert-facing slopes of San Jacinto Mts and adjacent desert, to Texas and Baja	n/a	Fed: none Calif: S2.2? CNPS: List 2 RED:3-2-1	Moderate (habitat common; lower margin of elev. range)
Senna covesii (= *Cassia covesii*) Coves's cassia	Low, mostly herbaceous perennial; desert washes, about 1600 - 3500 ft. elev.; Colorado Des to Nevada, Arizona and Baja Calif.	April - June	Fed: none Calif: S2.2 CNPS: List 2 R-E-D:2-2-1	Low (below elev. range)
Stemodia durantifolia Purple stemodia	Moist canyons below about 1000 ft. elev.; desert slopes of San Jacinto Mts., San Diego area, Arizona, tropical Mexico	± year-around	Fed: none Calif: S2.1 CNPS: List 2 R-E-D:3-3-1	Absent (no suitable habitat)
Xylorhiza orcuttii (= *Machaeranthera orcuttii*) Orcutt's woody aster	Perennial herb; gen on gypsum soils; canyons or lower slopes, desert shrublands, sea level to about 1200 ft. elev.; Riverside, Imperial, and San Diego Cos., northern Baja Calif.	March - April	Fed: none Calif: S2.2 CNPS: List 1B R-E-D:2-2-2	High (habitat suitable; many local occurrences)

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
FISH				
Cyprinodon macularis Desert pupfish	San Felipe Ck and Salt Ck (Imperial Co.); also several irrigation canals near Salton Sea; a few locns in Arizona and Mexico	year - around	Fed: END Calif: END S1	Absent (no aquatic habitat)
REPTILES				
Gopherus agassizii (= *Xerobates agassizi*) Desert tortoise	Desert shrublands where soil suitable for burrows; Mojave and Sonoran des. (E Calif., S Nevada, W Ariz., and Sonora, Mexico)	Spring - summer	Fed: THR Calif: THR S2	Absent (geographic range)
Coleonyx switaki Barefoot banded gecko	Massive rock outcrops and boulders, below about 2000 ft. elev.; Anza-Borrego State Park through much of NE Baja Calif.	Spring-summer	Fed: none Calif: S1 THR	Unknown (habitat suitable in quarry area; geog. range poorly known)
Phrynosoma mcallii Flat-tailed horned lizard	Open, sandy flats and dunes; Coachella Valley southward to N Baja Calif.	Spring-summer	Fed: proposed THR Calif: CSC S2	Low to moderate
Sauromalus obesus Common chuckwalla	Rock outcrops in desert shrublands; ± throughout deserts of Calif., S Nevada, W Ariz., and Baja Calif.	warm seasons	Fed: none Calif: S4	Occurs (see text)
Crotalus ruber ruber (= *Crotalus exsul*) N red diamond rattlesnake	Coastal sage scrub, chaparral, desert scrub; SW Calif., Baja Calif.	Spring - summer	Fed: none Calif: CSC S2?	Low (no records this area of Imperial Co.)
BIRDS				
Circus cyaneus Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; N America and Eurasia	Winter; rare in summer	Fed: none Calif: CSC S3 (nesting)	Nesting: Absent Foraging: High (occas.)
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grass-lands; breeds throughout W N America, winters to E coast	Year-around	Fed: none Calif: CSC S3 (nesting, wintering)	Nesting: Low (no nests observed) Foraging: High
Buteo regalis Ferruginous hawk	Forages over grassland and shrub-land; winters in W and SW N Amer. (breeds in Great Basin and N plains)	Winter	Fed: none Calif: CSC S3S4 (wintering)	Nesting: Absent Winter: High (infreq)
Accipiter striatus Sharp-shinned hawk	Nests and hunts in forests and woodlands, also forages in open areas; throughout N America, parts of S America	Spring - early summer	Fed: none Calif: CSC S3 (nesting)	Nesting: Absent Winter: Low

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
Falco columbaris Merlin	Uncommon wintering species in S Calif. desert and valleys (breeds in northern N America and Eurasia)	Winter	Fed: none Calif: CSC S3 (wintering)	Nesting: Absent Winter: Low
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	Fed: none Calif: CSC S3 (nesting)	Nesting: Low (no nests observed) Foraging: High
Athene cunicularia hypugea (= *Speotyto cunicularia*) Burrowing owl	Nests in rodent burrows, usually in grasslands; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico; sparse in desert scrub	Year-around	Fed: none Calif: CSC S2 (burrow sites)	Breeding: Low Foraging: Low
Pyrocephalus rubinus Vermillion flycatcher	Desert riparian woodlands and shrublands; SE Calif., east through S Texas, and S through Baja and tropical mainland Mexico	Spring-summer; potential year-around	Fed: none Calif: CSC S2S3	Absent (no suitable habitat)
Toxostoma crissale Crissal thrasher	Nests in dense brushy thickets of mesquite, willow, or other desert shrubs; E Calif. to Texas, W mainland Mexico	Year - around	Fed: none Calif: CSC S3	Low (nesting habitat absent)
Toxostoma lecontei LeConte's thrasher	Mojave and Colorado Deserts, SW Cent. Valley, Owens Valley; to Nevada, Utah, Arizona; open shrub-land, often sandy or alkaline flats	Year - around	Fed: none Calif: CSC S3	Low (habitat suitable, but not observed)
Polioptila melanura Black-tailed gnatcatcher	Desert shrublands, gen. thickets of mesquite, palo verde, or acacia, occas. in open shrubland (mostly winter); Calif. deserts, thr. S Texas, Baja, and arid mainland Mexico	Year-around	Fed: none Calif: S4	Occurs (see text)
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; widespread in N America (declining significantly in midwest)	Year-around	Fed: none Calif: CSC S4	Occurs (see text)
Junco hyemalis caniceps Calif. gray-headed junco	Breed in arid pine woodlands of desert mts., Inyo-White Mts., and Great Basin; winter to S, through much of S Calif.	Winter	Fed: none Calif: CSC S1 (breeding)	Winter: High (infreq) Breeding: Absent
MAMMALS				
Antrozous pallidus Pallid bat	Rock outcrops of shrublands, gen below 6000 ft. elev.; Calif (exc high mts), SW N Amer through interior OR and Wash.; hibernates in winter	Warm season	Fed: none Calif: CSC, S3	Roosting: High Foraging: Expected

APPENDIX 1: Special status species of northwestern Imperial Co. and adjacent San Diego and Riverside Cos.

Special Status Wildlife	Habitat and Distribution[1]	Activity season[1]	Status Designation[2]	Occurrence Probability[3]
Eumops perotis californicus California mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., northern Mexico; roost in deep rock crevices, forage over wide area	Year-around	Fed: none Calif: CSC S3?	Roosting: High Foraging: Expected
Macrotus californicus (= *M. waterhousii*) California leaf-nosed bat	Desert shrublands and arid lowlands of W San Diego Co., to W Ariz., Baja Calif. and Sonora, Mex; gen. roost in mineshafts, forage over open shrublands	Year-around	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: Expected
Nyctinomops femorosaccus (= *Tadarida f.*) Pocketed free-tailed bat	Deserts and arid lowlands; E Riv and San Diego Cos, through SW US, Baja Calif., mainland Mexico; roost mainly in crevices of high cliffs	Year-around	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: Expected
Euderma maculatum Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N. Amer., but very rare; roosts in deep crevices in cliffs, feeds over open water	Unkn	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: Absent
Plecotus townsendii pallescens (= *Corynorhinus t. pallescens*) Townsend's big-eared bat	Many habitats throughout Calif and W N Amer, scattered poulations in E; day roosts in caves, tunnels, mines; feed primarily on moths	Year-around	Fed: none Calif: CSC S2S3	Roosting: Low Foraging: Expected
Neotoma albigula venusta Colorado Valley woodrat	Desert shrublands and pinyon woodlands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada. No documented Calif. occurrences in past 20 years.	Year-around	Fed: none Calif: SH	Low (edge of geogr. range; no captured during small mammal surveys)
Taxidea taxus American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer	Year-around	Fed: none Calif: S4	High (uncommon)
Ovis canadensis nelsoni "distinct population segment" (*O. canadensis cremnobates*) Peninsular bighorn sheep	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riverside Co. to N Baja Calif.	Year - around	Fed: **END** Calif: **THR** S1	See text

[1] References and notes:
Barbour & Davis 1969, CDFG 2002a, 2002b, Ehrlich et al. 1988, Garrett & Dunn 1981, Grinnell & Miller 1944, Hall 1981, Hickman (ed.) 1993, Ingles 1965, Jennings and Hayes 1994, Johnsgard 1988, Kearney & Peebles 1951, Moyle et al. 1995, Munz 1974, National Geographic Society 1987, Remsen 1978, Shreve and Wiggins 1964, Stebbins 1954, 1985, Swift et al. 1993, Tibor 2001, Turner et al. 1995, Williams 1986, FWS 1999, Zeiner et al. 1988.

[2] Status Designations

Federal designations (US Fish and Wildlife Service). Some agencies, but not FWS, continue to use "SOC" as a federal status designation. Until 1996, FWS maintained a list of "category 2 candidates," described as species of concern, but for which insufficient data were available to support listing. This list is no longer maintained and FWS has no "SOC" category.

- END: Federally listed, endangered.
- THR: Federally listed, threatened.
- Proposed: Formally proposed by FWS for the federal status shown.
- CAND: Candidate for federal listing; sufficient data are available to support listing, but not yet listed.
- None: Not designated.

State designations (California Dept. of Fish and Game):

- END: State listed, endangered.
- THR: State listed, threatened.
- RARE: State listed as rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
- Proposed: Proposed for the state status shown.
- None: Not designated.

CDFG Natural Diversity Data Base Designations: Applied to special status species and sensitive plant communities; where correct category is uncertain, CDFG uses two categories or question marks.

- S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
  - S1.1: Very threatened
  - S1.2: Threatened
  - S1.3: No current threats known
- S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
- S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
- S4: Apparently secure in California; clearly lower than S3 but factors exist to cause some concern, i.e., some threat or somewhat narrow habitat. No threat rank.
- S5: Demonstrably secure or ineradicable in California. No threat rank.
- SH: All California sites are historical (i.e., no known extant occurrences; generally presumed extinct)

California Native Plant Society (CNPS) designations: (Note: According to CNPS (Tibor 2001), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.)

- List 1A: Plants presumed extinct in California.
- List IB: Plants rare and endangered in California and throughout their range.
- List 2: Plants rare, threatened or endangered in California but more common elsewhere in their range.
- List 3: Plants about which we need more information; a review list.
- List 4: Plants of limited distribution; a watch list.

CNPS R-E-D Code:

Rarity

- 1: Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
- 2: Occurrence confined to several populations or one extended population.
- 3: Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

Endangerment

- 1: Not endangered.
- 2: Endangered in a portion of its range.
- 3: Endangered throughout its range.

Distribution

- 1: More or less widespread outside California.
- 2: Rare outside California.
- 3: Endemic to California (i.e., does not occur outside California).

[3] Occurrence Probabilities

Occurrence probabilities are determined from field surveys and habitat analyses reported here, plus information in the references cited earlier.

Occurs: Observed on the site during this study, or recorded on-site by other qualified biologists.

Expected: Not observed or recorded on the site, but very likely present during at least a portion of the year.

High: Reported sighting(s) in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.

Moderate: Reported sighting(s) in surrounding region, or site is within the known range of the species and habitat on the site is marginally suitable or of a type occasionally used by the species.

Low: Site is within the species known range but habitat is rarely used by the species, and there are no reported sighting(s) of the species in the vicinity. It is unlikely that the species exists in substantial numbers if present.

Absent: A focused study failed to detect the species, the site is outside the known range, or no suitable habitat is present.

Unknown: No focused surveys have been performed in the region, and the species distribution and habitat are poorly known.

APPENDIX 2

USG PLASTER CITY QUARRY SPECIES LIST

VASCULAR PLANTS[1]

Latin Name	**Common Name**
EPHEDRACEAE	EPHEDRA FAMILY
Ephedra sp.	Desert tea
ASCLEPIADACEAE	MILKWEED FAMILY
Sarcostemma sp.	Unid. Climbing milkvine
ASTERACEAE	ASTER FAMILY
Ambrosia dumosa	White bursage
Bebbia juncea	Sweetbush
Chaenactis sp.	Pincushion
Encelia farinosa	Brittlebush
Hymenochlea salsola	Cheesebush
Peucephyllum schottii	Pygmy cedar
Pleurocoronis pluriseta	Arrow-leaf
BORAGINACEAE	BORAGE FAMILY
Cryptantha sp.	Narrowleaf cryptantha
BRASSICACEAE	MUSTARD FAMILY
* *Brassica tournefortii*	Wild turnip
CACTACEAE	CACTUS FAMILY
Ferocactus cylindraceus	California barrel cactus
Mamillaria tetrancistra	Fish-hook cactus
Opuntia basilaris	Beavertail cactus
Opuntia echinocarpa	Silver cholla
CUCURBITACEAE	CUCUMBER FAMILY
Cucurbita palmata	Coyote melon
EUPHORBIACEAE	SPURGE FAMILY
Chamaesyce polycarpa ssp. hirtella [Euphorbia polycarpa h.]	Sand mat
Ditaxis sp.	
FABACEAE	PEA FAMILY
Acacia greggii	Catclaw acacia
Caesalpinia virgata [Hoffmannseggia microphylla]	Desert bird-of-paradise
Prosopis	Mesquite
Psorothamnus schottii	Indigo-bush
Psorothamnus spinosus	Smoke tree
FOQUIERACEAE	OCOTILLA FAMILY
Foquieria splendens	Ocotillo
KRAMERIACEAE	KRAMERIA FAMILY
Krameria grayi	White ratany
LAMIACEAE	MINT FAMILY
Hyptis emoryi	Desert lavender

1. Alien plants indicated by asterisk; special status species indicated by two asterisks. This list includes only species observed on the site. Other species may have been overlooked or unidentifiable due to season. Plants were identified using keys, descriptions, and illustrations in Abrams (1923-1951), Hickman (1993), Jaeger (1940), Munz (1974), and Shreve & Wiggins (1964). Taxonomy and nomenclature generally follow Hickman.

USG PLASTER CITY QUARRY SPECIES LIST

	LOASACEAE	STICK-LEAF FAMILY
	Mentzelia sp.	Unid. annual
	Petalonyx linearis	Sandpaper plant
	MALVACEAE	HIBISCUS FAMILY
	Hibiscus denudatus	Pale face
	NYCTAGINACEAE	FOUR O'CLOCK FAMILY
	Mirabilis bigelovii	Desert wishbone-bush
	ONAGRACEAE	EVENING PRIMROSE FAMILY
	Camissonia boothii	Shredding primrose
	Camissonia californica	California false mustard
	Camissonia cardiophylla	Heart-leaved primrose
	PAPAVERACEAE	POPPY FAMILY
	Argemone munita	Prickly poppy
	PLANTAGINACEAE	PLANTAIN FAMILY
	Plantago ovata	Desert plantain
	POLYGONACEAE	BUCKWHEAT FAMILY
	Chorizanthe rigida	Rigid spine-flower
	Eriogonum deflexum	Skeleton-weed
	Eriogonum inflatum	Desert trumpet
	SOLANACEAE	NIGHTSHADE FAMILY
	Datura discolor (?)	Jimsonweed, desert thorn-apple
	Lycium sp.	Unid. Wolfberry
	Nicotiana sp.	Unid. Wild tobacco
	Physalis crassifolia	Thick-leaved ground-cherry
	VISCACEAE	MISTLETOE FAMILY
	Phoradendron californicum	Desert mistletoe
	ZYGOPHYLLACEAE	CALTROP FAMILY
	Fagonia laevis	Smooth-stem fagonia
	Larrea tridentata	Creosote bush
	AGAVACEAE	
	Agave deserti	Desert agave
	POACEAE	GRASS FAMILY
	Aristida adscensionis	Six-weeks three-awn grass
*	*Schismus barbatus*	Mediterranean schismus

WILDLIFE[2]

	REPTILIA	Reptiles
	Iguanidae	Iguanids
	Dipsosaurus dorsalis	Desert iguana
**	*Sauromalus obesis*	Chuckwalla
	Crotophytidae	Crotophytids
	Gambelia wislizenii	Long-nosed leopard lizard

2. The following is a list of species observed or detected on the project site. Non-native species are indicated by an asterisk. Species on CDFG's Special Animals list are indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.). Taxonomy and nomenclature generally follow Fisher and Case (1997) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

USG PLASTER CITY QUARRY SPECIES LIST

Phrynosomatidae	Phrynosomatids
Callisaurus draconoides	Zebra-tailed lizard
Teiidae	Whiptail lizards
Cnemidophorus tigris	Western whiptail
AVES	Birds
Cathartidae	Vultures
Cathartes aura	Turkey vulture
Accipitridae	Raptors
Buteo jamaicensis	Red-tailed hawk
Columbidae	Pidgeons and doves
Zenaida macroura	Mourning dove
Caprimulgidae	Nightjars
Chordeiles acutipennis	Lesser nighthawk
Trochilidae	Hummingbirds
Calypte costae	Costa's hummingbird
Tyrannidae	Tyrant flycatchers
Sayornis saya	Say's phoebe
Laniidae	Shrikes
** *Lanius ludovicianus*	Loggerhead shrike
Vireonidae	Vireos
Vireo gilvus	Warbling vireo
Corvidae	Jays and crows
Corvus corax	Common raven
Troglodytidae	Wrens
Salpinctes obsoletus	Rock wren
Troglodytes aedon	House wren
Silviidae	Gnatcatchers
Polioptila caerula	Blue-gray gnatcatcher
Parulidae	Wood warblers
Vermivora celata	Orange-crowned warbler
Vermivora ruficapilla	Nashville Warbler
Oporornis tolmiei	MacGillivray's warbler
Wilsonia pusilla	Wilson's warbler
Emberizidae	Towhees and sparrows
Amphispiza bilineata	Black-throated sparrow
Icteridae	Blackbirds and orioles
Icterus bullockii	Bullock's oriole
Fringillidae	Finches
Carpodacus mexicanus	House finch
MAMMALIA	Mammals
Leporidae	Hares and rabbits
Lepus californicus	Black-tailed jackrabbit
Sciuridae	Squirrels
Ammospermophilus leucurus	White-tailed antelope squirrel
Heteromyidae	Pocket mice, kangaroo rats
Chaetodipus formosus	Long-tailed pocket mouse
Dipodomys merriami	Merriam's kangaroo rat
Muridae	Old world rats and mice
Peromyscus crinitus	Canyon mouse
Neotoma lepida	Desert woodrat
Canidae	Dogs/wolves/foxes
Canis latrans	Coyote (scat, tracks)
Vulpes velox	Kit fox

Appendix C3 Revegetation Plan for the Plaster City Quarry

ATTACHMENT D

REVEGETATION PLAN
FOR THE
PLASTER CITY QUARRY

UNITED STATES GYPSUM COMPANY

Prepared For:

UNITED STATES GYPSUM CORPORATION
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JUNE 2002

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UNITED STATES GYPSUM COMPANY
PLASTER CITY QUARRY

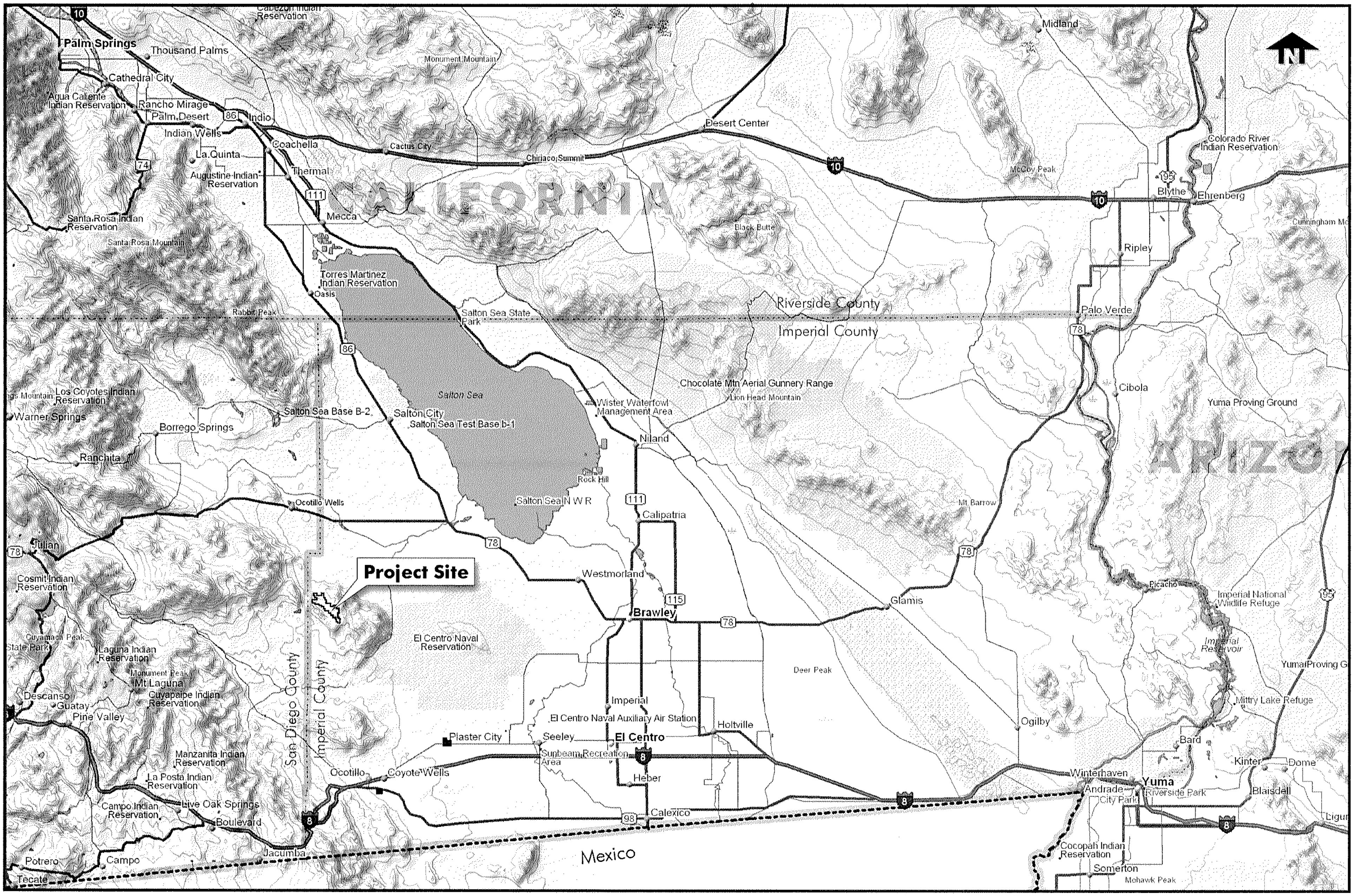
INTRODUCTION

This Revegetation Plan is designed to meet the Surface Mining and Reclamation Act (SMARA) performance guidelines for revegetation (Article 9, Section 3709) and soil salvage (Article 9, Section 3711). The goals of the revegetation program are to reproduce vegetative conditions similar to those present on adjacent properties and on the undisturbed portions of United States Gypsum Company's (USG) Plaster City Quarry, in the areas to be reclaimed. Revegetation will reduce visual impacts and reestablish native desert habitat for wildlife. The Plan facilitates revegetation through implementation of plant and surface material salvage, seed collection, surface preparation, broadcast seeding and transplanting, and remediation actions as necessary. A second objective is to monitor, maintain and assess the results of the completed revegetated areas as compared to baseline data and approved success criteria.

This Revegetation Plan is part of the revised Mine Reclamation Plan for the ongoing operations over the course of the next 40-year period. The Reclamation Plan includes plans for concurrent reclamation of quarry phases that cease operations and reclamation of the remainder of the disturbed site following termination of quarry activities. This Revegetation Plan is incorporated into the revised Plaster City Quarry Reclamation Plan upon its review and approval by Imperial County. Reclamation activities are intended to be an integral part of the quarry operation.

This Plan is divided into three parts: 1) the environmental setting; 2) revegetation, which will involve reproducing the mixture of plant species now present on the site; 3) monitoring, maintaining, and assessing revegetated areas utilizing transects compared to baseline data and approved success criteria, and implementing remedial action as necessary.

The Plaster City Quarry is located near the northwest end of the Fish Creek Mountains in western Imperial County near the Imperial County – San Diego County boundary and directly adjacent to the Anza Borrego Desert State Park and Fish Creek Wilderness Area (see Figures 1 and 2). The project is situated on 1,668 acres of private land and 380 acres of unpatented public land currently under application for patent with the Bureau of Land Management (BLM). The private lands are owned and operated by United States Gypsum Company of Chicago, Illinois. Nineteen unpatented placer mining claims, totaling 380 acres, are part of the project site. These are being considered for patent under Patent Application No. CACA 24563 and may transfer title before approval of this plan. The total project area is 2,048 acres.



Vicinity Map

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 1

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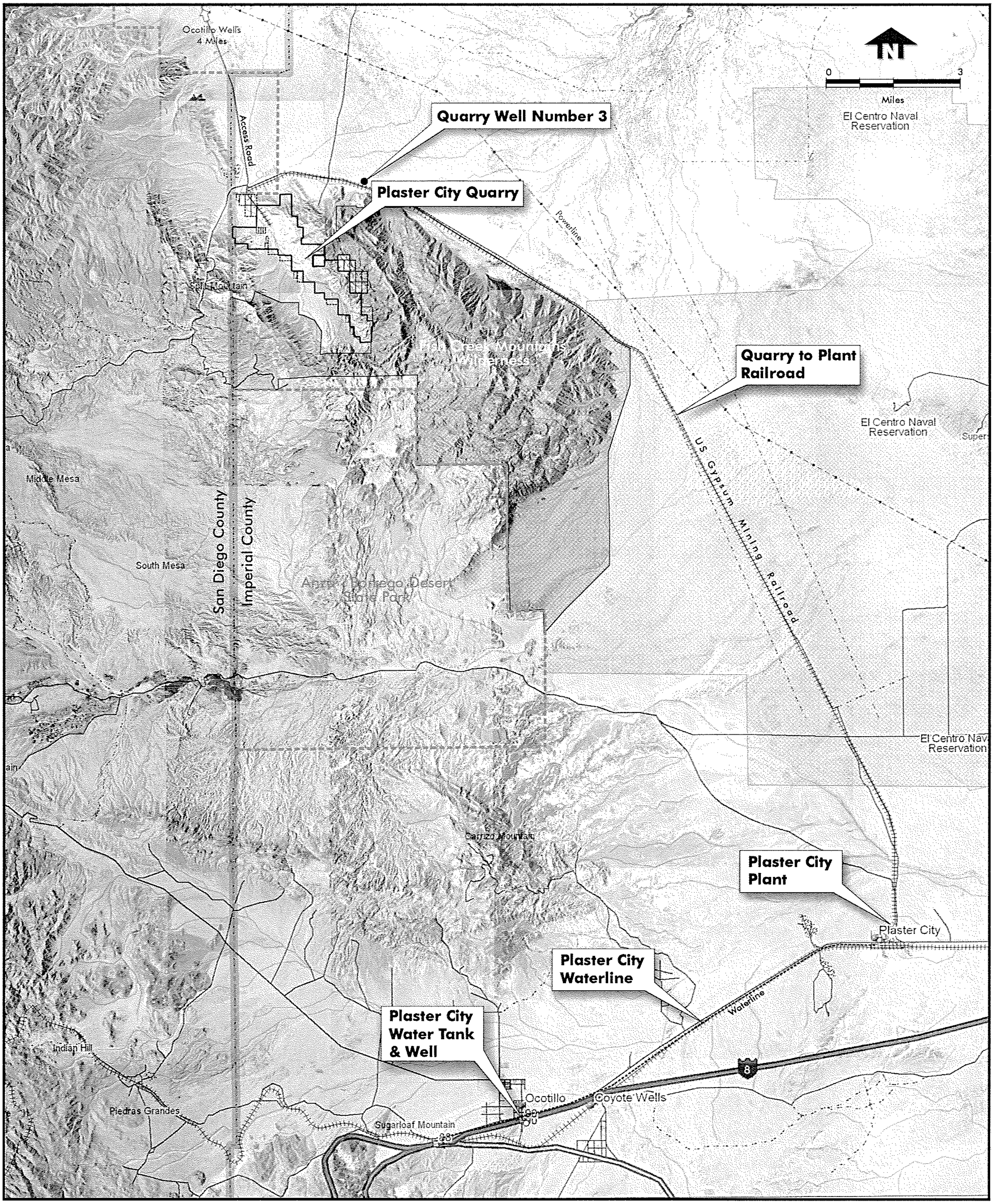

Source: Tiled USGS ¼ Panel 7.5 min. Quads, 1996.

Regional Map

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United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 2

1.0 ENVIRONMENTAL SETTING

Imperial County and the Plaster City Quarry are within the Colorado Desert, which lies at relatively low elevations, in some places below sea level. The western portion of Imperial County is characterized by a series of low lying mountain ranges opening up to the Imperial Valley and Salton Sea trough to the east. The quarry site is located between the Fish Creek Mountains on the east and Split Mountain (part of the larger Vallecito Mountains) on the west. The site lies in an elongated valley and along the lower hillsides of these two mountains ranges. It is traversed by an unnamed wash located along the west side of the Fish Creek Mountains (see Figure 3). The wash flows in a northwesterly direction along the Fish Creek Mountains to Fish Creek, which is northwest of the site.

The Fish Creek Mountains extend approximately 10 miles in a northwest to southeast trending direction. Gypsum occurs along a north-south trend for about 2.5 miles along the northern portion of the Fish Creek Mountains. The maximum elevation of these mountains is around 2,330 feet above sea level. In the immediate vicinity, elevations range from 500 to 800 feet above sea level along the ridgelines within the project site.

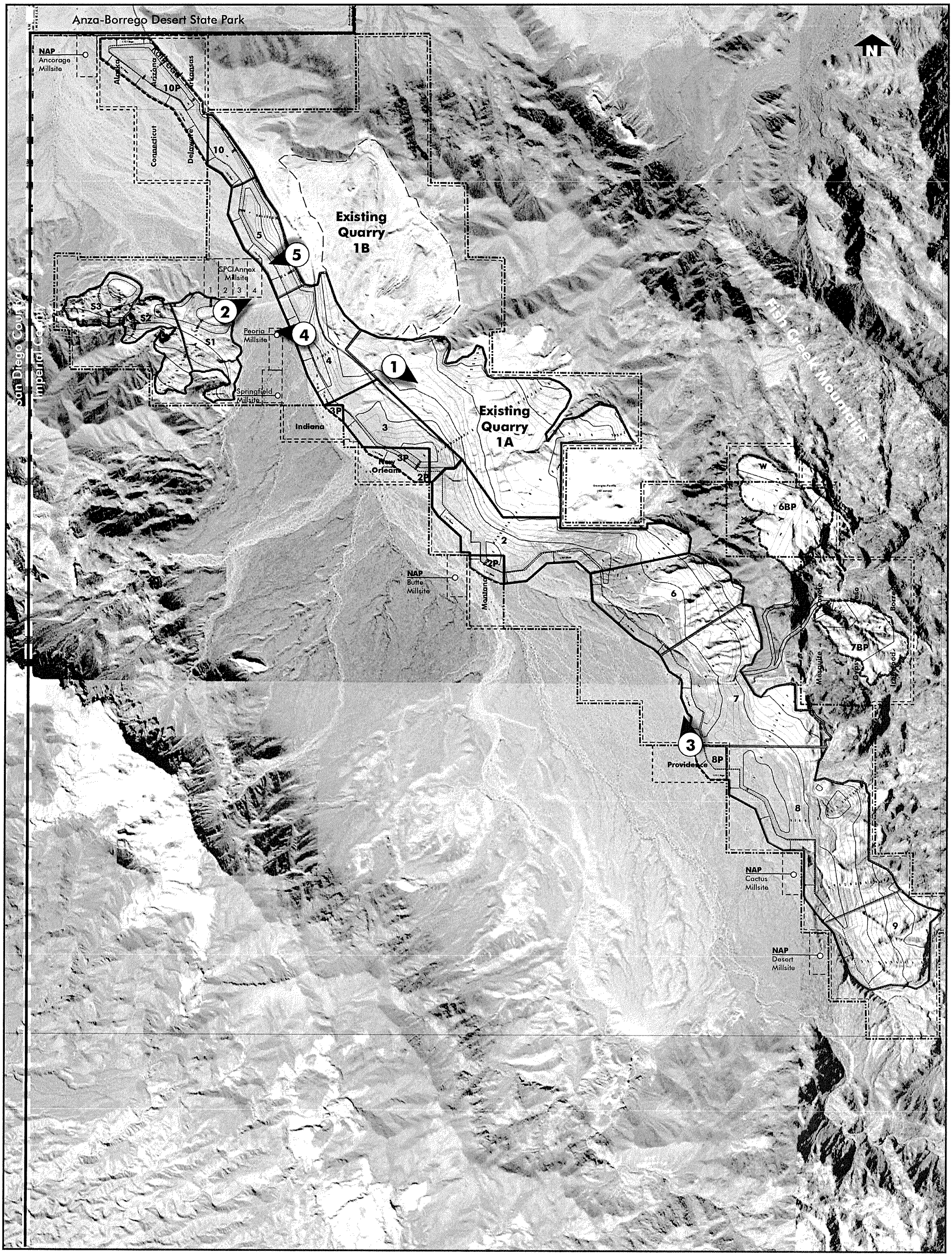
The site is bordered by Anza Borrego Desert State Park to the west and north, on the east and south by the Fish Creek Mountain Wilderness and undeveloped public desert lands to the south administered by the BLM. The topography consists primarily of moderate to steep hills, which are cut by several unnamed small drainages, and a larger intervening wash area aligned from the south to north.

Gypsum occurs throughout the site as a contiguous bed striking northwest to southeast and dipping approximately 20° to the west with gypsum deposits overlying granite. The gypsum deposit is part of the Split Mountain formation of Miocene age, consisting of non-marine sediments that have been mildly folded and faulted. Soil cover is little to nonexistent. Gypsum outcrops form smoothly rounded hills with deeply incised gullies. The massive, nearly pure gypsum occurs as a lens up to 100 feet thick between overlying red sandstone members and underlying gray sandstone members of the Spilt Mountain formation and alluvial sands in the washes. The existing deposit is an irregular remnant of a formerly thicker bed that was much more widespread than at present.

1.1 EXISTING VEGETATION

This region experiences extremely high temperatures and arid conditions. Summer temperatures average over 105° F. and average rainfall is 2-3 inches per year with occasional years of no precipitation. Light precipitation occasionally occurs with winter storm fronts from the west and northwest. During the late summer, subtropical moisture from the south produces infrequent and scattered heavy thundershowers.

Vegetation on the site consists generally of scant Sonoran Creosote Bush Scrub on the hillsides and alluvial fans, and Desert Dry Wash Woodland in the central wash area, which has been disturbed by the past and existing quarry operations.



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

LEGEND

Plaster City Quarry Private Land Boundary

Plaster City Quarry Public Land Boundary

50' Quarry Setback

2 Quarry Phase Boundary and Phase Number

1 Photograph Location, Number and Direction of View

NAP Not a Part

Plaster City
Quarry Phasing Plan

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Prepared By:
LILBURN CORPORATION

Figure 3

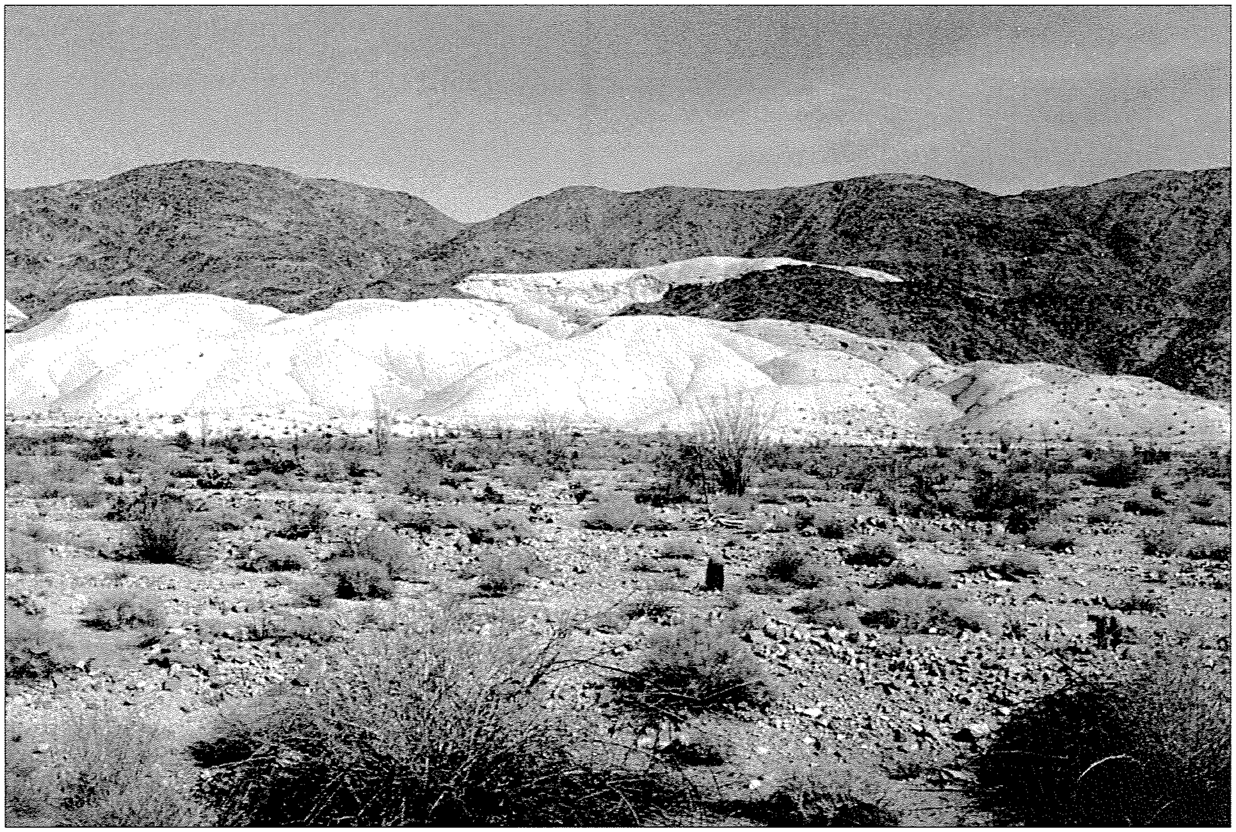
The baseline floristic inventory of the Plaster City Quarry was conducted in April 1995 by Lilburn Corporation and May 2002 by White and Leatherman Associates. These surveys were conducted to provide data upon which to base the revegetation plan and the success criteria for the site. The inventory was conducted in two habitat types: Desert Dry Wash Woodland in the wash areas and Sonoran Creosote Bush in the Quarry 1B and Shoveler Quarry areas. Figure 4 includes photographs showing the two types of onsite vegetation. Photograph 1 shows the desert wash vegetation in the foreground with the barren light-colored gypsum outcrops in the background. Those hillside areas around the gypsum outcrops with creosote bush scrub are shown in Photograph 2.

1.2 BASELINE VEGETATION DATA

During the site visits, the perennial plant species in each habitat type were recorded. Transects were completed in undisturbed portions of the wash, Quarry 1B, and Shoveler planned quarry areas in order to establish the density and diversity of each species per unit area. To measure species density and diversity, twenty plant transects were performed on both the Quarry 1B and Shoveler quarry areas, and thirty transects were taken in the wash. Each belt transect was fifty meters long and one meter wide. All perennial species within the belt transect were counted and the length and perpendicular width of each plant crossed by the transect were measured. The transect data collected during the inventory provides baseline data to determine seed types and rates and is used to determine success criteria for future revegetation efforts. Tables 1, 2, and 3 summarize the transect data.

The principal species recorded on Quarry 1B were pygmy cedar (*Peucephylum schottii*) (80 plants and 75 percent of the relative ground cover) and catclaw (*Acacia greggii*) (5 plants and 12 percent of the relative ground cover) over the total area of 1,000 square meters. The principal species recorded on Shoveler were pygmy cedar (79 plants and 76 percent of the relative ground cover) and indigo bush (*Psorothamnus schottii*) (6 plants and 18 percent of the relative ground cover) over the total area of 1,000 square meters. The principal species recorded in the wash area were cheesebush (*Hymenoclea salsola*) (77 plants and 27 percent of the relative ground cover), smoke tree (*Psorothamnus spinosus*) (37 plants and 19 percent of the relative ground cover), indigo bush (31 plants and 14 percent of the relative ground cover), and catclaw (9 plants and 9 percent of the relative ground cover) over the total area of 1,500 square meters.

The percent of ground cover illustrates the scant vegetation within the project areas. The wash area totals 12 percent ground cover with more variety of plants while the hills total only 3 to 4 percent ground cover, typical of this portion of the desert.



Photograph 3: Desert wash vegetation in foreground with barren gypsum outcrops in background

Photograph 4: Hillside around gypsum outcrops with Creosote bush scrub.

Existing Vegetation

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United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 5

Table 1
Summary of Plant Transect Data
Plaster City Quarry - Wash Area

Species	Ground Cover (M^2)	Ground[1] Cover (%)	Relative[2] Cover (%)	Cumulative Cover (%)	Density (#'s/M^2)
Cheesebush (*Hymenoclea salsloa*)	47.46	3	27	27	0.05
Smoke tree (*Psorothamnus spinosus*)	34.15	2	19	46	0.02
Indigo bush (*Psorothamnus schotti*)	25.35	2	14	60	0.02
Catclaw (*Acacia greggii*)	16.75	1	9	69	0.01
Desert lavender (*Hyptis emoryi*)	13.90	1	8	77	0.01
Desert willow (*Chilopsis linearis* ssp. *arcuata*)	9.06	1	5	82	0.003
Sandpaper plant (*Petalonyx thurberi*)	5.41	T[3]	3	85	0.01
Honey bean mesquite (*Prosopis glandulosa* var. *torreyana*)	4.70	T	3	88	0.001
Sweetbush (*Bebbia juncea*)	3.92	T	2	90	0.005
Creosote bush (*Larrea tridentata*)	3.81	T	2	92	0.003
Pygmy cedar (*Peucephyllum schottii*)	2.80	T	2	94	0.001
Burrobush (*Ambrosia dumosa*)	1.51	T	1	95	0.005
Golden cholla (*Opuntia echinocarpa*)	.11	T	T	95	0.001
Emory dalea (*Psorothamnus emoryi*)	.06	T	T	95	0.001
Totals	**178.81**	**12**	**100**	**95**	**0.17**

1 = Sample area covered by species
2 = Ground cover expressed as a percent of the total ground cover provided by vegetation
3 = T denotes trace (<0.01%)

Table 2
Summary of Plant Transect Data
Plaster City Quarry - Quarry 1B

Species	Ground Cover (M^2)	Ground[1] Cover (%)	Relative[2] Cover (%)	Cumulative Cover (%)	Density (#'s/M^2)
Pygmy cedar (*Peucephyllum schottii*)	23.78	2	75	75	0.08
Catclaw (*Acacia greggii*)	3.88	T[3]	12	87	0.005
Creosote bush (*Larrea tridentata*)	1.90	T	6	93	0.001
Burrobush (*Ambrosia dumosa*)	1.20	T	4	97	0.002
Sweetbush (*Bebbia juncea*)	.39	T	1	98	0.002
Rush milkweed (*Asclepias subulata*)	.39	T	1	99	0.001
Brittlebush (*Encelia farinose*)	.13	T	T	99	0.001
Totals	**31.67**	**3**	**100**	**99**	**0.09**

1 = Sample area covered by species
2 = Ground cover expressed as a percent of the total ground cover provided by vegetation
3 = T denotes trace (<0.01%)

Table 3
Summary of Plant Transect Data
Plaster City Quarry - Shoveler Quarry

Species	Ground Cover (M^2)	Ground[1] Cover (%)	Relative[2] Cover (%)	Cumulative Cover (%)	Density (#'s/M^2)
Pygmy cedar (*Peucephyllum schottii*)	30.95	3	76	76	0.08
Indigo bush (*Psorothamnus schottii*)	7.24	1	18	94	0.006
Sweetbush (*Bebbia juncea*)	0.64	T[3]	2	96	0.002
Catclaw (*Acacia greggii*)	0.48	T	1	97	0.002
Prickly poppy (*Argemone munita*)	0.37	T	1	98	0.005
Totals	**40.72**	**4**	**100**	**98**	**0.097**

1 = Sample area covered by species
2 = Ground cover expressed as a percent of the total ground cover provided by vegetation
3 = T denotes trace (<0.01%)

2.0 REVEGETATION

Over the past several years, USG has recontoured portions of the completed quarry areas within Quarry 1A then allowed the area to remain undisturbed as a test of natural revegetation. Figure 5 includes two photographs showing the reduced quarry slopes and the natural revegetation that has become established over approximately the past five years. Figure 5, Photograph 3 shows the recontoured slopes in which the vertical walls were pushed down to create 1:1 to 2:1 slopes and the plant growth that occurred naturally. Photograph 4 shows a close-up of the reclaimed slope dominated by pygmy cedar (*Peucephylum schottii*). The revegetation effort will be dependent on the infrequent precipitation that occurs over this arid region. The revegetation plan will focus on preparing the surface and providing native seeds in a favorable condition to take advantage of the infrequent rains.

Cheesebush, brittlebush (*Encelia farinosa*), stiff-haired lotus (*Lotus strigosus*), desert tobacco (*Nicotiana obtusifolia*), Emory's desert mallow (*Sphaeralcea emoryi* var. *emoryi*), fluff grass (*Erioneuron pulchellum*) and big galleta grass (*Pleuraphis rigida*) act as pioneering species on disturbed areas and colonize recently prepared revegetation sites. These species produce early cover, which is later displaced by the climax species such as pygmy cedar, smoke tree, indigo bush, and catclaw.

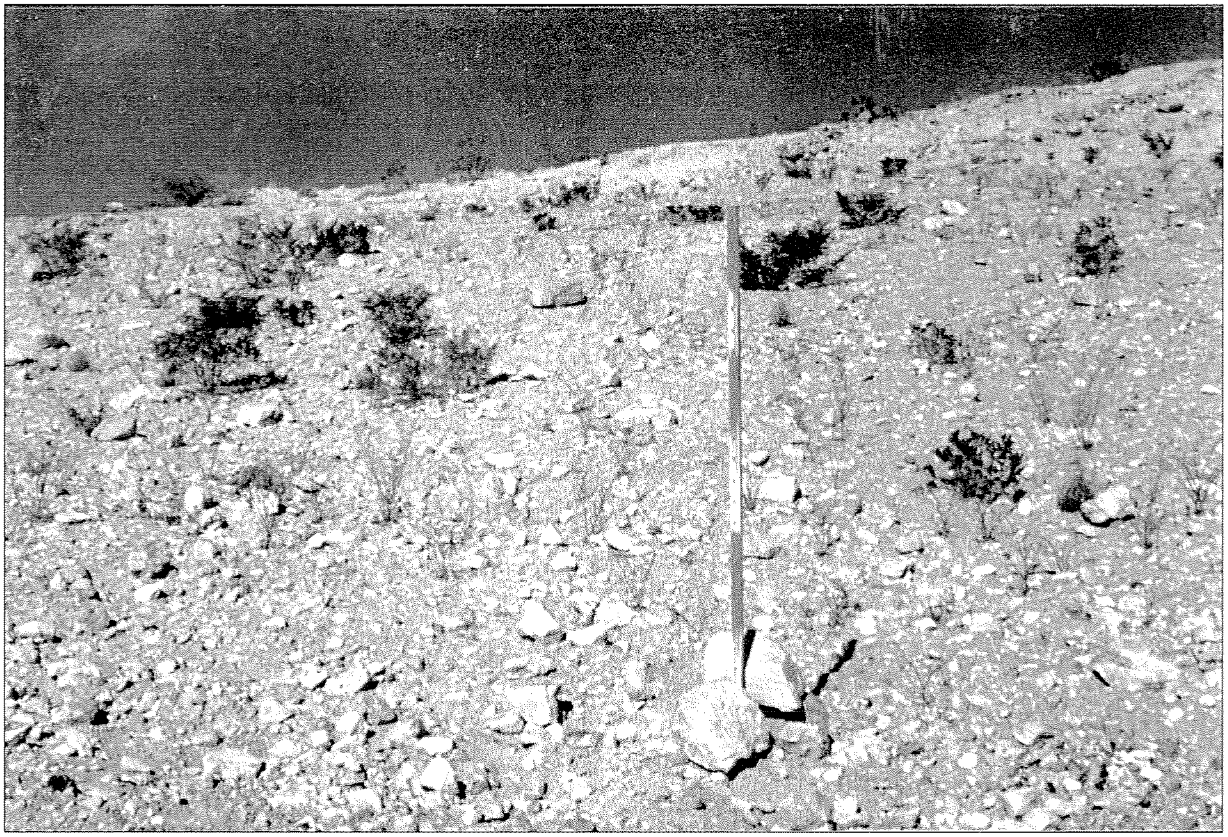
Revegetation will follow a series of steps that can be varied over the life of the operation, but are designed to produce tangible results. They are proposed as guidelines that should be followed until new information or techniques become available which could improve the results of the revegetation activities. Revegetation efforts will use seeds and plants collected locally (on-site and on adjacent areas). Due to the limited vegetation and highly variable seed production, it is likely that on-site collection alone will not provide an adequate supply of seeds when needed. Therefore, seeds may be collected and stored by a contractor specializing in native plants.

The undisturbed portions of the quarry sites and areas adjacent to the quarry provide the model for what should be achieved through the revegetation effort. The areas to be disturbed will also provide specimens for direct transplanting and the undisturbed areas will provide a source of seeds for the revegetation effort.

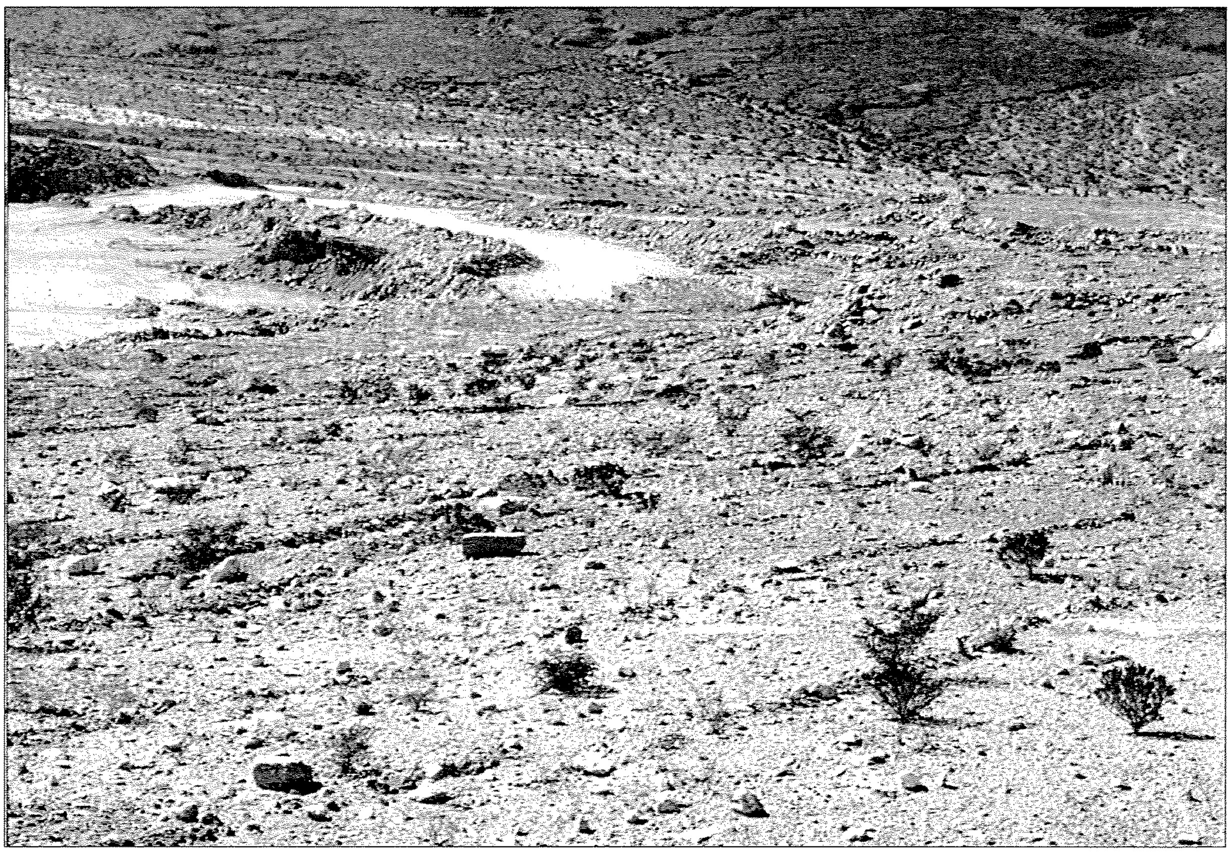
Revegetation includes propagules of both the climax plant community as well as those species found in the disturbed portions of the site. The species from the disturbed areas generally act as pioneer species and will establish first and begin the process of recovery. The climax species are the long-lived shrubs found in the undisturbed portions of the site that will establish after the pioneer species, when conditions are appropriate. The site is dominated by communities of Sonoran Creosote Bush Scrub on the slopes and Desert Dry Wash Woodland.

2.1 SOIL SALVAGE

The goal of soil salvage is to salvage the soil in which the majority of the plant roots and microorganisms are growing. Most desert soils have little topsoil development. Where there is no topsoil, the material in which the majority of the plant roots are growing is referred to as "growth



Photograph 1: Reclaimed slopes with naturally occurring revegetation growth of approximately 5 years.



Photograph 2: Close-up of naturally revegetated slope with pygmy cedar dominant.

Existing Vegetation

Prepared By:
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United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 4

media". Areas to be reclaimed will be covered with this material to provide a natural seed source and enhance broadcast seeding and transplanting.

Salvaged soil or growth media can preserve:

- **Nutrients -** A functioning plant community stores and cycles nutrients. A large portion of these nutrients are stored within organic matter in the roots, soil and litter layer.

- **Microflora** - A wide variety of beneficial microbes occur in the soil associated with plant roots, nutrient cycling and nutrient availability. Maintenance of these microbes may greatly facilitate reclamation. Soil from the reference areas will be tested for the occurrence of microflora especially vesicular arbuscular micorhyizae fungi.

- **Plant Propagules -** Seeds, rhizomes and tubers are stored within growth media and may greatly facilitate reclamation.

By salvaging growth media and preserving these components of the below ground ecosystem, revegetation of disturbed ground, in a habitat where plant growth and recovery are very slow, can be greatly enhanced.

2.2 SEED COLLECTION

The goal in seed collecting is to preserve the local genetic diversity of the given plant species while providing seed that is well suited to growing at the site. Native seed will be collected for direct seeding. A seed collection program will be developed to collect seed locally. For plant species that will be direct seeded, large quantities of seed will be necessary. In a given collecting area, some seed will always be left uncollected, to avoid potential damage to the system from over-collection.

Adjacent to the site and on undisturbed portions of the site are areas which can be used as a seed source for plant materials. Seed collection should be performed by a professional seed collecting firm or a qualified botanist the year before the revegetation is undertaken. Seed collecting is preferable to purchasing generic seeds from commercial sources because it guarantees that the seed is derived from plants that are generally suited to the site.

Seed can be commercially collected, tested and stored. In any given year, some seed may be available, however, seed may not always be available in sufficient quantities for revegetation. When seed is needed and cannot be collected, the best available seed may be purchased. In this case, non-local native seed is deemed preferable to colonization of the revegetation area by invasive non-native species.

Seed will be stored in closed containers protected from temperature extremes. Seeds from as many of the plant species listed in Tables 4 and 5 will be collected for broadcast seeding. It should be noted that much of the plant communities onsite, though sparse, are a mature stage of development and that the revegetation effort will begin in the pioneering stage. It will also depend on the availability of onsite seed, commercially available seed, and actual revegetation results. As many species as possible now present on the site will be included in the revegetation effort. It is also expected that many species will naturally revegetate on the new areas as mining activities move to new areas or cease.

2.3 SITE PREPARATION

As areas are mined to a finished grade, the disturbed areas will be prepared for revegetation as follows:

- **Soil Scarification** - Compacted areas including closed roads and processing areas will be ripped to a one-foot depth (if possible due to numerous rock outcrops), with surface rills and furrows left to aid in water and seed collection.

- **Growth Media** - Topsoil or rootline materials that have been stockpiled will be spread on benches and slopes and partially mixed with underlying scarified material.

- **Land Shaping** - Final contours will be designed for necessary drainage and for natural appearing slopes and landforms.

- **Rock** - Surface boulders are naturally occurring components of the undisturbed hillsides in the area and will remain on reclaimed areas to aid in retention of wind-blown seeds and to reduce the visual contrast of mined areas.

2.4 IRRIGATION

The revegetation planned for the site utilizes native seeds collected on site and on adjacent areas, which are adapted to local conditions. The average precipitation in the area should be sufficient for seed germination and root establishment of native species. Irrigation of the site will not generally be used in order to avoid encouraging growth of non-native invasive plants.

2.5 FERTILIZATION

No fertilization of the site is recommended. All revegetation will utilize stored surface material and native seeds tolerant to existing soil conditions. The surface material of the excavated quarries and benches will generally consist of loosened material (not bare rock), which will aid in germination. Soil testing is not required since the finished material will be similar to existing surface gypsonite or alluvium found in the wash. Use of fertilizers on desert sites appears to benefit non-native weedy species and not the native species that are being encouraged (Clary, 1987). Any salvaged plant material from the site will act as "time-release" nitrogen sources for the growing plants.

2.6 WEED CONTROL

Non-native invasive species (weeds) will be controlled on reclaimed areas by manual, mechanical or chemical methods as needed. Reclaimed areas will be inspected annually and the need for remedial action if any, will be determined at those times. Remedial actions include removal of non-native species and monitoring the establishment of native species.

2.7 PLANTING METHODS AND SEEDING RATES

As portions of the site are quarried to a finished grade they will be prepared for revegetation. The prepared areas will be covered with available salvaged surface material and broadcast seeded with the seed mix and seeding rates indicated below (see Tables 4 and 5). The seeded areas will be cultivated with a spring tooth harrow or dragged with a chain to cover the seeds. Available plant material and growth media will be spread over the reclaimed areas to create pockets or islands to act as a water-holding mulch and a "time-release" fertilizer. Seeding will be undertaken in the fall before potential winter rains.

Selected species deemed suitable for transplanting as identified by a qualified botantist/biologist will be salvaged and transplanted to areas ready for revegetation. Salvaging should be performed during the late fall months prior to winter precipitation. Each specimen should be watered at the time of planting to consolidate the earth about the roots.

Hillside Slopes - Utilizing the data from Tables 1, 2, and 3 and the notes taken in the field, the surrounding undisturbed hillside areas are characterized as sparsely vegetated with Sonoran Creosote Bush Scrub. Perennial elements include creosote bush, burrobush, cheesebush, pygmy cedar, sweetbush and catclaw. The most common shrub species from Quarry 1B and Shoveler quarry areas consist of pygmy cedar, indigo bush and catclaw, and these species will be utilized in the revegetation effort. Recommended amounts of live seed are listed in Tables 4 and 5.

Table 4
Seeding Rates For Hillside Areas

Plant Species	Seeding Rate (Pounds/Acre)
Pygmy cedar (*Peucephyllum schottii*)	1
Indigo-bush (*Psorothamnus schottii*)	0.5
Catclaw (*Acacia greggii*)	0.5
Creosote bush (*Larrea tridentata*)	0.5
Burrobush (*Ambrosia dumosa*)	0.25
Sweetbush (*Bebbia juncea*)	0.25

Wash Areas - The wash area consists of Desert Dry Wash Woodland elements including smoke tree, indigo bush, cheesebush, burrobush, creosote bush, and desert lavender (*Hyptis emoryi*). The most common shrub species from the wash area are cheesebush, smoke tree, indigo bush and catclaw and these species will be seeded at amounts of live seed as recommended in Table 5.

Table 5
Seeding Rates For Wash Areas

Species	Seeding Rate (Pounds/Acre)
Cheesebush (*Hymenoclea salsola*)	2.0
Smoke tree (*Psorothamnus spinosus*)	1.0
Indigo bush (*Psorothamnus schottii*)	0.5
Catclaw (*Acacia greggii*)	0.5
Desert lavender (*Hyptis emoryi*)	0.5
Desert willow (*Chilopsis linearis*)	0.5
Sandpaper plant (*Petalonyx thurberi*)	0.25
<u>Cuttings</u> golden cholla (as available)	(as available)

Specific methods and species may be revised in future years as results of other desert revegetation results become available.

2.8 SCHEDULE FOR REVEGETATION

Revegetation will be an integral part of mining with various activities (seed/plant collection, surface preparation, planting, monitoring) occurring at various locations on-site concurrently throughout the life of the mine operation until reclamation efforts meet or exceed the success criteria.

Pre-Mining

Prior to quarrying in undisturbed areas, selected plants will be salvaged and transplanted to areas ready for final revegetation. Approximately two months prior to the mining of an undisturbed area, a qualified botanist/biologist will survey the area to be quarried. Plants deemed suitable for removal and transplanting will be marked.

Selected specimens marked for transplanting will be excavated. Removal should be undertaken during the late fall or early winter (November through January) to maximize survival. If this is not possible, spring or fall transplants can be attempted by drenching each individual plant with water the day before excavation to maximize the water content of the stems before moving. All species moved should be oriented to assure that the north-facing side is replanted facing north. Each specimen will be allowed to heal broken roots in a shaded area for a few days before being replanted. Damaged roots or basal areas are subject to bacterial infections that will kill the plants. Each replanted specimen will be watered initially. Most specimens will be transplanted to areas ready for revegetation.

Seed collecting should be undertaken from March through June, within one year of commencement of proposed revegetation activities. The reclaimed areas will be initially seeded during the late fall months with native seeds. If the surrounding seed sources are intact, it is expected that over time, the revegetation areas will receive additional seeds from these areas and produce a final revegetation similar to the surrounding areas.

There is no overburden or growth media on the gypsum outcrops. The top six inches of surface material in the wash quarry will be stockpiled as a berm along the western edge of the wash quarry for future reclamation or preferably, collected and immediately spread on areas that will begin revegetation. The immediate use of collected surface material should not only provide a seed source from the natural seed bank present in most soils, but may also provide a source of vesicular-arbuscular mycorrhizal fungi which is important in both nutrient and possibly water uptake (Bethlenfalvay, et al, 1984). The plants present on the site that are not transplanted should be crushed and spread on the revegetation sites. This will provide nitrogen to the new plants as they grow, since plants serve as nitrogen reservoirs by storing nitrogen in their roots, stems and leaves (Garcia-Moya and McKell 1970).

Ongoing Operations

Revegetation will be undertaken concurrent with quarry operations on areas no longer required for operations and will include recontouring disturbed surfaces, distributing surface material and reseeding. Monitoring will be conducted to assess success of completed revegetation and the need for remedial actions (weeding, reseeding) if any are necessary.

Final Reclamation

Final reclamation includes final contouring of quarry slopes, ripping compacted surfaces, spreading of remaining available surface material, and reseeding with native seed.

3.0 REVEGETATION MONITORING

Revegetation monitoring will be an ongoing effort to assess the results of revegetation on the reclaimed areas of the quarry. Monitoring will be conducted annually to assess completed revegetated areas, areas being cleared, and areas where revegetation is being planned. Revegetated areas will be assessed utilizing the success criteria below, with successful methods being implemented for future revegetation. The revegetation effort and ongoing reclamation activities will be reported in the annual mine report prepared for the County.

3.1 SUCCESS CRITERIA

Revegetation success will be determined based on the overall quality of the revegetation results compared to the recorded baseline vegetation data. Two years after revegetation (more or less as determined by the monitor) for a specific area, the surviving plant species shall be evaluated by the consulting biologist for relative growth as determined by diversity, density and frequency. Areas shall receive appropriate remedial attention as necessary, which may include weeding and/or reseeding. The above procedure will be repeated annually thereafter for the next five years.

Success will be a measure of the density and species diversity based on the control areas, with 20 percent for both cover and species diversity being the 10-year goal respectively. The baseline transect data for the wash quarry areas indicates 12 percent cover by 14 perennial plant species. Successful revegetation for the wash areas would be achieved when the revegetation areas have approximately 3 percent cover by a minimum of 3 species. The baseline transect data for the hillside quarries on the east side of the site indicates approximately three 3 cover by 7 perennial plant species. Successful revegetation of the eastern slopes would be achieved when the revegetation areas have approximately one percent cover by 2 species. The sparse cover of the Shoveler Quarry indicated by the data is approximately 4 percent cover by 5 perennial plant species. Successful revegetation of the Shoveler Quarry would be achieved when the revegetation areas have approximately 1 percent cover by 2 species.

It is expected that the final results on the various hillside quarries will actually be better than predicted because the gypsonite layer now present over most of the surface of these sites will be removed and a looser substrate more favorable for plant growth will be left in its place.

3.2 TECHNICAL ASSESSMENT

Annual assessments will be conducted on reclaimed areas by a qualified botanist to determine the success of the revegetation effort including the seeding and transplanting for the duration of the operation. Upon reclamation, annual monitoring will continue for five years.

At two years from completion of the revegetation for a specific area, the surviving plant species will be evaluated for relative success as determined by diversity and density. Individual specimens or areas will receive appropriate remedial attention as necessary. Remedial actions include removing invasive exotic or non-native weed species, reseeding, replanting, and herbivore protection. The above procedure will be repeated annually thereafter for the following three years. Five years after revegetation has been completed has been chosen as the minimum length of time necessary to determine the permanence and ultimate sustainability of the plant community that has been revegetated.

Transects will be randomly established and located in representative areas of revegetation on the quarry site and as controls in undisturbed adjacent areas. The actual number of plots and/or sampling transects may vary in order to produce at least an 80 percent confidence level as required under SMARA's Performance Standards for Revegetation. During the initial years, the number of plots will be less, as they will correspond with the actual areas of revegetation. Within the plots/transects, the following data will be collected:

a. Survivorship: assessed by absolute counts

b. Plant Density or Frequency (number/area)

c. Species Composition (number of species/area)

d. Cover per specified area

All data will be recorded on a standard form and copies will be submitted as an appendix to each annual report. Permanent photo documentation stations will also be established for representative transects to visually document annual vegetational changes and community development.

3.3 REPORTING

USG will submit an annual mine report to Imperial County and State Department of Conservation, Office of Mine Reclamation, on reclamation work at the quarry. The annual mine report is due by June 30th of each year. In addition to the standard information required in the annual state forms, progress on work for the following topics will be included:

1. Revegetation areas for past, current, and upcoming year
2. Plant growth media salvage
3. Seed collection
4. Plant growth
5. Exotic species or weed control activities
6. Reclamation monitoring and results.

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Appendix C4 Hydrologic Impacts Attachment to the Biological Technical Report

BOOKMAN - EDMONSTON

a division of Navigant Consulting, Inc.

MEMORANDUM

DATE: October 31, 2002

TO: Steve Lilburn
Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

FROM: Richard A. Rhone

SUBJECT: Hydrologic Impacts Attachment to the
Biological Technical Report
United States Gypsum Company
Plaster City Quarry Site

This memorandum addresses hydrologic impacts of the planned expansion of the Plaster City Quarry and is intended to be included with the Biological Technical Report being prepared by Lilburn Corporation. It has been suggested that the expansion of the existing Plaster City Quarry could impact the population of Desert Pupfish located on San Felipe Creek approximately 11 miles downstream from the quarry. The total project area is 2,048 acres. The planned total quarry area will be 1,055 acres of which 752 acres are planned expansion and 303 acres are currently disturbed.

Pup Fish Drainage Area

The total drainage area above the pupfish population is approximately 965,388 acres and extends from the Santa Rosa Mountains on the north to below the Mexican border on the south. The 752-acre quarry expansion area is less than 0.08 percent of the total drainage area above the Pupfish population on San Felipe Creek. **Figure 1** shows the location of the Pupfish population, the quarry and the extent of the drainage area above the Pupfish population.

Hydrologic Impact due to Expansion

U.S. Gypsum plans on diverting all creek flows going through the project area, therefore the only impact the expansion may have on the area's hydrology would be surface flow caused by precipitation. The following Table illustrates the calculated volumes and their respective contribution to the overall surface flow. The quarry expansion (752-acres) accounts for about 0.05 percent of the total volume attributed to rainfall within the Pupfish's drainage area.

Area Description	Area (acres)	Annual Average Precipitation (inches) [1]	Volume (acre-ft)	% of Total Volume
San Felipe Creek Drainage Area above Pup Fish Population	965,388	2.5 - 22.5	583,883	100.00
Subbasin including Quarry	7,866	3.5 - 4.5	2,870	0.49
Quarry including Planned Expansion	1,055	4.5	396	0.07
Quarry Expansion	752	4.5	282	0.05

Figure 2 is an isohyetal map of the Pupfish drainage area. The map was generated from an existing isohyetal map of the State of California [1]. The isohyetal lines of precipitation, measured in inches, were averaged over the period 1900-1960. The values in the Table above were computed using Figure 2.

Approximately 90 percent of the Quarry receives an average annual precipitation of 4.5 inches; the remaining 10 percent receives 3.5 inches. Even if the expansion were to prevent all rainfall within the 752 acres from either recharging the groundwater basin

[1] Fire and Resource Assessment Program, California Department of Forestry and Fire Protection, July 23, 2000.

or contributing to surface flows the impact on surface water and groundwater is negligible.

Appendix C5 Potential Impacts of Pumping the Fat Pat Well

BOOKMAN - EDMONSTON

a division of Navigant Consulting, Inc.

M E M O R A N D U M

DATE: October 31, 2002 (Rev: December 10, 2002)

TO: Steve Lilburn
Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

FROM: John Rotert

SUBJECT: Potential Impacts of Pumping the Fat Pat Well
Hydrologic Impacts Attachment to the
Biological Technical Report
United States Gypsum Company
Plaster City Quarry Site

U.S. Gypsum proposes to install a new water supply well, to be known as the Fat Pat Well, near their Plaster City Quarry at the western border of Imperial Valley, California. The company wants to pump approximately 26 acre-feet of water per year from this well (approximately 16.2 gpm). U.S. Gypsum seeks to determine if pumping this well would adversely affect the discharge from two springs near the confluence of San Felipe Creek and Fish Creek in Section 32, T12S, R10E. These two springs, the San Felipe Creek Spring and the Fish Creek Spring, support the habitat for a population of Desert Pupfish (Cyprinodon mascularius), an endangered species.

After reviewing the data and reports provided, it is my opinion that the planned pumping of the Fat Pat Well will have no affect on the discharge of San Felipe Creek and Fish Creek Springs, and hence to the Desert Pupfish habitat. The following discussions are offered to support this opinion.

Direct Effect of Pumping

The Fat Pat Well is located in the southern portion of the Fish Creek Wash alluvial fan. The well is approximately 7.6 miles from Fish Creek Spring and San Felipe Creek Spring. In order to evaluate the possible direct effect of pumping the Fat Pat Well on spring flow, a Theis solution was applied. In applying the Theis solution we assume unrestricted hydrologic communication between the Fat Pat Well and the springs. As described in the following discussion concerning the location and possible affects of the San Jacinto Fault, a barrier to this hydrologic communication may exist.

In applying the Theis solution, it was assumed that the Fat Pat Well would be pumped continuously at rate of 16.2 gpm (26 acre-feet per year) for 20 years. I also assumed an average transmissivity of 50,000 gpd/ft and a storativity of 0.2. The following table illustrates the calculated drawdown that would result at increasing distances from the Fat Pat Well after 20 years of pumping.

Distance From Fat Pat Well (Miles)	Drawdown (Feet)
1	0.11
2	0.06
3	0.04
4	0.02
5	0.01
6	0.008
7	0.004

The table illustrates that the calculated drawdown resulting from pumping the Fat Pat Well becomes insignificant within a short distance. The calculated drawdown at the Fish Creek and San Felipe Creek Springs would be only several thousandths of a foot (approximately 1 millimeter).

Presence of San Jacinto Fault

The San Jacinto Fault lies between the Fat Pat Well and the location of San Felipe Creek and Fish Creek Springs. Typically, transverse movement along bedrock faults will result in reduced transmissivity of the overlying alluvial system across the fault zone. This reduction in transmissivity is primarily due to partial or complete juxtaposition of aquifers and aquitards, and to ductile shearing of the sediments. The result is a potential hydrogeologic barrier that may act to retard, divert or halt underflow through the alluvial system. This potential hydrogeologic barrier may act to reduce or eliminate the hydrologic effect of Fat Pat Well pumping on the San Felipe Creek and Fish Creek Springs.

Underflow Contribution from Drainage Systems

Three drainage systems supply surface water for recharge to the Ocotillo Groundwater Basin, and therefore, potential underflow to support discharge from the San Felipe

Creek and Fish Creek Springs. These drainage systems are the San Felipe Creek, the Fish Creek and the Carrizo Creek Wash drainage systems. These drainage systems were ranked with respect to their recharge potential based on observation of the relative size of their watersheds. The drainage system with, by far, the largest watershed area is the San Felipe Creek drainage system. The area drained by Carrizo Creek Wash would be ranked second in its recharge contribution. The Fish Creek drainage, because of its relatively very limited watershed, would be a distant third in recharge contribution.

The observed equipotential contours depicted in the U. S. Geological Survey Professional Paper 486-K (Plate 1) reflect this relative recharge contribution. It appears that underflow primarily comes from the north through Borrego Valley due to recharge along San Felipe Creek, and to a lesser extent from the south due to recharge along Carrizo Creek Wash. There is no indication of a significant underflow contribution from the Fish Creek drainage system.

As stated earlier, the Fat Pat Well is located in the southern portion of the Fish Creek Wash alluvial fan. Observations indicate the Fish Creek drainage system plays an insignificant role in potential contribution to underflow. Therefore, the pumping of the Fat Pat Well should have an insignificant impact on discharge from the San Felipe Creek and Fish Creek Springs.

Mechanism of Water Supply to Springs

In their hydrogeologic investigation report produced for Allegretti Farms, Krieger & Stewart present data supporting the position that an upper and a lower aquifer exist in the Ocotillo Groundwater Basin. They also propose that the upper aquifer is the source of discharge at the San Felipe Creek and Fish Creek Springs rather than the lower aquifer, which is utilized by Allegretti Farms wells.

The main lines of evidence are:

- ***Lithologic Evidence:*** Previous investigators have reported the existence of a continuous confining to semi-confining clay layer atop the regional (lower) aquifer. Also reported is a relatively thin unconfined aquifer existing above the clay layer. This clay layer and the upper and lower aquifers were evident from my review of the borehole logs provided. The existence of such continuous clay layers are the rule rather than the exception for the deep alluvial basins of the Southwest due to periods of lacustrine deposition during the Pleistocene Epoch.

  The continuous clay layer separating the upper and lower aquifers has been described as the depositional remnant of Lake Cahuilla, which existed in the basin during the Pleistocene and Holocene Epochs. The extent of Lake Cahuilla deposition is shown in the U. S. Geological Survey Professional Paper 486-K on Plate 1. If the information provided in this document is correct, the western extent of Lake Cahuilla deposits is approximately 2 miles east of the Fat Pat Well. Therefore, the Fat Pat Well is located in the portion of the aquifer system not bifurcated by lacustrine deposits.

- ***Water Quality Evidence:*** The Allegretti irrigation wells produce water from the lower aquifer with total dissolved solid (TDS) content of 930 – 1,800 mg/L. Wells thought to tap the upper aquifer in the vicinity of Allegretti Farms produce water with TDS ranging from 5,900 – 7,900 mg/L. The TDS content of the water from San Felipe Creek Spring and Fish Creek Spring are 14,800 mg/L and 11,000 mg/L, respectively. It appears that the water discharging from the springs is more alike in quality with the water in the upper aquifer than the lower aquifer.

- ***Spring Flow Evidence:*** San Felipe Creek changed from intermittent flow to perennial flow in 1984, even as the water levels in the lower aquifer continued to decline by a rate of approximately 3 feet per year. This observation shows the springs were not responding to the declining potentiometric levels in the lower aquifer, and therefore are most likely the result of discharge from the upper aquifer atop the regional aquitard.

These lines of evidence strongly support the position that an upper and a lower aquifer exist in the Ocotillo Groundwater Basin, and that the upper aquifer is the source of discharge at the San Felipe Creek and Fish Creek Springs. However, Krieger & Stewart say in their report that the shallow aquifer is primarily recharged through surface infiltration of meteoric water (Page III-7). I find it difficult to believe that perennial springs from the upper aquifer could be maintained by surface infiltration of meteoric water in such a desert environment. I believe a more plausible explanation is that the major portion of local recharge to the upper aquifer is occurring due to return flows from Allegretti Farms irrigation. Reports indicate it was necessary to apply irrigation water in excess of crop requirements to prevent excessive build-up of salts in the root zone. I believe it is this local recharge to the upper aquifer which is primarily supporting the discharge from the springs and base flow in San Felipe Creek.

The water quality observations also support this theory. Water infiltrating into the soils during Allegretti Farms irrigation would initially be concentrated in total dissolved solids as a result of evapotranspiration. That portion of the applied water contributing to deep percolation would further increase in TDS as it dissolved soluble salt residuals during its migration through the vadose zone. The water reaching the upper aquifer would very likely exhibit the TDS concentrations seen in the spring water (i.e., 11,000 mg/L to 14,800 mg/L). Ironically, the springs, and hence the Desert Pupfish habitat, may owe their very existence to the pumping that is occurring at Allegretti Farms.

Based on these observations, the most likely interpretation is that the current discharge of San Felipe Creek and Fish Creek Springs is primarily resulting from recharge of water to the upper aquifer due to return flows from Allegretti Farms irrigation. If this interpretation is correct, the mechanism of aquifer recharge and spring discharge is occurring locally in the Lower Borrego Valley. This mechanism would not be affected by the planned pumping of the Fat Pat Well located over seven miles to the southwest.

Appendix D Air Quality

Appendix D1 List of USG Air Quality Permits at Quarry and Plaster City Plant

APCD Permits - 2003 **12/20/2002**

Permit #	Fee $$	Permit Description on Permit	Actual Source
2834C-B	$2,808		CP Mill Burner
1122	$2,247	Combustion pt A	#1 Kettle, burner, bin vent, Air/Fuel & 2 baghouses. Permit desc should include pts A,7.
1123	$2,247	Combustion pts B,C,D,8,9,10	#2 Kettle, burner, bin vent, Air/Fuel & 2 baghouses. Permit desc should only include pts B,8.
1124	$2,247	Combustion pts B,C,D,8,9,10	#3 Kettle, burner, bin vent, Air/Fuel & 2 baghouses. Permit desc should include pts C,9.
1125	$2,247	Combustion pts B,C,D,8,9,10	#4 Kettle, burner, bin vent, Air/Fuel & 2 baghouses. Permit desc should only include pts D,10.
1126	$2,808	Combustion pts 11,39	#5 Kettle, burner, bin vent, hot pit. Permit desc should include pts E,7,39.
1130A	$2,808	Combustion pt F	ATC #6 kettle, burner, Air/Fuel and baghouse. Permit desc should include F,22.
1131	$2,247	Crusher pt 2	Crusher,baghouse.
1992B	$2,247	Aggregate-Split Mtn	Ag Plant at quarry.
2455	$843	Milling pts 4,5,6,49,50	Raymond Mill and baghouse (#4B?) . Pt 50.
2456	$113	Petro. Storage-Split Mtn	Quarry 4000 gallon petroleum tank (gas)
2662	$169	Storage pt 16	SFS Storage - Green Giant, Unloading baghouse.
2664	$1,686	Blending pts P, 13, 45	Permit shows PST Scott Blender. Old permit applicability list shows PST system, burner, silo, bin vent, air/fuel, 2 baghouses.
2663	$561	Cutting pts 30,31,32,33	Permit shows Old Dunnage Machine Dust Collector. Old permit applicability list shows endsaws, kerfs, 4 baghouses, and dunnage machine..
2702	$113	Non-Retail SS	PE Gas tank, 2000 gallon
2718	$282	Packing pt 12	Packing/Agri, 3 packing machines, 1 baghouse.
2815	$843	Milling pts 4,5,6,49,50	#3 RM, dryer, baghouse. Pt 6.
2814	$843	Milling pts 4,5,6,49,50	#2 RM, dryer, baghouse. Pt 5.
2834C-A	$1,686		CP Mill Dust Collector
2735	$1,686	Mfg	Mill Upgrade,Rock silo DC,MMD Crusher DC,Williams Mill,#5 kettle,#2,3,4 Kettle DC,Packing DC,TY Crusher DC. Still need permit to operate?
2836	$180	Board Waste Disposal	Permit says Waste Disposal.
2823	$169	Conveying pt 40	A/C Screw, conveyor, baghouse.
2822	$2,529	Storage pt 21	#6 LP (RM #5,6,7).
2821	$282	Storage, rail car unloading	Gypsum rock dust control w/baghouse. Train unloading DC Permit 2304A?
2813	$843	Milling pts 4,5,6,49,50	#1 RM, dryer, baghouse. Pt 4.
2816	$843	Milling pts 4,5,6,49,50	#4 RM, dryer, baghouse. Pt 49.
2811	$2,808	Combustion pts G,H,I,J	#1 Kiln.
2826	$1,122	Milling pts 26, 27	Tube mill and air sweep, 2 baghouses.
2825	$1,122	Milling pt 48	Ball Mill baghouse. Appears to be #1.
2824	$561	Storage pts 3, 47, 19, 37	LP system, 3 baghouses.
2830	$169	Storage, Dwg 3212, pt 29	Dry additive silo 1 baghouse.
2829	$282	Conveying pts 38, 44	Stucco elevator, stucco reclaim, 2 baghouses. Appears to be #1 board stucco elevator. Pt 44 location unknown.
2828	$282	Storage, pts 34, 35	Board plant HRA,LP revieving bin, 2 baghouses (appears to be #1 and #2)
3061	$117	Combustion	Plant fire pump (diesel)
2834C-C	$282		CP Mill Stucco Cooler
2834C-E	$282		Stucco Storage DC
2834C-F	$282		CP Mill Rock Bin DC
2834C-G	$843		HRA DC
2834C-H	$843		Ball Mill DC
2834C-I	$282		Additive Refill DC
2834C-J	$282		Additive Refill DC
2834C-K	$282		Dry Additive DC
2834C-L	$2,808		#3 kiln
2834C-M	$561		#3 End Saw DC
2834C-N	$561		New Dunnage Machine, typo in permit #, should be 2834C-N
2834C-O	$561		Waste Reclaim Bin Vents (3)
3059	$117	Quarry Combustion	Quarry portable air compressor
3108	$282	Milling	
3109	$169	Milling	
3110	$169	Milling	
3186	$169		ATC - Waste Reclaim Bin Vent - on Rock Belt
Total	$50,815		
2834C-D	$843		LP Air preheater - ELIMINATE PTO - GET EMISSION CREDIT
2834C-P	$282		West Reveiving DC - ELIMINATE PTO - GET EMISSION CREDIT
2834C-Q	$282		East Receiving DC - ELIMINATE PTO - GET EMISSION CREDIT
None		Not in 2003 Permits	Quarry train tunnel, crusher
None		Not in 2003 Permits	Quarry Crusher -new
None		Not in 2003 Permits	CP Mill Misc Dust Collector

Appendix D2 Approved Air Quality Operating Permit #2834C

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

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

IMPERIAL COUNTY

AIR POLLUTION CONTROL DISTRICT

CALIFORNIA

Conditions for Amended Authority To Construct Permit #2834C

United States Gypsum Company
P.O. Box 2450
El Centro, CA 92244

LOCATION: **3810 W. Highway 80, Plaster City, CA**
7801 Split Mountain, Ocotillo Wells, CA

A. General Conditions:

1. The facility shall be constructed to operate in compliance with the project description and operating parameters of the applications dated October 19, 1998 and subsequent application for equipment changes dated August 27, 1999, (with its supporting documentation and supplemental materials) February 28, 2000, and April 11, 2000, and the modifications described in them. Except as may be modified by more stringent requirements of law or the specific conditions of this permit.

2. This Permit does not authorize the emissions of air contaminants in excess of those allowed by USEPA (Title 40 of the Code of Federal Regulation), the State of California (Division 26, Part 4, Chapter 3 of the Health and Safety Code), or the ICAPCD (Rules and Regulations). The Permit cannot be considered permission to violate applicable existing laws, ordinances, regulations, rules or statutes of other governmental agencies.

3. On or before startup of any emission unit authorized under this Authority to Construct, the permittee shall have provided to the ICAPCD offsets or Emission Reduction Credits (ERC's) authorized pursuant to CAA and ICAPCD Rule 207. Project NOx emission increases will be 54.18 tons per year (27,090 lbs per quarter), which will be fully offset. On or before start-up of the West and East Receiving Silo Bin Vent Dust Collectors, the permittee shall have provided to the ICAPCD 5.5 tons of dust offsets per year (2,740 pounds per quarter) or Emission Reduction Credits (ERC's) authorized pursuant to CAA and ICAPCD Rule 207.

   a. The permits for the Second Line shall be surrendered no later than 90 days following the start-up of the Third Line in compliance with Rule 207.D.8.b.

b. The rock crushing equipment marked in Condition 6 with an asterisk must cease operations no later than 90 days following the startup of the crusher listed in Condition 5 in compliance with Rule 207.D.8.b.

4. This Permit supercedes Permit to Operate # 1168B and the Conditions amended on 11/26/96, for the quarry, crusher and storage pile located at 7801 Split Mountain, Ocotillò Wells, CA., and includes all project operations and equipment.

5. USG under this Authority to Construct is authorized to construct the emission units listed in Table 1 with the designated BACT controls.

TABLE 1

EMISSION UNITS	**Pt. Ref Map CA-35010**	**BACT Control Rule 207**	**DUST COLLECTORS (D/C) 6 to 1 Max (D/C) Air/Cloth ratio for all D/C (burner size)**
Train Loading Tunnel	Quarry (34)	Pulse Jet Dust collector	30,000 scfm for load out
Quarry Crusher	Quarry (34)	Pulse Jet Dust collector	33,000 scfm
Integrated Milling and Calcining Unit	36	Flue Gas Recirculation	(86 MM BTU/HR)
Integrated Milling and Calcining Unit	36	Pulse Jet Dust Collectors	34,997 dscfm
Integrated Milling and Calcining Unit Stucco Cooler	37	Pulse Jet Dust collector	4,390 dscfm
Integrated Milling and Calcining Unit Kiln Dryer Booster Burners	25,26,29	LoNox Burner	(25.9 MM BTU/HR)
LP Air Heater	39,42	LoNox Burner	(1 MM BTU/HR)
#1Miscellaneous Dust Collector	41	Pulse Jet Dust Collector	4,400 scfm

Rock Bin Dust Collector	40	Pulse Jet Dust Collector	4,400 scfm
Stucco Storage Bin Dust Collector	17	Pulse Jet Dust Collector	4,274 scfm
HRA Landplaster	18	Pulse Jet Dust Collector	1,500 scfm
HRA Mill	19	Pulse Jet Dust Collector	1,000 scfm
Additive Refill Storage	22	Pulse Jet Dust Collector	700 scfm
Additive Refill	23	Pulse Jet Dust Collector	700 scfm
Stucco Dry Additives	24	Pulse Jet Dust Collector	7,551 scfm
Kiln Wet Zone Burner & End Seal	25,27,29	LoNox Burner	(100 MM BTU/HR)
Kiln Dry Zone Burner & End Seal	26,28,29	LoNox Burner	(99 MM BTU/HR)
End Saw Dust Collector	30	Pulse Jet Dust Collector	10,000 scfm
Dunnage System	31	Pulse Jet Dust Collector	10,000 scfm
Waste Dust Collector	33	Pulse Jet Dust Collector	3,000 scfm
West Receiving Silo Bin Vent Dust Collector	43	Vent Dust Collector	7,300 scfm
East Receiving Silo Bin Vent Dust Collector	44	Vent Dust Collector	7,300 scfm

6. The following equipment located at the Split Mountain Quarry is incorporated into this Permit and was previously permitted under Permit # 1168 B:

* Equipment that will be replaced

*42" Primary Gyratory Crusher, 350 HP Motor (1)
*36" Wide Bucket Elevator, 200 HP Motor (1)
*5' x 10' Single Deck Screen, 40 HP Motor (1)
*20' Secondary Cone Crusher, 250 HP Motor (1)
*36' Wide Incline Belt (1)
*Tripper Belt (1)
Rock Shed (4" rock stockpile) (1)
*US Air Filtration Pulse Jet Dust Collector, 5333 sq ft Cloth Area 25,000 scfm fan (1)
US Air Filtration Pulse Jet Dust Collector, 4333 sq ft Cloth Area 20,000 scfm fan (1) (controls rock shed loading dust)
* William & Mayer Cyclone, 22,000 ACFM Blower (1)

B. Emission Limitations:

1. All belt conveyors, transfer points, or any emission control units serving the third line and quarry, with the exception of the IMCU (Integrated Milling Calcining Unit), shall be enclosed and emissions shall not exceed 7% opacity, as determined using USEPA Method 9.

2. The IMCU shall be enclosed and emissions from the unit shall not exceed 10% opacity, as determined using USEPA Method 9.

3. Total NOx and CO emissions from point sources at Plaster City shall be less than 151 tpy and 268 tpy, respectively.

4. The dust collectors listed in Condition A.6 and Table 2 above shall be adequately sized to emit no more than 0.01 grains per cubic foot of gas at standard conditions using Method 5 and emissions shall not exceed 7% opacity as determined using USEPA Method 9.

5. The Emission Units listed in the following table shall not exceed the NO_x emission rates, and PM10 grain loading set forth in Table 2.

TABLE 2

Emissions Limitations and BACT for Equipment

EMISSION UNITS	Ref Map CA35010 for exhaust Location	Heat input and Or flow rates	NOx Limitation	PM 10 Limitation
Train Loading Tunnel	Quarry 34	Dust collector 30,000 scfm for load out	N/A	.01 gr/scf
Crusher System	Quarry 34	Dust collector 33,000 scfm	N/A	.01 gr/scf
LPs Air Heater	39,42	LoNox Burner (1) 1MM btu/hr Dust Collector	.037 lbs/MM btu	.01 gr/scf
Milling, Calcining, and Stucco Cooler	36,37	(1) 86 mm btu/hr (1) 34,997dscfm (1) 4,390 dscfm	.045 lbs/MM btu	.01 gr/scf
#1 Dust Collector Rock Bin Dust Collector	41,40	(2) 4,400 scfm ea	N/A	.01 gr/scf
West Receiving Silo Bin Vent Dust Collector	43	(2) 7300 scfm	N/A	
East Receiving Silo Bin Vent Dust Collector	44			
Stucco Storage Bin HRA Landplaster HRA Mill	17 18 19	4,274 scfm 1,500 scfm 1,000 scfm	N/A	.01 gr/scf
Storage Bin Storage Bin Stucco Dry Additives (binders)	22 23 24	700 scfm 700 scfm 7,571 scfm	N/A	.01 gr/scf

Wall Board Kiln	25 26 27 28 29	LoNox Burners (226 MM BTU/HR)	.037 lbs/mm btu	.01 gr/scf
Board Waste Collection Recycled End Saw Dunnage System Waste Collector	 30 31 33	 10,000 scfm 10,000 scfm 3,000 scfm	N/A	.01 gr/scf

C. Fugitive Dust Control:

1. *Gypsum Rock Storage Plaster City*

The open storage of gypsum rock is prohibited. The raw gypsum rock shall be stored within an enclosed building that reduces fugitive gypsum dust emissions caused by wind erosion, rock pile movements or any activity that produces significant amounts of fugitive gypsum dust. Fugitive dust shall not exceed 15 % opacity from the building for a period or periods aggregating more than 3 minutes in any one hour.

2. *Inert Material Storage Plaster City*

Fugitive dust from storage or reclaiming operations shall not exceed 20% opacity for a period or periods aggregating more than 3 minutes in any one hour.

3. *Split Mountain Access Road And Quarry Haul Road*

a. USG shall asphalt or cement pave the access road distance from the Agri facility to the Split Mountain railroad crossing (approximately 0.4 miles). Paving shall be completed upon Third Line startup.

b. USG shall asphalt or cement pave the unpaved distance of the haul road when the road distance reaches .25 mile + - 10 %; and

c. USG shall maintain and prevent surface dust accumulation on paved roads.

4. *Split Mountain Quarry, Crusher, and Storage Pile*
Process Rate: 1,919,605 Tons/year gypsum ore

a. Fugitive dust from processing areas other than those listed in Table 1 shall not exceed 20% opacity for a period aggregating more than 3 minutes in any one hour.

b. Fugitive dust from facility access roads near and around crusher and rock storage and the Agri facility shall be conditioned to minimize dust.

c. The crusher shall process no more than 1,872,700 tons of rock per year.

d. All drops within the crusher shall be enclosed.

e. The truck dump on the crusher shall be enclosed on three sides

5. *Opacity Observer*

Permittee shall provide training and shall maintain at least one employee certified by CARB as an opacity observer.

D. Performance Testing:

1. U.S. Gypsum shall submit a source test plan for approval by APCD no later than 30 days prior to equipment start-up. The plan shall contain approved test methods for particulates, CO and NOx. The source test plan shall include a schedule for source testing for all combustion sources covered under this Authority to Construct Permit. The source test frequency shall be no less than once every five years.

2. U.S Gypsum shall conduct annual visibility testing using Method 9 on all sources listed under 40 CFR 60.674 as requiring monitoring using Method 9. U.S. Gypsum shall provide a list of all such sources to APCD no later than 30 days prior to equipment start-up.

3. All exhaust stacks permitted under this permit shall be equipped for source testing accessibility.

E. Control Equipment Operation:

1. All Dust Collectors, covers, shrouds, burners, dryers and supporting equipment shall be properly maintained and in good working order. Emission control equipment shall be used at all times that the related source is in operation.

2. All dust collectors shall contain static pressure drop gauges. The gauges shall be properly sized and maintained in good working order at all times. The pressure drop across the baghouse shall be within the range specified by the manufacturer during operation.

F. Monitoring Requirements:

1. On a daily basis, personnel shall visually inspect dust-producing sources at the facility and log the inspection. Any visible emissions shall be logged and shall trigger a USEPA Method 9 test within 25 hours of the initial logged inspection.

2. On a monthly basis, the facility shall make USEPA 22 observations of all dust producing sources. If any visible emissions are detected, a USEPA Method 9 test shall be triggered. All Method 22 and Method 9 observations shall be logged, and shall include name of observer, date and time of observation, unit ID number, and results of the VE observation.

3. On a monthly basis, for all baghouses (not including bin vents), the facility shall record pressure drop readings to determine that baghouses are operating properly. Inspections shall be logged, and shall include name of inspector, date and time of observation; unit ID number, proper operating pressure drop readings, and pressure drop readings.

4. On a daily basis, personnel shall record the weight of rock processed by the crusher.

5. Logs required by Conditions F.1 through F.4 shall be retained by the facility for five years.

G. Reporting:

1. After approval of equipment vendors to construct the Third Line, USG shall submit all burner, dryer, dust collector and control sizes and specifications.

2. USG shall submit by February 28th, of each calendar year beginning with year 2001, an inventory of total fuel consumed, the total gypsum rock crushed, calcined for wallboard and non-wallboard products, for the previous calendar year.

3. USG shall submit by February 28th of each calendar year beginning with year 2001, an inventory of NOx and CO emissions for the facility for the previous calendar year.

4. USG shall submit by February 28th of each calendar year beginning with year 2001, a report containing the total rock processed by the crusher for the previous calendar year.

Appendix D3 Air Pollutant Emissions Calculations and Assumptions

APPENDIX AQ3

AIR POLLUTANT EMISSIONS ASSUMPTIONS AND CALCULATIONS

Table 1
Onsite Quarry Equipment
Estimated Usage

Equipment	Number	Pre-Project Hours per Day	Post-Project Hours per Day
Loaders -			
Volvo 330	3	36	44
Dresser	1	4	4
Dozer–Komatsu 375	1	8	8
Haul Trucks – 60-ton Euclid	4	48[1]	56[2]
Water Truck	1	2	5
Grader – Cat G14	1	1	1
Drill Rig	1	8	10
Excavator	1	10	14
Fork Lift	1	1	1
Vacuum Truck	1	1	3

Source: USG, 2003

Notes: Equipment above is presently used onsite and like equipment will replace used equipment as needed.

1 – Pre-project haul trucks consisted of four 35-ton trucks.

2 – Post-project haul trucks consist of four 60-ton trucks.

Table 2
Train and Locomotive Data

The Plaster City Plant has two Bombardier 110-ton locomotives. Both are Model DL535-E, Narrow Gage, Single Cab locomotives built in1982.

	Pre-Project Actual	Post-Project Air Quality Permit	Post-Project Maximum
Tons/Year	1,084,050[1]	1,872,655[2]	1,919,605[3]
Number of Trains	913[4]	1,577[4]	1,706[5]
Number of Trains Used for Assessment	1,200[6]	1,577	1,800[5]
Diesel Fuel Consumed @ 75 gallons/trip	90,000	118,275	135,000

Source: USG, 2003

Notes: 1 – Total production of 1,310,000 tons minus 46,950 tons for Agrite Plant and trucked offsite.

2 – 1,919,605 tons minus 46,950 tons assumed for Agrite Plant and trucked.

3 – Typically estimated 200,000 tons for Agrite Plant but amount varies.

4 – Calculated number of trains using 1,188 tons per train load in past estimates.

5 – Revised to 1,125 tons per train – USG requesting assessment for 1,800 trains/ year or 5 trains/day.

6 – Actual average number of trains for pre-project

Table 3
USG Quarry Operations
Onsite Equipment Exhaust Emissions - Pre-Project Conditions

				Equation Variables		Emissions				
Operation		Emission Factor	Units	1	2	PM-10 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours					
PM-10	Bulldozer	0.11	lbs/hr	1	8	0.9				
	Wheel loaders	0.17	lbs/hr	4	10	6.8				
	Water & Vac Trucks	0.41	lbs/hr	2	2	1.6				
	Grader	0.06	lbs/hr	1	1	0.1				
	Haul Trucks	0.45	lbs/hr	4	12	21.6				
	Drill Rig	0.11	lbs/hr	1	8	0.9				
	Excavator	0.11	lbs/hr	1	10	1.1				
ROC	Bulldozer	0.12	lbs/hr	1	8		1.0			
	Wheel loader	0.23	lbs/hr	4	10		9.2			
	Water & Vac Trucks	0.15	lbs/hr	2	2		0.6			
	Graders	0.04	lbs/hr	1	1		0.0			
	Haul Trucks	0.19	lbs/hr	4	12		9.1			
	Drill Rig	0.12	lbs/hr	1	8		1.0			
	Excavator	0.12	lbs/hr	1	10		1.2			
CO	Bulldozer	0.35	lbs/hr	1	8			2.8		
	Wheel loader	0.57	lbs/hr	4	10			22.8		
	Water & Vac Trucks	0.67	lbs/hr	2	2			2.7		
	Graders	0.15	lbs/hr	1	1			0.2		
	Haul Trucks	1.80	lbs/hr	4	12			86.4		
	Drill Rig	0.35	lbs/hr	1	8			2.8		
	Excavator	0.35	lbs/hr	1	10			3.5		
NOX	Bulldozer	1.26	lbs/hr	1	8				10.1	
	Wheel loader	1.90	lbs/hr	4	10				76.0	
	Water & Vac Trucks	1.70	lbs/hr	2	2				6.8	
	Graders	0.71	lbs/hr	1	1				0.7	
	Haul Trucks	4.17	lbs/hr	4	12				200.2	
	Drill Rig	1.26	lbs/hr	1	8				10.1	
	Excavator	1.26	lbs/hr	1	10				12.6	
SOX	Bulldozers	0.14	lbs/hr	1	8					1.1
	Wheel loader	0.18	lbs/hr	4	10					7.2
	Water & Vac Trucks	0.14	lbs/hr	2	2					0.6
	Graders	0.09	lbs/hr	1	1					0.1
	Haul Trucks	0.45	lbs/hr	4	12					21.6
	Drill Rig	0.14	lbs/hr	1	8					1.1
	Excavator	0.14	lbs/hr	1	10					1.4
					Total (lbs./day)	33.0	22.1	121.1	316.4	33.1
					Total (tons/year)	6.02	4.03	22.11	57.75	6.04

Sources: USG, 2003; URBEMIS 2001 Construction Equipment Emissions; SCAQMD CEQA Handbook

Table 4
USG Quarry Operations
Onsite Equipment Exhaust Emissions - Post-Project Conditions

				Equation Variables		Emissions				
Operation		Emission Factor	Units	1	2	PM-10 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours					
PM-10	Bulldozer	0.11	lbs/hr	1	8	0.9				
	Wheel loaders	0.17	lbs/hr	4	12	8.2				
	Water & Vac trucks	0.41	lbs/hr	2	4	3.3				
	Grader	0.06	lbs/hr	1	1	0.1				
	Haul Trucks	0.45	lbs/hr	4	14	25.2				
	Drill Rig	0.11	lbs/hr	1	10	1.1				
	Excavator	0.11	lbs/hr	1	14	1.5				
ROC	Bulldozer	0.12	lbs/hr	1	8		1.0			
	Wheel loader	0.23	lbs/hr	4	12		11.0			
	Water & Vac trucks	0.15	lbs/hr	2	4		1.2			
	Graders	0.04	lbs/hr	1	1		0.0			
	Haul Trucks	0.19	lbs/hr	4	14		10.6			
	Drill Rig	0.12	lbs/hr	1	10		1.2			
	Excavator	0.12	lbs/hr	1	14		1.7			
CO	Bulldozer	0.35	lbs/hr	1	8			2.8		
	Wheel loader	0.57	lbs/hr	4	12			27.4		
	Water & Vac trucks	0.67	lbs/hr	2	4			5.4		
	Graders	0.15	lbs/hr	1	1			0.2		
	Haul Trucks	1.80	lbs/hr	4	14			100.8		
	Drill Rig	0.35	lbs/hr	1	10			3.5		
	Excavator	0.35	lbs/hr	1	14			4.9		
NOx	Bulldozer	1.26	lbs/hr	1	8				10.1	
	Wheel loader	1.90	lbs/hr	4	12				91.2	
	Water & Vac trucks	1.70	lbs/hr	2	4				13.6	
	Graders	0.71	lbs/hr	1	1				0.7	
	Haul Trucks	4.17	lbs/hr	4	14				233.5	
	Drill Rig	1.26	lbs/hr	1	10				12.6	
	Excavator	1.26	lbs/hr	1	14				17.6	
SOx	Bulldozers	0.14	lbs/hr	1	8					1.1
	Wheel loader	0.18	lbs/hr	4	12					8.6
	Water & Vac trucks	0.14	lbs/hr	2	4					1.1
	Graders	0.09	lbs/hr	1	1					0.1
	Haul Trucks	0.45	lbs/hr	4	14					25.2
	Drill Rig	0.14	lbs/hr	1	10					1.4
	Excavator	0.14	lbs/hr	1	14					2.0
					Total (lbs/day)	40.2	26.8	144.9	379.4	39.5
					Total (tons/year)	7.34	4.88	26.44	69.23	7.21

Sources: USG, 2003; URBEMIS 2001 Construction Equipment Emissions; SCAQMD CEQA Handbook

Table 5
USG Quarry - Onsite Transport Truck and Vehicle Exhaust Emissions
Pre-Project and Post-Project (No Change Expected)

Operation		Emission Factor	Units	Equation Variables 1	Equation Variables 2	Emissions PM-10 lbs/day	Emissions ROC lbs/day	Emissions CO lbs/day	Emissions NOX lbs/day	Emissions SOX lbs/day
Delivery Vehicle Emissions Onsite				# of trips per day	vmt					N/A
PM-10	Transport Trucks (26-ton)	0.58	grams/mile	32	2	0.08				
	Autos	0.02	grams/mile	12	2	0.00				
	Light Duty Trucks	0.02	grams/mile	12	2	0.00				
ROC	Transport Trucks (26-ton)	2.06	grams/mile	32	2		0.29			
	Autos	0.27	grams/mile	12	2		0.0			
	Light Duty Trucks	0.32	grams/mile	12	2		0.0			
CO	Transport Trucks (26-ton)	16.61	grams/mile	32	2			2.3		
	Autos	6.12	grams/mile	12	2			0.3		
	Light Duty Trucks	6.25	grams/mile	12	2			0.3		
NOX	Transport Trucks (26-ton)	10.75	grams/mile	32	2				1.5	
	Autos	0.56	grams/mile	12	2				0.0	
	Light Duty Trucks	0.88	grams/mile	12	2				0.0	
					Total (lbs/day)	0.1	0.3	3.0	1.6	----
					Total (tons/year)	0.02	0.06	0.55	0.29	

Table 6
USG Quarry
Fugitive Dust Emissions (PM10)

Source	Parameter Pre-Project	Parameter Post-Project	Emission Factor	Pre-Project (TPY)	Post-Project (TPY)	Change (TPY)
Drilling	25 blasts @ 40,000 tons/blast	48 blasts @ 40,000 tons/blast	0.0008 lbs/ton	0.45	0.77	+0.32
Blasting	Same as above	Same as above	0.08 lbs/ton	52.4	76.8	+24.4
Dozing	8 hrs/day	8 hrs/day	33.4 lbs/hour	48.76	48.76	0
Loading	1.13 MT	1.919 MT	0.036 lbs/ton	20.34	34.55	+14.21
Totals				**121.95**	**160.88**	**+38.93**

Assumptions

Drilling and Blasting

Pre-Project 1.31 MTPY 25 blasts/year
Post-Project 1.919 MTPY 48 blasts/year

Drilling Emission Factor 0.0008 lb/ton
Source: Mojave Desert AQMD "Emissions Inventory for Material Handling and Processing Industries"

Blasting Emission Factor 0.08 lb/ton
Source: Mojave Desert AQMD "Emissions Inventory for Material Handling and Processing Industries"

Dozing

Dozing Emission Factor = 33.4 lbs/hour

No change in hours per J. Mitchell 8 hours/day
Source: AP-42, Section 11.9, Table 11.9.1 Bulldozing Overburden Equation

$$EF\ (PM10) = 1.0(s)^{1.5}/M^{1.4} * 0.75\ \text{lb/hr}$$
$$= 3.45^{1.5}/0.25^{1.4} * 0.75\ \text{lb/hr}$$
$$= 33.4\ \text{lbs/hr}$$

Silt content (s) = 3.45% Measured data used by USG in previous inventories
Moisture content (M) = 0.25% Worst case used in previous inventories

Loading

Loading Emission Factor = 0.036 lbs/ton

Pre-project production = 1.13 MT Post-project production = 1.919 MT
Source: AP-42, Section 13.2.4

$$EF\ (PM10) = k*0.0032 * \frac{(U/5)^{1.3}}{(M/2)^{1.4}}\ \text{lbs/ton}$$

EF (PM10) = 0.036 lbs/ton

ONSITE HAUL ROAD DUST

Haul Truck Data
For Haul Roads from Quarry to Plant

Parameter	Pre-Project	Post Project
Haul Trucks Capacity	35 ton	60 ton
Truck Weight (tons) Empty Full Ave.	 34.3 69.3 51.8	 45.7 105.7 75.7
Quarry Production	1.13 MTPY	1.191 MTPY
Trips/Year	32,286	32,000
Paved Distance in Miles	1	1.2 (ave.)
Miles/Year on Paved Roads	64,572	76,800
Unpaved Distance in Miles (Max. allowed unpaved per AQ permit)	0.25	0.25
Miles/Year on Unpaved Roads	16,143	16,000
Miles on Agrite Plant road	0.4 (unpaved)	0.4 (paved)

1. Pre-Project – Unpaved Agrite Road

PM_{10} Emission Factor = 4.59 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (50% control) = 2.30 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.2, Unpaved Roads (10-01)

Distance = 0.4 miles one way
Amount transported = 200,000 TPY
Number of Trips = 200,000 TPY/35 tons per truck = 5,714 truck trips

Emission Factor (PM_{10}) = $K\,(s/12)^a\,(W/3)^b$

K = 1.5 for PM_{10} (lbs/VMT)
s (silt content) = 10%
W (ave. wt) = 51.8 tons
a = 0.9
b = 0.45

$$EF\ (PM_{10}) = 1.5(10/12)^{0.9}\ (51.8/3)^{0.45}$$
$$= 4.59\ \text{lbs/VMT}$$

See Table 7 for total emissions.

2. Post Project – Paved Agrite Plant Road

PM_{10} Emission Factor (Uncontrolled) = 5.07 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (80% control) = 1.35 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.1, Paved Roads (10-02)

Distance = 0.4 miles one way
Amount transported = 200,000 TPY (No Change)
Number of Trips = 200,000 TPY/60 tons per truck = 3,333 truck trips
Silt loading (sl) = 8.2%

$$\text{Emission Factor } (PM_{10}) = K\ (sl/2)^{0.65}\ (W/3)^{1.5}$$
$$= 5.07\ \text{lb/VMT}$$

See Table 7 for total emissions.

3. Pre-Project – Unpaved Haul Road

PM_{10} Emission Factor = 3.89 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (50% control) = 1.90 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.2, Unpaved Roads (10-01)

Distance = 0.25miles one way
Amount transported = 1.31 M TPY
Number of Trips = 32,286 truck trips

$$\text{Emission Factor } (PM_{10}) = K\ (s/12)^{a}\ (W/3)^{b}$$

K = 1.5 for PM_{10} (lbs/VMT)
s (silt content) = 8.3%
W (ave. wt) = 51.8 tons
a = 0.9
b = 0.45

$$EF\ (PM_{10}) = 1.5(8.3/12)^{0.9}\ (51.8/3)^{0.45}$$
$$= 3.89\ \text{lbs/VMT}$$

See Table 7 for total emissions.

4. Post Project – Unpaved Haul Road

PM_{10} Emission Factor = 4.61 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (80% control) = 0.92 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.2, Unpaved Roads (10-01)

Distance = 0.25 miles one way
Amount transported = 1.919 M TPY
Number of Trips = 32,000 truck trips

Emission Factor (PM_{10}) = $K\,(s/12)^a\,(W/3)^b$

K = 1.5 for PM_{10} (lbs/VMT)
s (silt content) = 8.3%
W (ave. wt) = 75.7 tons
a = 0.9
b = 0.45

EF (PM_{10}) = $1.5(8.3/12)^{0.9}\ (75.7/3)^{0.45}$
= 4.61 lbs/VMT

See Table 7 for total emissions.

5. Pre-Project – Paved Haul Road

PM_{10} Emission Factor (Uncontrolled) = 2.83 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (50% control) = 1.44 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.1, Paved Roads (10-02)

Distance = 1.0 mile one way
Amount transported = 1.31 MTPY
Number of Trips = 32,286 truck trips
Silt loading (sl) = 8.2%

Emission Factor (PM_{10}) = $K\,(sl/2)^{0.65}\,(W/3)^{1.5}$
= 2.83 lb/VMT

See Table 7 for total emissions.

6. Post Project – Paved Haul Road

PM_{10} Emission Factor (Uncontrolled) = 5.07 lbs/vehicle mile traveled (VMT)
PM_{10} Emission Factor (80% control) = 1.35 lbs/vehicle mile traveled (VMT)

Source: AP-42, Section 13.2.1, Paved Roads (10-02)

Distance = 1.2 miles one way
Amount transported = 1.919 MTPY
Number of Trips = 32,000 truck trips
Silt loading (sl) = 8.2%

Emission Factor (PM_{10}) = $K\ (sl/2)^{0.65}\ (W/3)^{1.5}$
= 5.07 lb/VMT

See Table 7 for total emissions.

Dust Control Estimates

Pre-Project

Water spray 2 times/day
15 mph speed limit
vacuum truck once per day on paved areas

Post Project

Water spray 3 to 4 times per day
15 mph
Additional paving of haul roads
Larger haul trucks therefore about same number of total trips as pre-project
vacuum truck 2 to 3 times per day on paved areas

Paved Roads
176 vehicle passes/day
V = number of vehicles between water spraying
With 3 water sprays/day, V = 174/3 = 59

Control Efficiency (%) = 96 – (0.263 * V) Water sweeping and vacuuming
Source: MDAQMD Emission Inventory Guidance for Mineral Handling and "Air Pollution Engineering Manual," Air and Waste Management Association.

= 96 – (0.263 * 59)
= 96- 15.5
= 80.5% control

Table 7
Haul Truck Road Dust
Estimated PM_{10} Emissions
Pre-Project and Post-Project Operations
(Based on Existing and Planned Hours of Operation)
Tons per Year

Source	Parameters	Pre-Project[1]	Post-Project[2]	Change
Unpaved Agri Road	0.4 miles	5.25	---	
Paved Agri Road	0.4 miles	---	1.35	-3.90
Unpaved Haul Road	0.25 miles	15.70	7.38	-8.32
Paved Haul Road	Increase from 1 to 1.2 miles	45.97	38.94	-7.03
Unpaved Access Road	1 mile	25.96	10.38	-15.58
Roads Total		**92.88**	**58.05**	**-34.83**

Source: USG, 2003: Background material and assumptions
Notes: 1 – Pre-Project road dust control measures estimated at 50% (paved and unpaved).
2 – Post-project road dust control/mitigation estimated at 80% with additional dust palliatives, watering and vacuuming of paved sections.

ONSITE ACCESS ROAD DUST

Table 8
Truck and Vehicle Data
For Access Road

Type	Number/Day	Ave. Weight (tons)	Total Weight (trips * ave. wt)
Highway Trucks (aggregate, delivery)	32	32.5	1040
Automobiles	12	3	36
Light Trucks	12	4	48
Totals	56		1124

Mean weight = 1124 tons/56 trips = 20 tons

Assumptions

- No change in numbers with pre-project and post- project conditions.
- One-way distance from site entrance to plant site is 1 mile or 2 miles for round trip.
- Access road is unpaved and graveled and is water sprayed (1 or 2 times/day as needed – pre-project; 50% control).
- For post-project with additional availability of water, assume water sprayed 3 – 4 times/day as needed; 80% control).

PM_{10} Emission Factor = 2.54 lbs/vehicle mile traveled (VMT)
Source: AP-42, Section 13.2.2, Unpaved Roads (10-01)

Emission Factor (PM_{10}) = $K\ (s/12)^a\ (W/3)^b$

K = 1.5 for PM_{10} (lbs/VMT)
s (silt content) = 8.3%
W (ave. wt) = 20 tons
a = 0.9
b = 0.45

$$EF\ (PM_{10}) = 1.5(8.3/12)^{0.9}\ (20/3)^{0.45}$$
$$= 2.54 \text{ lbs/VMT}$$

See Table 7 on previous page for total emissions.

COGENERATION SYSTEM EMISSIONS

One natural gas-fired turbine and electrical generator is proposed to be installed on-site next to the new #3 kiln at the west end of the plant. The turbine will be sized to provide power for the entire plant (maximum size of 14.4 MW) and would operate continuously. Commercial power from the IID would be reduced or eliminated. Backup commercial electrical power would still be provided by the IID. Waste heat from the turbine would be run into the #3 kiln to provide heat to dry wallboard, thus reducing the amount of natural gas needed by the kiln burners to dry board. Increased emissions from the turbine would be mostly offset by the reduction in gas usage by the kiln burners. Excess heat from the turbine will be exhausted to atmosphere.

#3 Kiln
226.5 MMBtu/hr or for 8760 hours per year, 1,984,140 MMBtu/year

14.4 MW Gas Turbine
127.4 MMBtu/hour or 1,116,000 MMBtu/year

Heat used by kiln to be replaced with waste heat from cogen
70.5 MMBtu/hour or 617,580 MMBtu/year

The cogen unit would reduce gas usage in the #3 kiln by 617,580 MMBtu/year. Thus, the cogen usage of 1,116,000 MMBtu/year minus the reduction in #3 Kiln of 617,580 MMBtu/year would increase total gas usage by approximately 500,000 MMBtu/year. The emissions from the increased amount of natural gas consumed by the cogen unit would be mostly offset by the reduction in the emissions from the kiln burner as calculated below in Table 9 due to the cleaner burning of gas in the cogen with BACT.

Emission Factors for #3 Kiln from USG permit applications and Title V Report

CO	0.064 lbs/MMBtu
NOx	0.032 lbs/MMBtu
PM_{10}	0.012 lbs/MMBtu
SOx	0.0006 lbs/MMBtu
VOC	0.005 lbs/MMBtu

Emission Factors for 14.4 MW Gas Turbine from Aspen Power Producers

CO	0.0242 lbs/MMBtu
NOx	0.02 lbs/MMBtu
PM_{10}	Negligible
SOx	Negligible
VOC	0.007 lbs/MMBtu

Table 9
Cogeneration System
Estimated Net Emissions
Based on Using Cogen to Reduce Heat Required By #3 Kiln
Tons Per Year

Source	MMBtu/Year	CO	NOx	PM10	SOx	VOC
#3 Kiln						
Emission Factors in lb/MMBtu	---	0.064	0.012	0.012	0.0006	0.005
Post-Project	1,984,140	63.89	31.45	11.9	0.60	4.96
Post-Project with Cogen	1,366,560	43.74	21.67	8.19	0.41	3.42
Net Reduction	617,580	-19.75	-9.78	-3.71	-0.19	-1.54
Cogeneration Unit						
Emission Factor in lb/MMBtu	---	0.0242	0.02	Negl	Negl	0.007
Cogenerator	1,116,024	13.50	11.16	Negl	Negl	3.91
Net Emissions		57.24	32.83	8.19	0.41	7.33
Net Change in Emissions with Cogen		-6.25	+1.38	-3.71	-0.19	+2.37

Table 10
USG Plaster City Plant Operations
Onsite Equipment Exhaust Emissions - Pre-Project Conditions

Operation		Emission Factor	Units	Equation Variables 1	Equation Variables 2	Emissions PM-10 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours					
PM-10	Forklifts (70 hp)	0.03	lbs/hr	16	8	3.8				
	Wheel loader	0.17	lbs/hr	2	8	2.7				
	Misc. trucks	0.41	lbs/hr	4	6	9.8				
	Highway vehicles	0.01	lbs/hr	11	3	0.3				
			lbs/hr			0.0				
			lbs/hr			0.0				
			lbs/hr			0.0				
ROC	Forklifts (70 hp)	0.05	lbs/hr	16	8		6.4			
	Wheel loader	0.23	lbs/hr	2	8		3.7			
	Misc. trucks	0.15	lbs/hr	4	6		3.6			
	Highway vehicles	0.01	lbs/hr	11	3		0.3			
			lbs/hr				0.0			
			lbs/hr				0.0			
			lbs/hr				0.0			
CO	Forklifts (70 hp)	0.35	lbs/hr	16	8			44.8		
	Wheel loader	0.57	lbs/hr	2	8			9.1		
	Misc. trucks	0.67	lbs/hr	4	6			16.1		
	Highway vehicles	0.20	lbs/hr	11	3			6.6		
			lbs/hr					0.0		
			lbs/hr					0.0		
			lbs/hr					0.0		
NOX	Forklifts (70 hp)	0.44	lbs/hr	16	8				56.3	
	Wheel loader	1.90	lbs/hr	2	8				30.4	
	Misc. trucks	1.70	lbs/hr	4	6				40.8	
	Highway vehicles	0.03	lbs/hr	11	3				1.0	
			lbs/hr						0.0	
			lbs/hr						0.0	
			lbs/hr						0.0	
SOX	Forklifts (70 hp)	0.14	lbs/hr	16	8					17.9
	Wheel loader	0.18	lbs/hr	2	8					2.9
	Misc. trucks	0.14	lbs/hr	4	6					3.4
	Highway vehicles	0.00	lbs/hr	11	3					0.0
			lbs/hr							0.0
			lbs/hr							0.0
			lbs/hr							0.0
					Total (lbs/day)	16.7	14.0	76.6	128.5	24.2
					Total (tons/year)	3.05	2.56	13.98	23.45	4.41

Sources: USG, 2003; URBEMIS 2001 Construction Equipment Emissions; SCAQMD CEQA Handbook

Table 11
USG Plaster City Plant Operations
Onsite Equipment Emissions - Post-Project Conditions

Operation		Emission Factor	Units	Equation Variables 1	2	Emissions PM-10 lbs/day	ROC lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours					
PM-10	Forklifts (70 hp)	0.03	lbs/hr	25	8	6.0				
	Wheel loader	0.17	lbs/hr	4	8	5.4				
	Misc. trucks	0.41	lbs/hr	4	7	11.5				
	Highway vehicles	0.01	lbs/hr	11	3	0.3				
			lbs/hr			0.0				
			lbs/hr			0.0				
			lbs/hr			0.0				
ROC	Forklifts (70 hp)	0.05	lbs/hr	25	8		10.0			
	Wheel loader	0.23	lbs/hr	4	8		7.4			
	Misc. trucks	0.15	lbs/hr	4	7		4.2			
	Highway vehicles	0.01	lbs/hr	11	3		0.3			
			lbs/hr				0.0			
			lbs/hr				0.0			
			lbs/hr				0.0			
CO	Forklifts (70 hp)	0.35	lbs/hr	25	8			70.0		
	Wheel loader	0.57	lbs/hr	4	8			18.2		
	Misc. trucks	0.67	lbs/hr	4	7			18.8		
	Highway vehicles	0.20	lbs/hr	11	3			6.6		
			lbs/hr					0.0		
			lbs/hr					0.0		
			lbs/hr					0.0		
NOX	Forklifts (70 hp)	0.44	lbs/hr	25	8				88.0	
	Wheel loader	1.90	lbs/hr	4	8				60.8	
	Misc. trucks	1.70	lbs/hr	4	7				47.6	
	Highway vehicles	0.03	lbs/hr	11	3				1.0	
			lbs/hr						0.0	
			lbs/hr						0.0	
			lbs/hr						0.0	
SOX	Forklifts (70 hp)	0.14	lbs/hr	25	8					28.0
	Wheel loader	0.18	lbs/hr	4	8					5.8
	Misc. trucks	0.14	lbs/hr	4	7					3.9
	Highway vehicles	0.00	lbs/hr	11	3					0.0
			lbs/hr							0.0
			lbs/hr							0.0
			lbs/hr							0.0
					Total (lbs/day)	23.3	21.9	113.6	197.4	37.7
					Total (tons/year)	4.24	3.99	20.73	36.02	6.88

Sources: USG, 2003; URBEMIS 2001 Construction Equipment Emissions; SCAQMD CEQA Handbook

Table 12
USG Plaster City Quarry and Plant Water Pipeline Construction
Construction Equipment Emissions

Operation		Emission Factor	Units	Equation Variables 1	Equation Variables 2	Emissions PM-10 lbs/day	Emissions ROC lbs/day	Emissions CO lbs/day	Emissions NOX lbs/day	Emissions SOX lbs/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours					
PM-10	Bulldozer	0.11	lbs/hr	1	8	0.9				
	Backhoes	0.17	lbs/hr	2	8	2.7				
	Water Truck	0.41	lbs/hr	1	2	0.8				
	Grader	0.06	lbs/hr	1	4	0.2				
	Trucks	0.41	lbs/hr	2	4	3.3				
	Excavator/trencher	0.11	lbs/hr	1	8	0.9				
			lbs/hr			0.0				
ROC	Bulldozer	0.12	lbs/hr	1	8		1.0			
	Backhoes	0.23	lbs/hr	2	8		3.7			
	Water Truck	0.15	lbs/hr	1	2		0.3			
	Graders	0.04	lbs/hr	1	4		0.2			
	Trucks	0.15	lbs/hr	2	8		2.4			
	Excavator/trencher	0.12	lbs/hr	1	8		1.0			
			lbs/hr				0.0			
CO	Bulldozer	0.35	lbs/hr	1	8			2.8		
	Backhoes	0.57	lbs/hr	2	8			9.1		
	Water Truck	0.67	lbs/hr	1	2			1.3		
	Graders	0.15	lbs/hr	1	4			0.6		
	Trucks	0.67	lbs/hr	2	4			5.4		
	Excavator/trencher	0.35	lbs/hr	1	8			2.8		
			lbs/hr					0.0		
NOX	Bulldozer	1.26	lbs/hr	1	8				10.1	
	Backhoes	1.90	lbs/hr	2	8				30.4	
	Water Truck	1.70	lbs/hr	1	2				3.4	
	Graders	0.71	lbs/hr	1	4				2.9	
	Trucks	1.70	lbs/hr	2	4				13.6	
	Excavator/trencher	1.26	lbs/hr	1	8				10.1	
			lbs/hr						0.0	
SOX	Bulldozers	0.14	lbs/hr	1	8					1.1
	Backhoes	0.18	lbs/hr	2	8					2.9
	Water Truck	0.14	lbs/hr	1	2					0.3
	Graders	0.09	lbs/hr	1	4					0.3
	Trucks	0.14	lbs/hr	2	4					1.1
	Excavator/trencher	0.14	lbs/hr	1	8					1.1
			lbs/hr							0.0
					Total	8.8	8.5	22.0	70.4	6.9

Sources: USG, 2003; URBEMIS 2001 Construction Equipment Emissions; SCAQMD CEQA Handbook

Appendix D4 Air Quality Modeling Analysis

AIR QUALITY MODELING ANALYSIS
US GYPSUM COMPANY - SOUTHWEST PLANT

PLASTER CITY, IMPERIAL COUNTY, CALIFORNIA

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September 2, 1999

Project 991401.0053

USG

Trinity Consultants

1. PROJECT IDENTIFICATION INFORMATION

US Gypsum Company (USG) has submitted an Authority to Construct application to the Imperial County Air Pollution Control District (ICAPCD) for the installation and operation of a new plaster board line at its existing Southwest Plant, located in the town of Plaster City, California. As part of this Authority to Construct application, an air dispersion modeling analysis is required to demonstrate that emissions from the proposed sources will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or California Ambient Air Quality Standards (CAAQS). This report summarizes the methodology and results of the air quality dispersion modeling analysis performed for the Authority to Construct application.

All analyses presented in this report conform to current United States Environmental Protection Agency (U.S. EPA) and ICAPCD modeling guidelines.[1]

1.1 FACILITY LOCATION

The Southwest Plant is located in the town of Plaster City on County Highway S80. Plaster City is situated in Imperial County, approximately 12 miles north of the California-Mexico border and approximately 20 miles west of El Centro. The Southwest Plant property is divided by Highway S80 into two parts: the southern portion of the property contains most of the manufacturing facility and buildings while the northern portion contains the main office, covered rock storage, and five rock storage silos. Public access to the southern portion of the property is blocked by a fence. No such barrier exists for the northern portion of the property.

Sections 3 and 4 of this document contain a facility plot plan showing the locations of the existing line #2 sources that will be removed and the proposed sources. An area map consisting of the Southwest Plant fenceline boundary overlaid onto a detailed map of the area. The area map shows terrain contours and the facility property relative to predominant geographical features such as highways, roads, and streams, as well as significant landmarks such as buildings and water towers.

1.2 UTM COORDINATE SYSTEM

In all modeling analysis input and output data files, the location of emission sources, structures, and receptors are represented in the Universal Transverse Mercator (UTM) coordinate system. The U.S. EPA requires that coordinates for permits and air dispersion modeling analyses be represented in the UTM system. The UTM grid was originally created by the Defense Mapping Agency of the United States as a special grid for military use throughout the world.[2] In this grid, the world is divided into 60 north-south zones, each covering a strip 6° wide in longitude. The Plaster City area of South Central California is located in UTM Zone 11. In each UTM Zone, coordinates are measured north and east in

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[1] Appendix W, Code of Federal Regulations, Title 40—Protection of Environment, Part 51, July 1, 1997.

[2] U.S. Department of the Interior and the U.S. Geological Survey Earth Science Information Center (ESIC), The Universal Transverse Mercator (UTM) Grid Factsheet, May 1993.

meters. The northing values are measured continuously from zero at the Equator, in a northerly direction. A central meridian through the middle of each 6° zone is assigned an easting value of 500,000 meters. Grid values to the east of this central meridian, as in the case of the Southwest Plant, are greater than 500,000. The center of the Southwest Plant is located near UTM coordinates 607.240 kilometers (km) East and 3,628.440 km North.

All emission point, building, and fenceline locations digitized from USG plot plans are converted to equivalent UTM coordinates.

2.1 PROCESS DESCRIPTION

The equipment being installed at the Southwest Plant is used to manufacture gypsum wallboard and other gypsum products. The equipment being installed for this manufacturing process can be found in Table 3-1.

In order to produce gypsum wallboard, gypsum ($CaSO_4 \cdot 2H_2O$), a white or gray naturally-occurring mineral, is partially dehydrated or calcined to produce calcium sulfate hemihydrate ($CaSO_4 \cdot 0.5H_2O$) (commonly referred to as stucco). This material is then converted to wallboard by crushing and stockpiling gypsum ore. The stockpiled ore is further crushed and screened to about 50 millimeters (2 inches) in diameter as needed. The mined ore is then dried in a heated roller mill and conveyed to a second roller mill, where it is ground such that 90% of it is less 149 micrometers (μm). This material is then fed to kettle calciners, where it is heated to remove 75% of the chemically-bound water to form stucco. In kettle calciners, the gypsum is indirectly heated by hot combustion gas passing through flues in the kettle, and the stucco product is discharged into a "hot pit" located below the kettle.

The stucco product is first mixed with dry additives and then mixed with water, soap foam, accelerators and shredded paper, or pulpwood in a pin mixer at the head of the board forming line. The slurry is then spread between two paper sheets that serve as a mold (the edges of the paper are board). As the wet board travels the length of the conveying line, the calcium sulfate hemihydrate combines with the water in the slurry to form solid calcium sulfate dihydrate, or gypsum, resulting in a rigid board. The board is rough-cut to length, and it enters a multideck kiln dryer, where it is dried by direct contact with hot combustion gases. The dried board is conveyed to the board end sawing area, where it is trimmed and bundled for shipment.

2.2 TYPE OF PERMIT REVIEW

Imperial County, in which the Southwest Plant is located, has been designated by the U.S. EPA as moderate nonattainment for particulate matter of 10 microns in size or less (PM_{10}) and transitional nonattainment for ozone.[3] Imperial County has been categorized as in attainment or unclassifiable for all other criteria pollutants. The Southwest Plant is a gypsum processing facility, which is not one of the 28 named Prevention of Significant Deterioration (PSD) stationary source categories with 100 ton per year (tpy) major source thresholds. Since facility-wide emissions of each criteria pollutant are less than 250 tpy, the Southwest Plant is considered to be a minor source with respect to the federal PSD program.

3 Code of Federal Regulations, Title 40-Protection of the Environment, Parts 81-85, §81.305, July 1, 1998.

2.3 POLLUTANTS EVALUATED

Emissions associated with the gypsum manufacturing process include PM_{10}, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and volatile organic compounds (VOC). The pollutants that are significantly increasing as a result of the proposed modification are NO_2 and CO; thus, this modeling analysis is conducted to demonstrate that the corresponding impacts of these pollutants will not exceed applicable modeling levels (e.g. CAAQS and NAAQS).

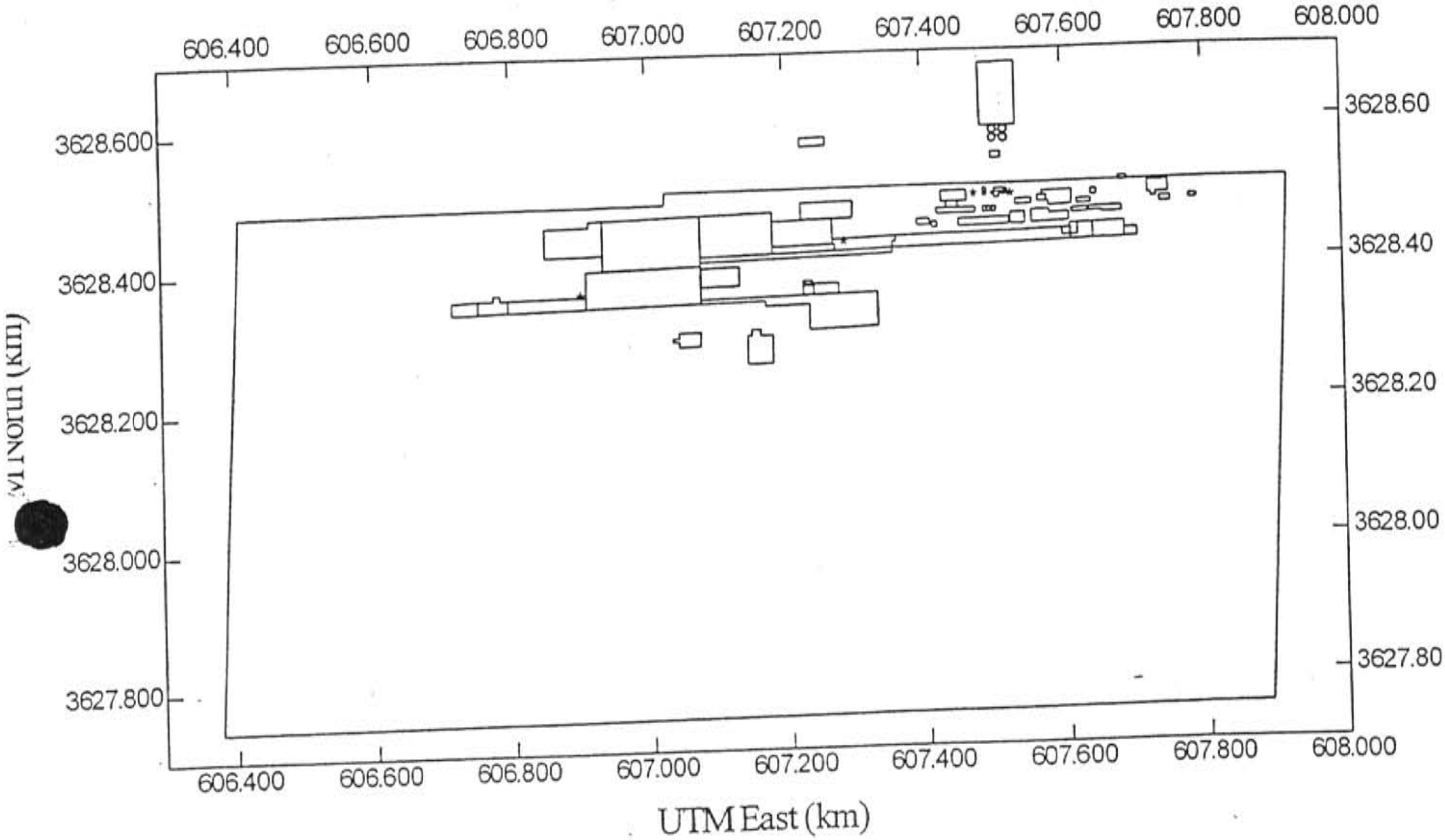
The maximum modeled off-property, ground-level concentrations of post-modification, plant-wide emissions of NO_2 and CO are compared to the corresponding CAAQS and NAAQS levels for each pollutant and averaging period.

A plot plan of the Southwest Plant and associated fenceline is shown in Figure 3-1. Figures 3-2A-C displays close-up views of the main manufacturing buildings. The sources depicted in Figures 3-2A-C are described below in Table 3-1. Please note that only those sources at the facility that emit the pollutants being modeled in this analysis (NO_2 and CO) are highlighted in the plots and tables.

TABLE 3-1. LINE #2 AND PROPOSED SOURCES AT THE SOUTHWEST PLANT.

Source Status	ID	Description
Existing (will be removed)	K	Line #2 Gypsum Board Drying Kiln
Proposed	LP_AIR	L.P. Air Heater
Proposed	CP_AIR	C.P. Air Heater
Proposed	N29	Kiln Exhaust

FIGURE 3-1. SOUTHWEST PLANT PLOT PLAN.



★- Indicates source location

FIGURE 3-2A. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.

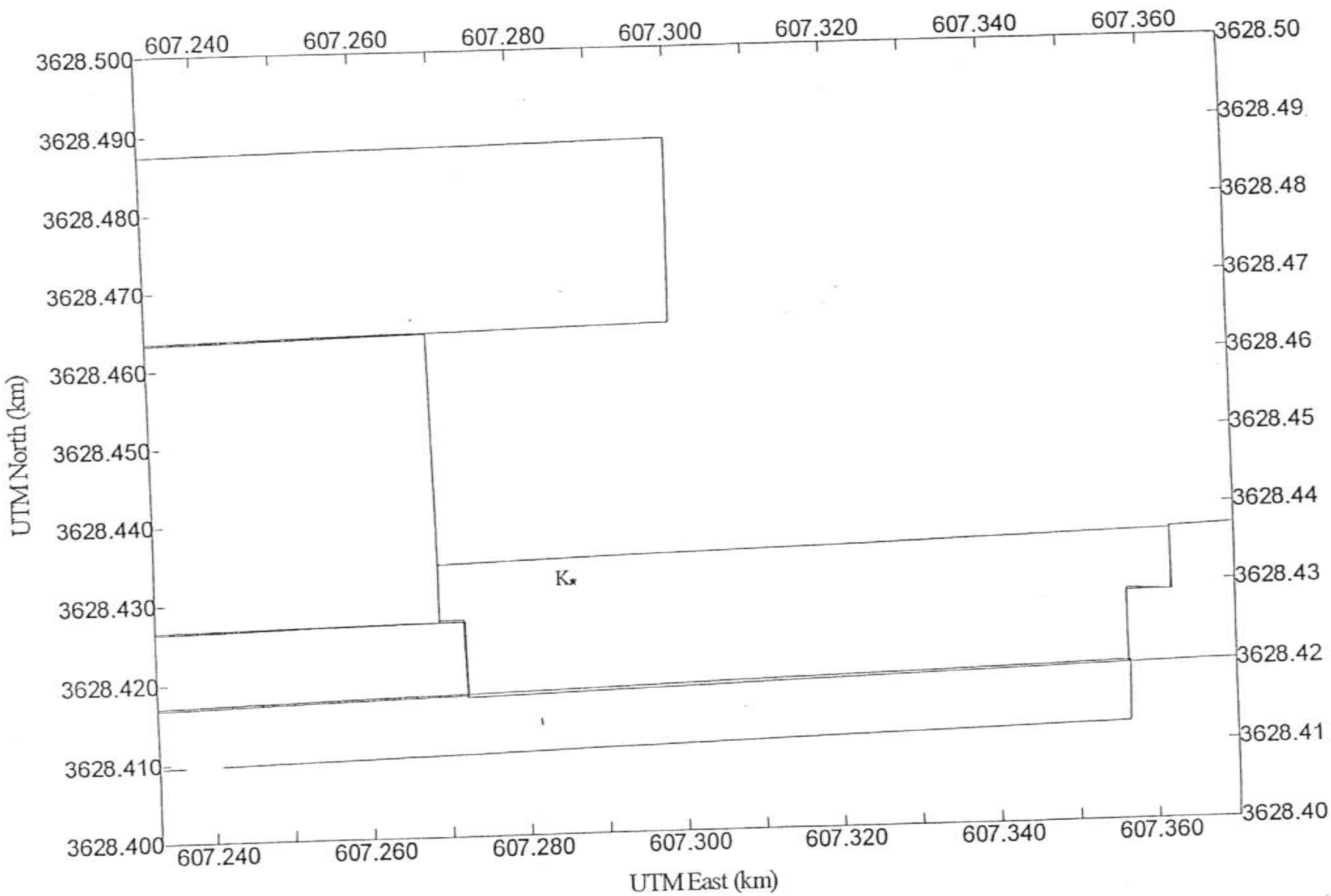


FIGURE 3-2B. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.

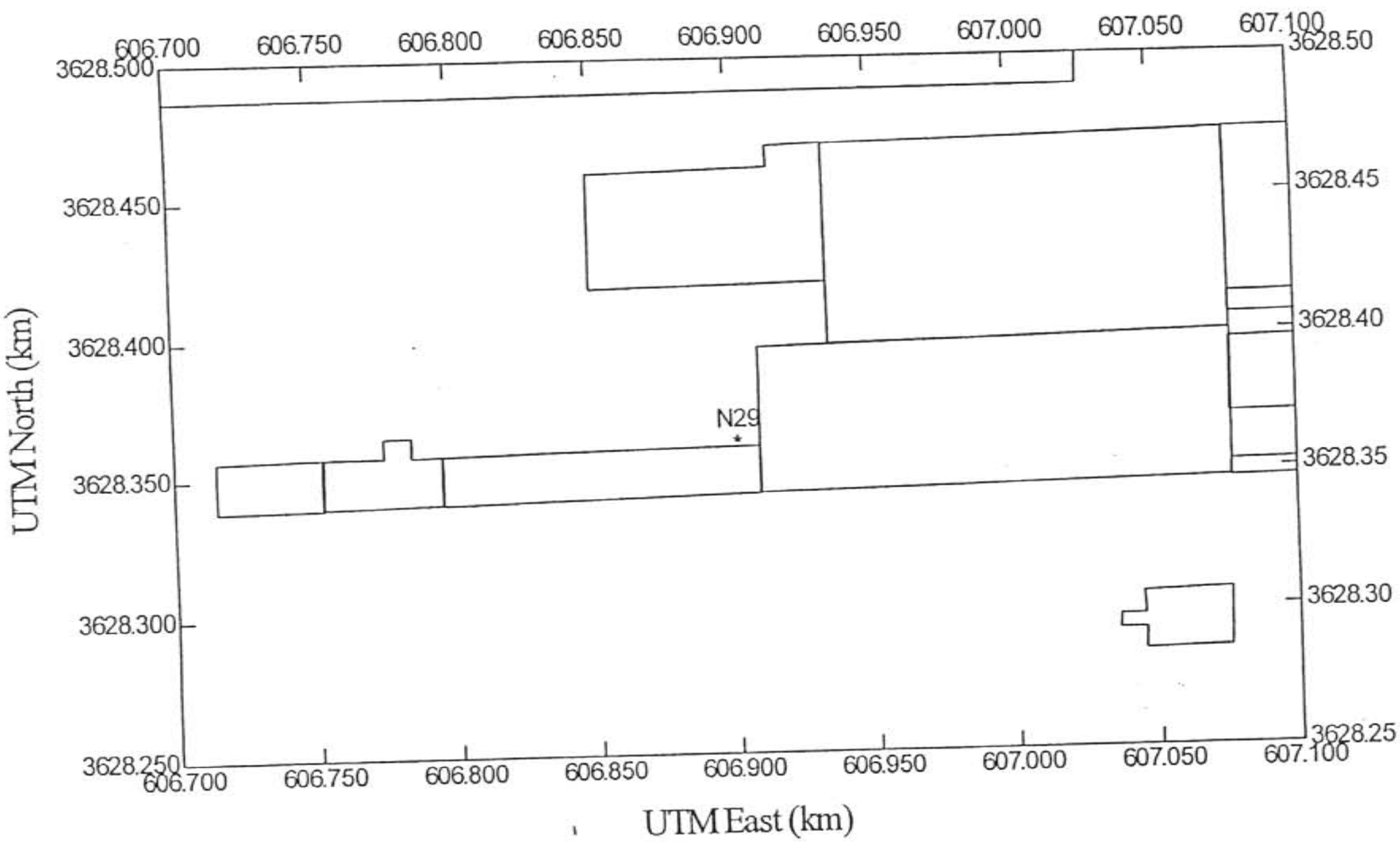


FIGURE 3-2C. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.

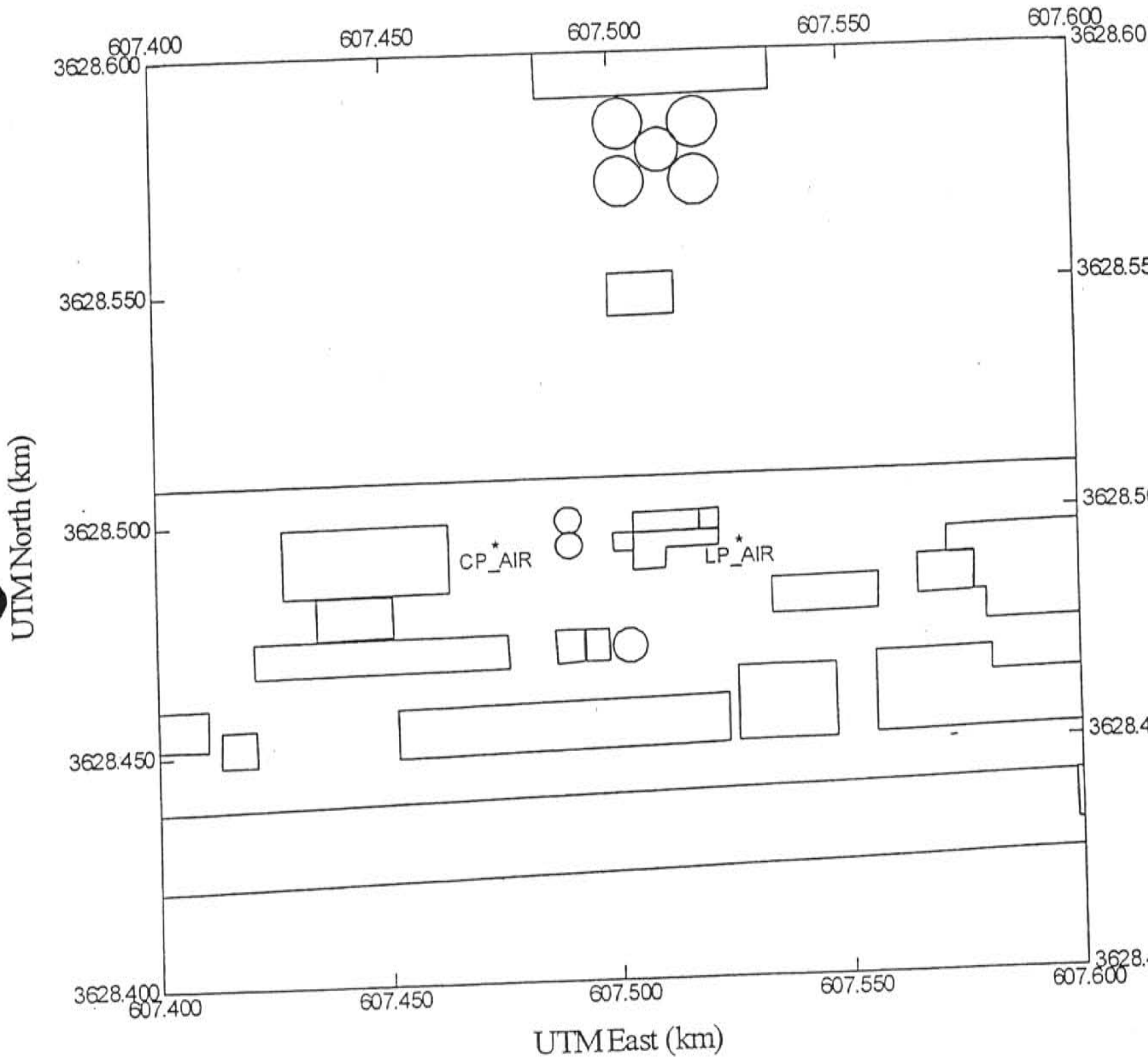
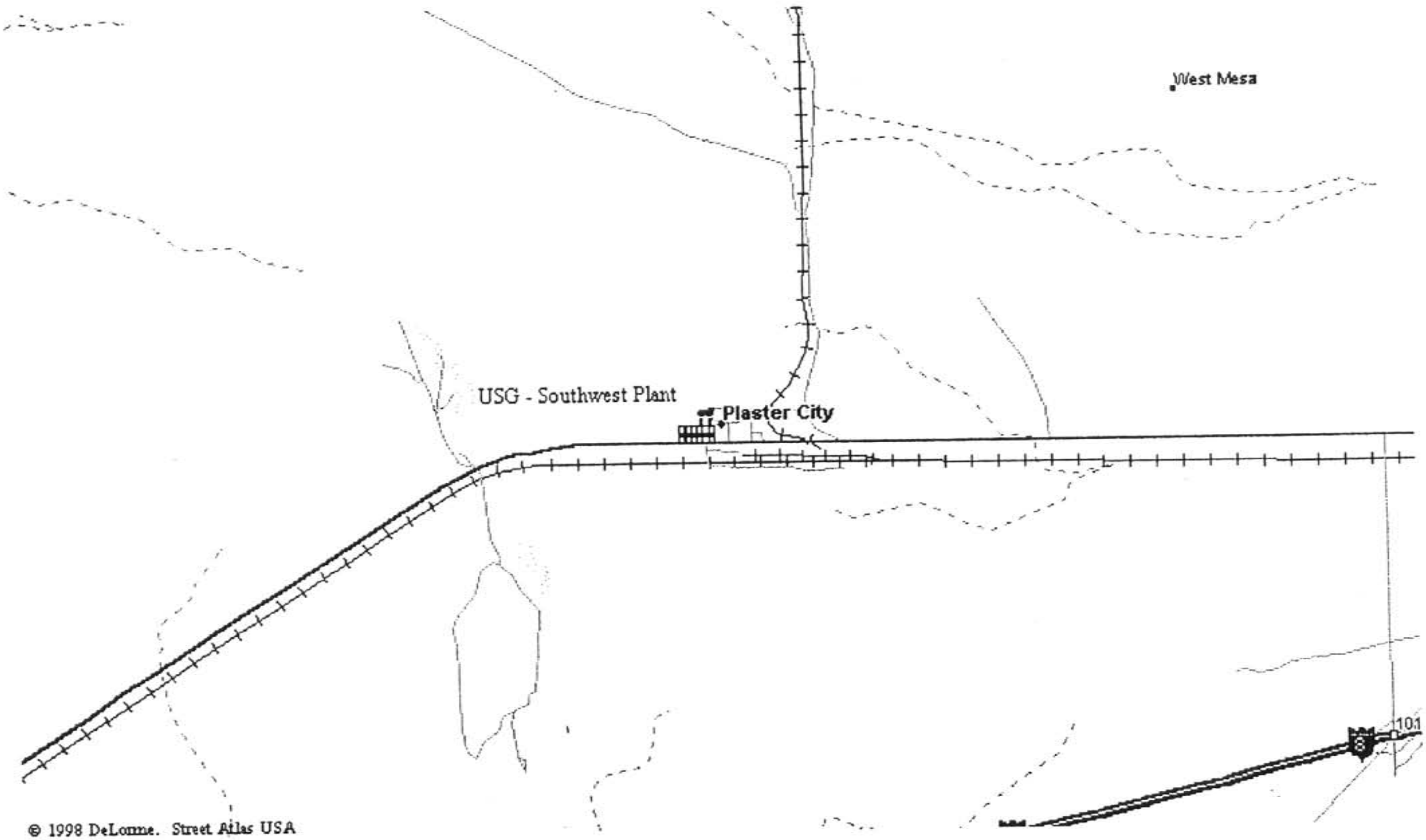


FIGURE 4-1. SOUTHWEST PLANT AREA MAP.



5. EMISSION SOURCE PARAMETERS

5.1 PROPOSED SOURCES

This section provides a brief discussion of stack parameters and emission rates for the proposed sources at the Southwest Plant.

Table 5-1 summarizes the stack parameters for the proposed sources in English units. Emission rates for the proposed sources are included in Table 5-3 at the end of this section. Descriptions of the proposed sources can be found in Table 3-1.

TABLE 5-1. STACK PARAMETERS FOR PROPOSED SOUTHWEST PLANT SOURCES.

Source ID	UTM East (km)	UTM North (km)	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)
LP_AIR	607.527	3628.494	25.0	0.67	178.4	200
CP_AIR	607.474	3628.495	90.0	6.00	30.4	322
N29	606.901	3628.363	17.0	8.52	50.0	203

5.2 Removal of Existing Line #2 Sources

As stated in Section 2.3, USG is modeling post-modification emissions of the criteria pollutants CO and NO_2 to assess compliance with the CAAQS and NAAQS. There are four existing line #2 sources at the Southwest Plant that will be removed once the proposed line is installed. These sources are the #2 End Saw (31), the #2 Kerf (32), the #2 Glip Saw (33), and the #2 Board Drying Kiln (K). Source K is the only line #2 source that emits one or more of the pollutants modeled in this analysis. Table 5-2 summarizes the stack parameters for this additional source in English units. Emission rates for the additional modeled source are included in Table 5-3 at the end of this section. A description of this existing line #2 source can be found in Table 3-1.

Table 5-2. Stack Parameters for Existing Line #2 Southwest Plant Source.

Source ID	UTM East (km)	UTM North (km)	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)
K	607.286	3628.432	26	5.42	27.7	203.5

TABLE 5-3. SUMMARY OF EMISSION RATES MODELED.

Stack #	NO_X Emission Rate tpy	lb/hr	g/sec	CO Emission Rate tpy	lb/hr	g/sec
LP_AIR	0.160	0.037	0.0046026	0.370	0.084	0.0106436
CP_AIR	18.830	4.299	0.5416730	7.530	1.719	0.2166117
N29	36.450	8.322	1.0485385	85.976	19.629	2.4732277
K	-27.010	-6.167	-0.7769829	-48.730	-11.126	-1.4017910
Totals	**28.430**	**6.491**	**0.818**	**45.146**	**10.307**	**1.299**

6. MODELING METHODOLOGY

This section discusses the modeling methodology that is used to demonstrate compliance with the applicable standards. The techniques used in the air dispersion modeling analysis are consistent with current U.S. EPA and ICAPCD modeling procedures.[4]

6.1 IMPACT ANALYSIS

An impact analysis is conducted for NO_2 and CO in order to determine whether the impacts associated with the post-modification Southwest Plant emissions comply with applicable NAAQS and CAAQS. In the impact analysis, the maximum off-property, ground-level concentrations of NO_2 and CO are calculated for comparison to the corresponding NAAQS and CAAQS levels.

6.2 DISPERSION MODEL SELECTION

Two levels of air quality dispersion model sophistication exist: screening and refined dispersion modeling. Screening models may be used to eliminate more extensive modeling; however, the results must demonstrate to the satisfaction of the permitting agency that all applicable air quality analysis requirements are adhered to. Screening models produce conservative estimates of ambient impacts in order to reasonably ensure that maximum ambient concentrations will not be underestimated. If the resulting estimates from a screening model indicate a violation of or a threat to the applicable standards, the applicant must use a refined model and/or refined emissions assumptions to re-estimate ambient concentrations. A refined dispersion model provides more accurate estimates of a source's impact and consequently requires more detailed and precise input data than does a screening model.

Based on the likelihood that a screening model would result in unacceptable impacts, a refined dispersion model is used in the air dispersion modeling analysis in support of the Authority to Construct application.

6.2.1 INDUSTRIAL SOURCE COMPLEX MODEL

The latest version (dated 99155) of the Industrial Source Complex Short Term Version 3 (ISCST3) model is used to estimate maximum off-property, ground-level concentrations due to emissions from the sources at the Southwest Plant. ISCST3 is the U.S. EPA's latest release of the Industrial Source Complex model. This model is used extensively in regulatory driven air quality modeling studies and is the workhorse of U.S. EPA regulatory models. Version 3 was first made available to the public in final form in early August 1995.

In this analysis, modeling with ISCST3 is performed using the regulatory default option, which includes stack heights adjusted for stack-tip downwash, buoyancy-induced dispersion, and final plume rise. Ground-level concentrations occurring during "calm" wind conditions are calculated by the model using the calm processing feature. Regulatory default values for

[4] Appendix W, Code of Federal Regulations, Title 40–Protection of Environment, Part 51, July 1, 1998.

wind profile exponents and vertical potential temperature gradients are used since no representative on-site meteorological data are available. As per U.S. EPA requirements, direction-specific building dimensions are used for both the Schulman-Scire and the Huber-Snyder downwash algorithms.

7. LAND-USE ANALYSIS

An analysis must be performed to determine if the area surrounding the Southwest Plant should be classified as urban or rural for air dispersion modeling purposes. The vast majority (> 90%) of the land surrounding the Southwest Plant is desert shrubland (rural) and cannot be classified as residential, commercial, or industrial. Since the majority of the area around the Southwest Plant is considered to be rural, rural dispersion coefficients are utilized in the modeling analysis.

The town of Plaster City is situated on a relatively flat plain approximately 20 miles west of the El Centro. As a general rule, terrain elevations slowly increase from east to west across the area. As shown on the 7.5 minute USGS map for Plaster City Quadrangle, the base elevation in the vicinity of the Southwest Plant is approximately 97 feet above mean sea level. Terrain elevations are all below the minimum facility stack heights within one mile of the facility; therefore, all sources, buildings, and receptors are modeled as flat terrain.

The emissions units at the Southwest Plant have been evaluated in terms of their proximity to nearby structures. The purpose of this evaluation is to determine if stack discharges might become caught in the turbulent wakes of these structures. Wind blowing around a building creates zones of turbulence that are greater than if the building were absent. The current version of the ISCST3 dispersion model provides for a revised treatment of building wake effects which, for certain emissions units, uses wind direction-specific building dimensions following the algorithms developed by Schulman and Hanna.[5] The minimum stack height not subject to the effects of downwash is defined by the formula:[6]

$$G = H + 1.5L$$

Where: G = Minimum Good Engineering Practice (GEP) stack height
H = Height of the structure
L = Lesser dimension (height or projected width of structure)

This equation is limited to stacks located within 5L of the structure. Stacks located at distances greater than 5L are not subject to the wake effects of the structure. If there is more than one stack at a given facility, the above equation must be successively applied to each stack. If more than one structure is involved, the equations must also be successively applied to each structure.

Direction-specific building dimensions and the dominant downwash structure parameters used as input to the dispersion models were determined using the *BREEZE-WAKE/BPIP* software, developed by Trinity Consultants, Inc. This software incorporates the algorithms of the U.S. EPA sanctioned Building Profile Input Program (BPIP), version 95086.[7] BPIP is designed to incorporate the concepts and procedures expressed in the GEP Technical Support document, the Building Downwash Guidance document, and other related documents.

The output from the BPIP downwash analysis lists the names and dimensions of the structures, and the emissions unit locations and heights. In addition, the output contains a summary of the dominant structure for each emissions unit (considering all wind directions) and the actual building height and projected widths for all wind directions. This information is then incorporated into the data files for the ISCST3 model. Table 9-1 summarizes the names and heights of the structures that are included in the downwash analysis. Figure 9-1 shows a close-up of the buildings at the plant and the corresponding building numbers for reference. Appendix A includes a hardcopy of the downwash output file.

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5 L.L. Schulman, S.R. Hanna, Evaluation of Downwash Modifications to the Industrial Source Complex Model, *JAPCA* 36:258-264, 1986.

6 U.S. EPA, Office of Air Quality Planning and Standards, *Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, Research Triangle Park, North Carolina, EPA 450/4-80-023R, June, 1985.

7 United States Environmental Protection Agency, *User's Guide to the Building Profile Input Program*, Research Triangle Park, NC, EPA-454/R-93-038.

TABLE 9-1. SUMMARY OF BUILDINGS INCLUDED IN DOWNWASH ANALYSIS.

Building Number	Building/Tier Name	Height (ft)	Building Number	Building/Tier Name	Height (ft)
N1	Waste Building - Tier #1	26.5	18	Calciner Feed - Tier #1	29.5
N2	Waste Building - Tier #2	32.5	19	Calciner Feed - Tier #2	48.0
N3	Kiln Building	51.5	20	Existing Warehouse #2	14.0
N4	Warehouse - Tier #1	34.0	21	Storeroom	14.0
N5	Warehouse - Tier #2	34.0	22	Crusher Building - Tier #1	10.0
N6	Truck Tarping	32.0	23	Crusher Building - Tier #2	46.0
N7	Train Canopy	32.0	24	Crusher Building - Tier #3	57.0
N8	Paper Storage	25.0	25	Crusher Building - Tier #4	37.0
N9	Waste Reclaim	25.0	26	Mill Office	12.5
N10	High Mill - Tier #1	82.0	27	Packing House	46.0
N11	High Mill - Tier #2	56.0	28	East Mill - Tier #1	11.0
N12	High Mill - Tier #3	82.0	29	East Mill - Tier #2	51.0
N13	Covered Rock Storage	82.0	30	Storage Building #1	13.0
N14	Substation	12.0	31	Storage Building #2	10.0
1	Existing Warehouse - Tier #1	35.1	32	Storage Building #3	13.0
2	# 1 Line Building	34.1	33	Main Shop	28.0
3	Existing Warehouse - Tier #2	29.0	34	Plant Engineering	12.0
4	Existing Warehouse - Tier #3	32.0	35	Electric Shop	16.0
5	Center Beam Loading	31.0	36	MMD Crusher	13.0
6	Existing Warehouse - Tier #4	16.4	37	Tube Mill	47.0
7	Board Plant - Tier #1	12.3	38	#6 Kettle Building	70.0
8	Board Plant - Tier #2	23.0	T1	Tank - Green Giant	80.0
9	Board Plant - Tier #3	62.5	T2	Tank - Calciner Feed Tank	50.0
10	Board Plant - Tier #4	23.4	S1	Crusher Silo #1	50.0
11	Board Plant - Tier #5	41.3	S2	Crusher Silo #2	50.0
12	Board Plant - Tier #6	24.0	S3	Rock Storage Silo #1	40.0
13	Main Office	10.0	S4	Rock Storage Silo #2	40.0
14	Quality Building	15.0	S5	Rock Storage Silo #3	40.0
15	Control Building	15.0	S6	Rock Storage Silo #4	40.0
16	Raymond Mills - Tier #1	50.0	S7	Rock Storage Silo #5	40.0
17	Raymond Mills - Tier #2	80.0			

FIGURE 9-1A. LOCATION OF BUILDINGS AT THE SOUTHWEST PLANT.

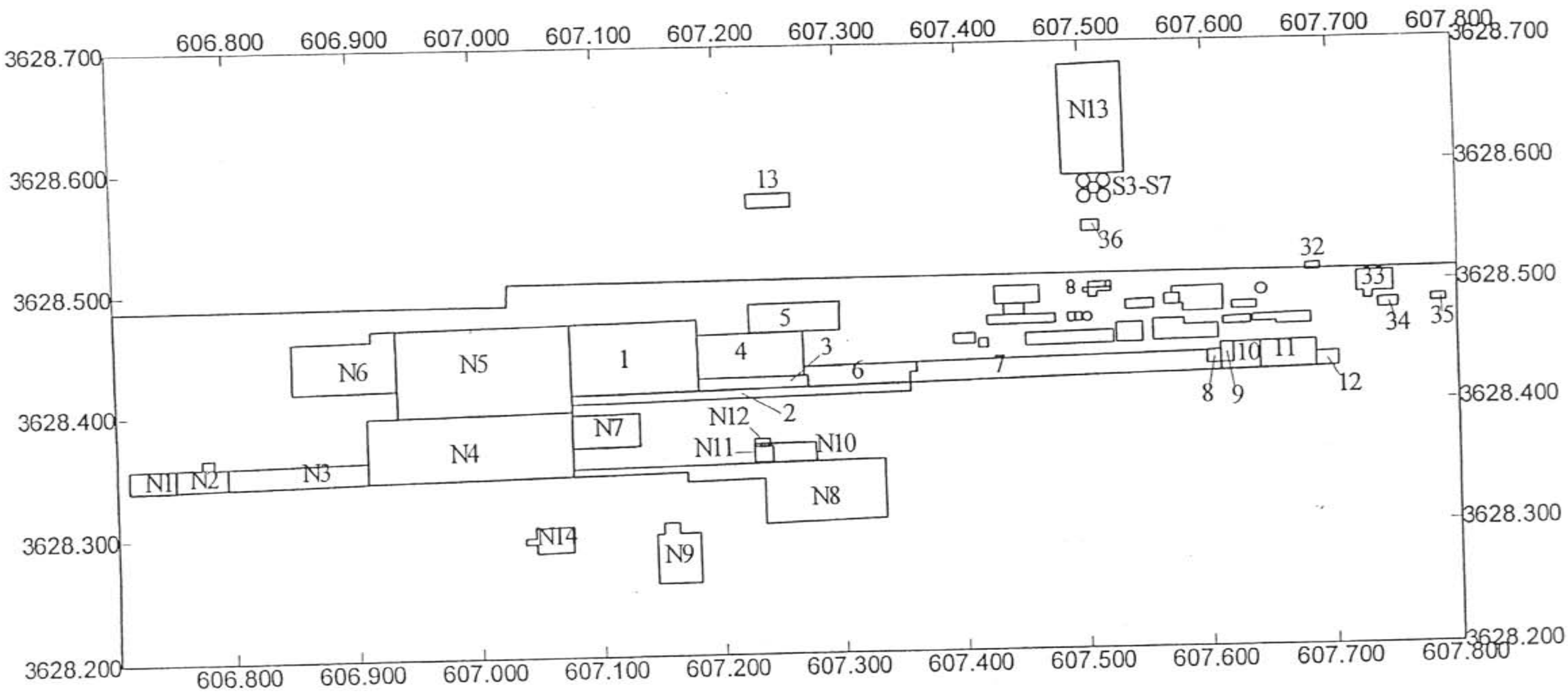
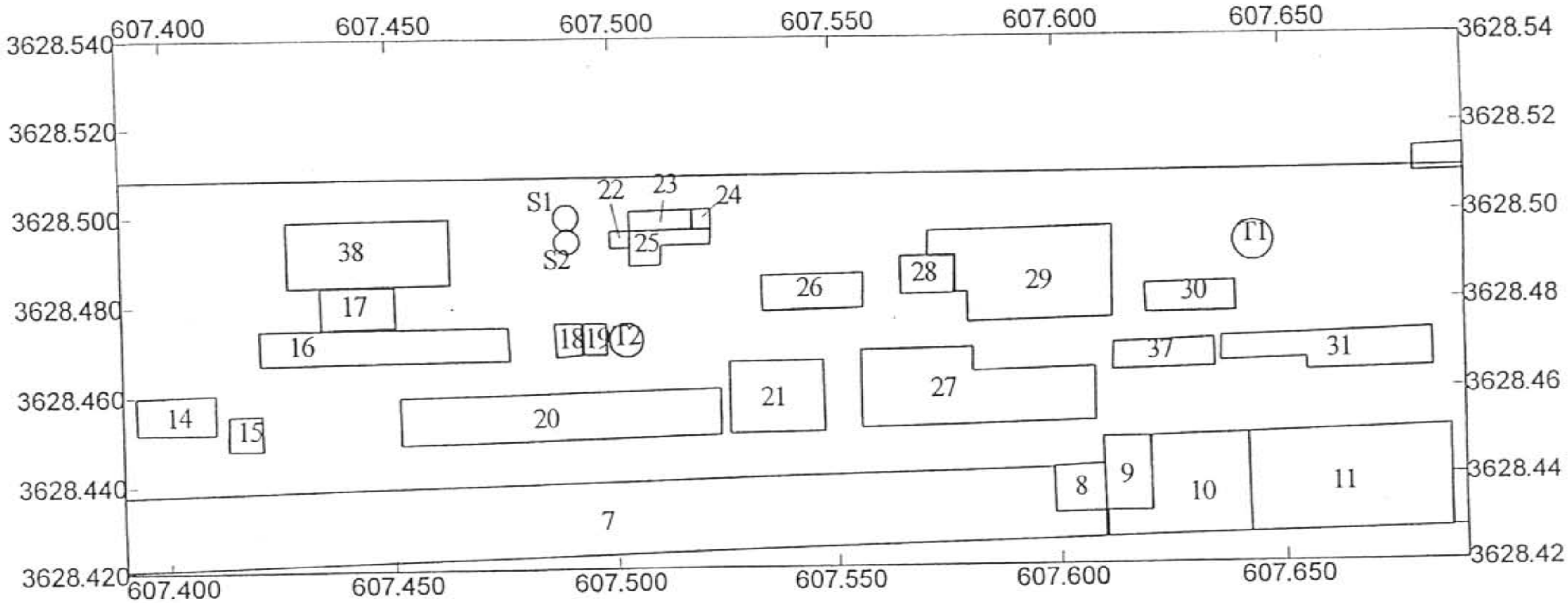


FIGURE 9-1B. LOCATION OF BUILDINGS AT THE SOUTHWEST PLANT (CONTINUED).



In the air dispersion modeling analysis, ground-level concentrations are calculated within four Cartesian receptor grids. These four grids cover a region extending 10 km from all edges of the Southwest Plant fenceline. Initially, a "coarse grid" that contains 1-km spaced receptors extending 10 km from the fenceline is employed to isolate a localized area of maximum concentrations. Since maximum concentrations are found to be on or very near the facility fenceline, the remaining grids are defined as follows: 1) a "fenceline" grid containing 100-meter spaced receptors extending along the fenceline of the facility, 2) a "fine grid" containing 100-meter spaced receptors extending 1.0 km from the fenceline exclusive of receptors on the fenceline grid and receptors within the fenceline, and 3) a "medium" grid containing 500 meter spaced receptors extending 5 km from the fenceline. Figures 10-1 through 10-4 show the receptor locations for the fenceline, fine, medium, and coarse Cartesian receptor grids, respectively.

FIGURE 10-1. RECEPTOR LOCATIONS FOR THE FENCELINE GRID.

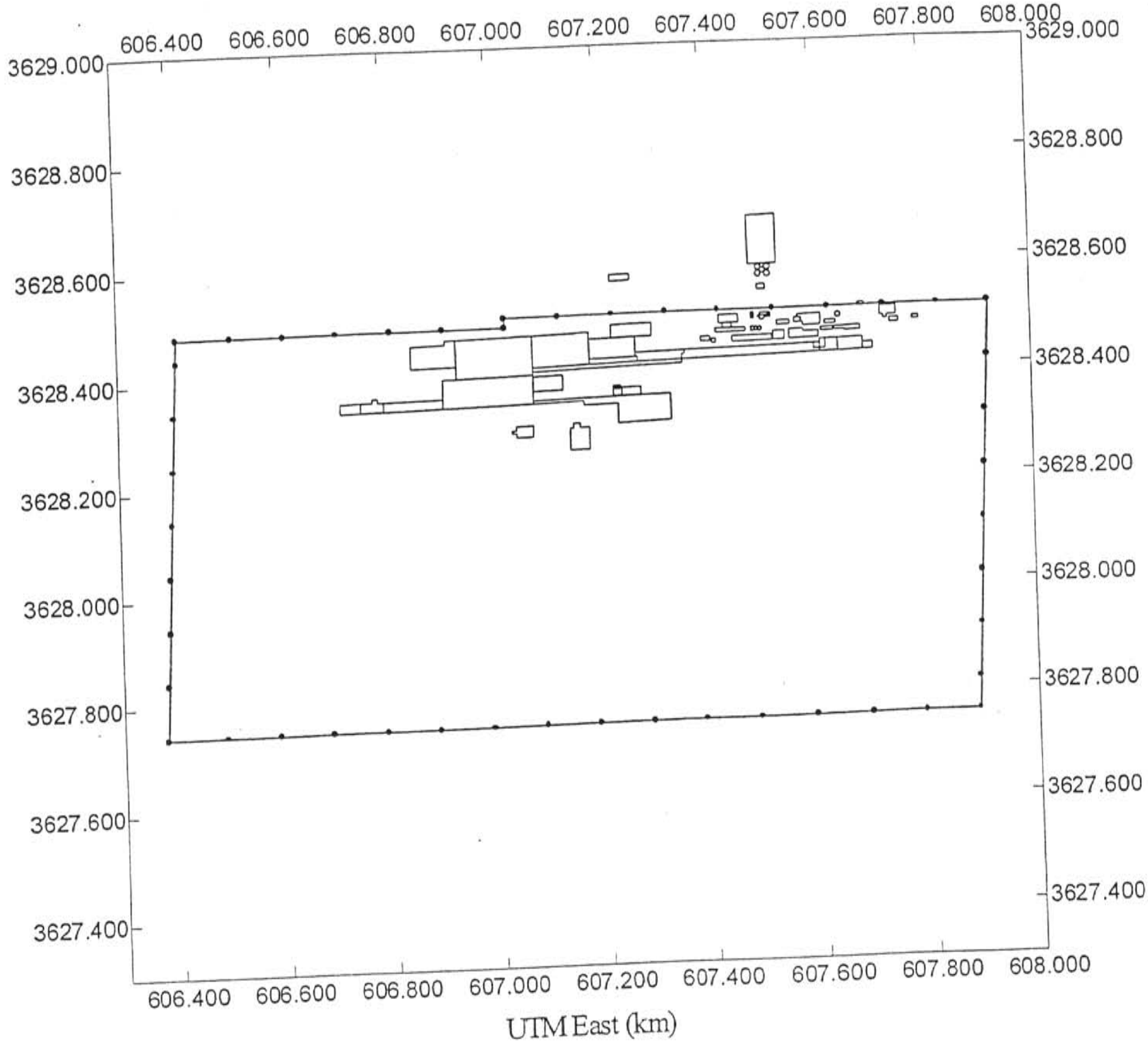


FIGURE 10-2. RECEPTOR LOCATIONS FOR THE FINE GRID.

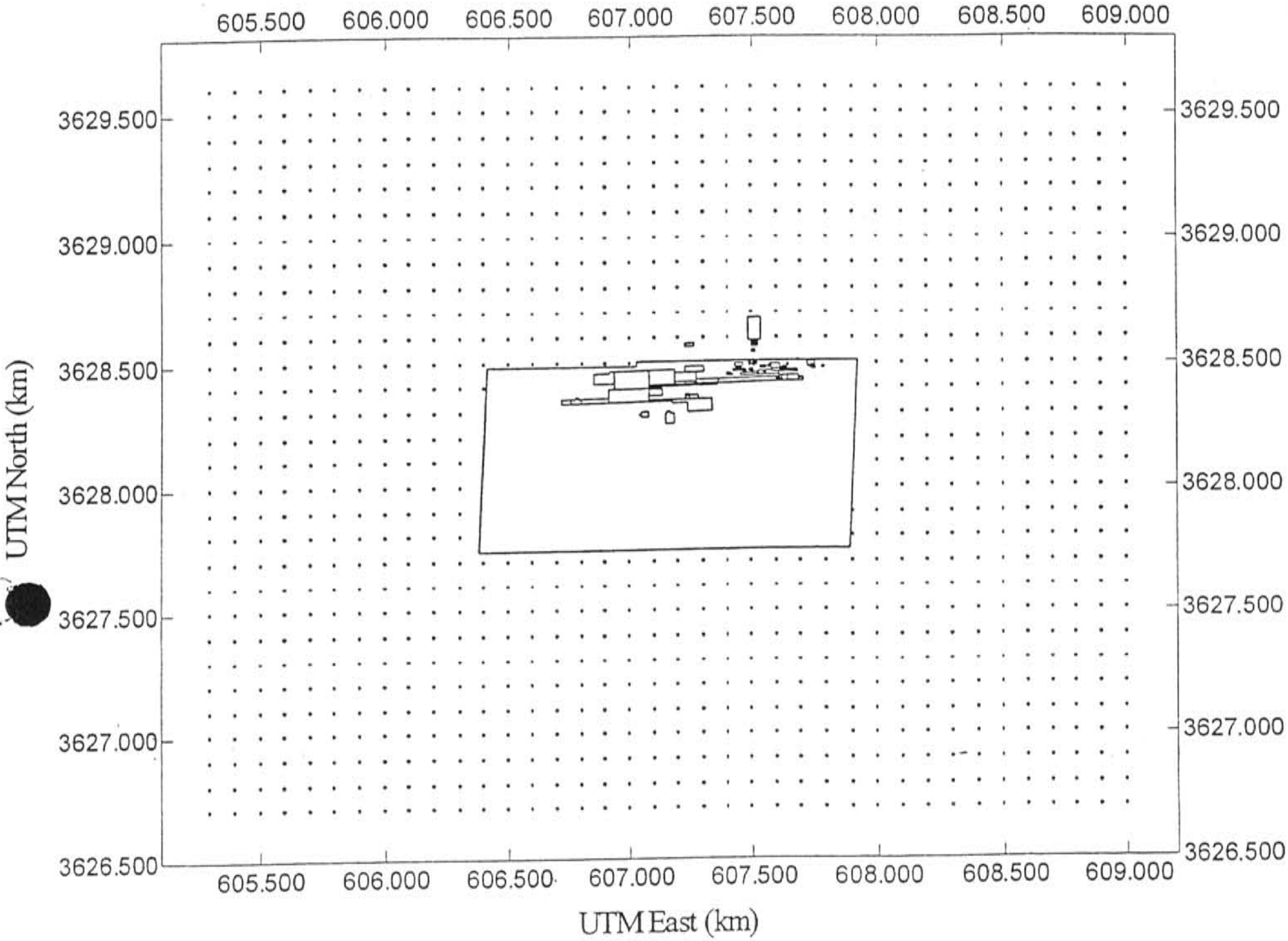


FIGURE 10-3. RECEPTOR LOCATIONS FOR THE MEDIUM GRID.

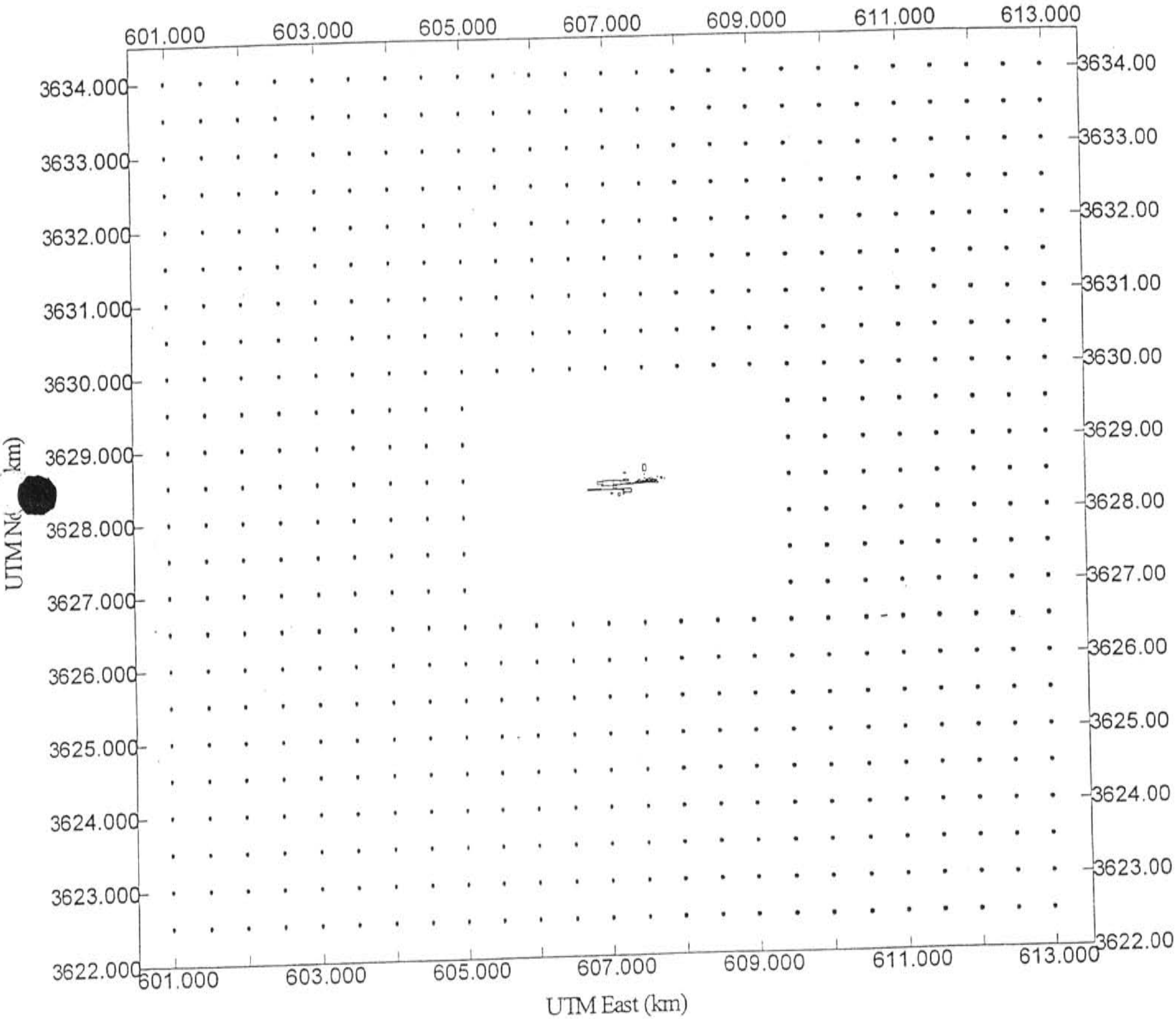
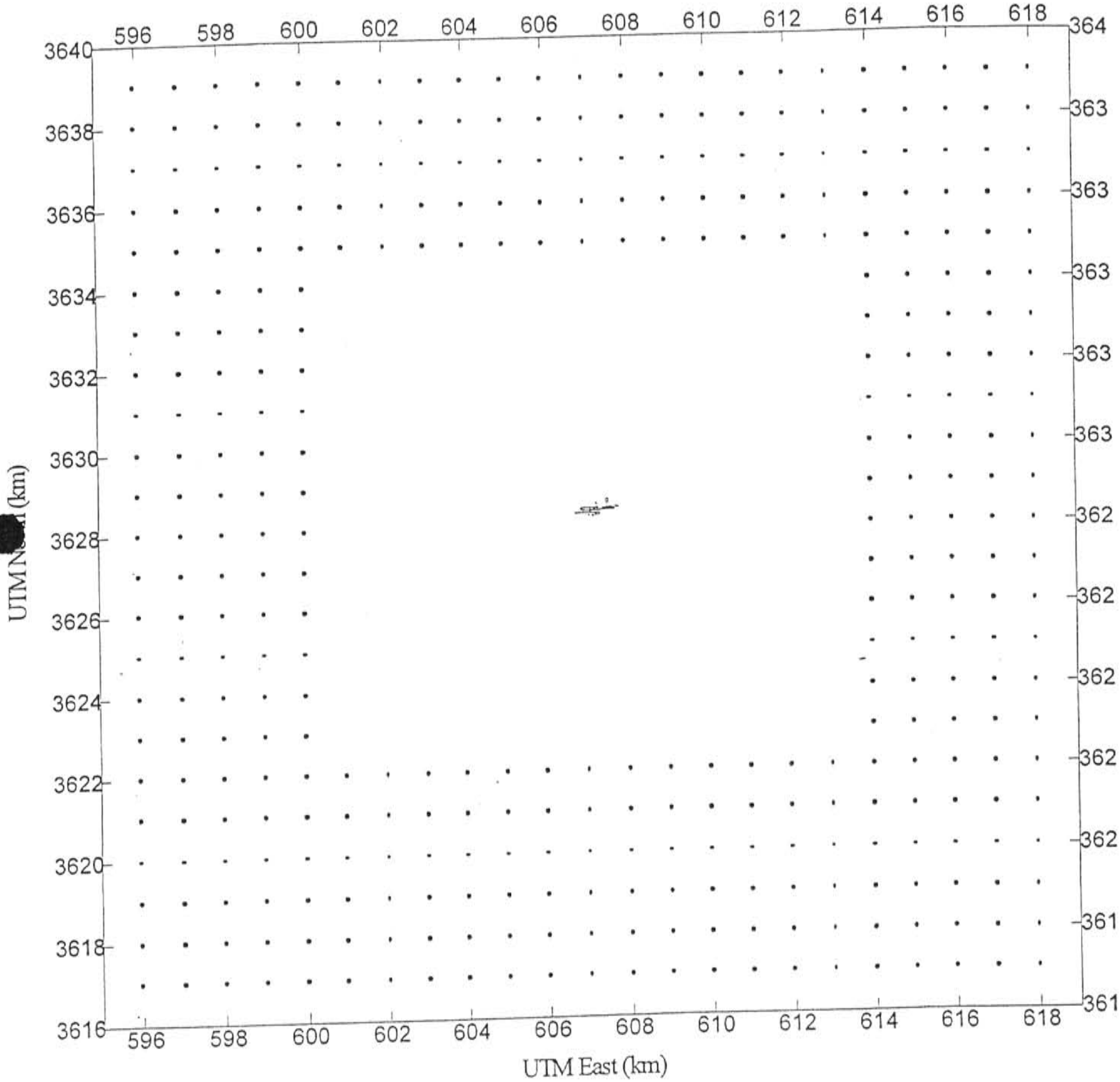


FIGURE 10-4. RECEPTOR LOCATIONS FOR THE COARSE GRID.



The U.S. EPA typically recommends a single year of meteorological data for effects evaluation or non-PSD modeling. In this case, the dispersion modeling analysis is performed using 1956 meteorological data based on surface observations taken from the El Centro Naval Auxiliary Air Station (National Weather Service Station [NWS] station number 23199) and upper air measurements from Yuma, Arizona (NWS station number 3145). This station combination has been recommended for modeling in Imperial County by the ICAPCD.

The anemometer height at the El Centro NWS station during the period of interest (1956) is assumed to be 10 feet above ground level.

12.1 IMPACT ANALYSIS

Table 12-2 lists the maximum off-property, ground-level concentrations of the pollutants modeled in the impact analysis (NO_2 and CO) for the fenceline, fine, medium, and coarse receptor grids. These impacts occur as a result of emissions from post-modification, proposed and removal of existing line #2 sources from the Southwest Plant. All concentrations are compared against the corresponding modeling impact levels (CAAQS and NAAQS).

Please note that a NO_X-to-NO_2 conversion ratio of 100% is conservatively assumed in the impact analysis.

Table 12-1 shows that all maximum modeled concentrations of criteria pollutants (NO_2 and CO) are below the corresponding modeling levels; therefore, no adverse impacts from these emissions are expected to occur and no further modeling is required to demonstrate compliance with the CAAQS and NAAQS. Concentration plots showing the maximum concentrations for each criteria pollutant and averaging period are provided for reference in Appendix B.

TABLE 12-1. MAXIMUM MODELED CONCENTRATIONS AS DETERMINED IN THE IMPACT ANALYSIS.

Pollutant	Averaging Period	Receptor Grid	UTM East (km)	UTM North (km)	Maximum Modeled Concentration (μg/m³)	Maximum Modeled Concentration w/Background (μg/m³)	Modeling Level CAAQS (μg/m³)	Modeling Level NAAQS (μg/m³)
NO_2	1-Hour	Fenceline	606.910	3,628.488	268.222	**341.522**	470	--
		Fine	607.000	3,628.500	212.635	**285.935**	470	--
		Medium	606.000	3,630.500	13.727	**87.027**	470	--
		Coarse	606.000	3,622.000	6.025	**79.325**	470	--
NO_2	Annual	Fenceline	606.810	3,628.487	1.580	**7.180**	--	100
		Fine	606.800	3,628.500	1.220	**6.820**	--	100
		Medium	609.500	3,628.000	0.059	**5.659**	--	100
		Coarse	615.000	3,627.000	0.037	**5.637**	--	100
CO	1-Hour	Fenceline	606.910	3,628.488	632.663	**632.663**	23,000	40,000
		Fine	607.000	3,628.500	501.547	**501.547**	23,000	40,000
		Medium	606.000	3,630.500	32.377	**32.377**	23,000	40,000
		Coarse	606.000	3,622.000	14.688	**14.688**	23,000	40,000
CO	8-Hour	Fenceline	606.910	3,628.488	164.644	**164.644**	10,000	10,000
		Fine	606.800	3,628.500	104.035	**104.035**	10,000	10,000
		Medium	608.000	3,626.500	9.547	**9.547**	10,000	10,000
		Coarse	602.000	3,635.000	2.295	**2.295**	10,000	10,000

Appendix D5 Source Testing Conducted for Permit #2834C and ICAPCD Onsite Inspection Summary

#3 Line Source Testing - Permit 2834C

07/29/2002

Source-Dwg CA 35010	Source-Dwg PCA-3212	Permit #	DESCRIPTION	dscfm	Type	Emissions lb/hr	Emissions lb/yr	Tested	Report Date
17	68	2834C-E	Stucco Storage Bin Dust Collector	4632	PM10	0.0688	602.688	11/16/2000	06/07/2002
18	69	2834C-G	HRA Landplaster Bin Vent	337	PM10	0.0021	18.396	11/28/2000	06/07/2002
19	70	2834C-H	HRA Mill Dust Collector	331	PM10	0.0277	242.652	11/28/2000	06/07/2002
22	71	2834C-I	#1 Additive Refill Dust Collector		PM10			Exempt	Ltr 9/24/01
23	72	2834C-J	#2 Additive Refill Dust Collector		PM10			Exempt	Ltr 9/24/01
24	73	2834C-K	Stucco & Dry Additives Dust Collector	7554	PM10	0.2163	1894.788	11/16/2000	06/07/2002
25	T	2834C-L	Wet Zone Kiln						
26	U	2834C-L	Dry Zone Kiln						
27	S	2834C-L	Wet Zone Kiln End Seals	46504	NOx	2.03	17782.8	04/24/2001	06/11/2001
28	V	2834C-L	Dry Zone Kiln End Seals		CO	4.92	43099.2		
29	S,T,U,V	2834C-L	Kiln Exhaust						
30	74	2834C-M	End Saw Dust Collector	10730	PM10	0.0028	24.528	11/17/2000	06/07/2002
31	75	2834C-N	Dunnage System Dust Collector	11030	PM10	0.0022	19.272	11/17/2000	06/07/2002
33	64	2834C-O	Waste Dust Colllectors (3)		PM10			Not in service	TBD-Fall 2002
36	61	2834C-A	CP Circulation Fan		PM10	1.55	13578		
37	61	2834C-C	CP Cool Bed	59199	NOx	1.44	12614.4	04/24/2001	06/11/2001
38	Q	2834C-B	Claudius Peters Air Heater		CO	5.77	50545.2		
40	60	2834C-F	Rock Bin Dust Collector	1788	PM10	0.0252	220.752	06/20/2001	06/07/2002
41	63		Miscellaneous Dust Collector	3460	PM10	0.211	1848.36	06/20/2001	06/07/2002
39	R	2834C-D	LP Air Heater		PM10, NOx			Not in service	TBD
42	R		LP Air Heater Dust Collector		CO				
NA	Q12		Quarry Crusher	29259	PM10	1.0395	9106.02	05/15/2002	05/30/2002
NA	Q10		Quarry Train Loading Dust Collector	35218	PM10	1.249	10941.24	05/15/2002	05/30/2002
NA	56	2834C-P	West Recieving Dust Collector		PM10			Not in service	TBD
NA	57	2834C-Q	East Recieving Dust Collector		PM10			Not in service	TBD

PM10	**38496.7**	**lbs/yr**	**19.25 tpy**
NOx	**30397.2**	**lbs/yr**	**15.20 tpy**
CO	**93644.4**	**lbs/yr**	**46.82 tpy**

APCD Inspections of New Equipment Installations – 1998 through 2002

May 18, 2000 Harry Dillon, APCD Engineer, visited the Plaster City Plant to review equipment installed under Permit #2735 – Mill Upgrade (1998). The purpose of the visit was to inspect equipment installed during 1998-99 so that a permit to operate could be issued. During December 15-16, 1998 and February 18-19, 1999, SCEC had completed source testing of the mill crusher, #5 kettle, and Williams Mill.

November 15, 2002 Harry Dillon, APCD Engineer, witnessed the re-testing of the #5 kettle burner source testing completed by SCEC. The #5 kettle was re-tested to confirm NOx emissions were below permitted levels (permit #2735).

November 2000 and June 2001, SCEC completed source testing of various dust collectors that were part of the #3 expansion. SCEC coordinated testing with Harry Dillon, APCD Engineer. Harry did witness part of the testing during November 2000, and was kept appraised of changes in the test plan by Scott Seely with U.S. Gypsum as well as by SCEC personnel (permit #2834).

April 24, 2002 Harry Dillon, APCD Engineer, witnessed source testing of the #3 kiln. Harry returned to witness additional #3 kiln testing and CP Mill burner testing during April 24 through 26, 2001 (permit #2834).

January 31, 2002 Harry Dillon, APCD Engineer, and Jesus Ramirez with the APCD, visited the U.S. Gypsum quarry to review equipment installed as part of permit #2834. Harry reviewed crusher operation and the train loading tunnel in preparation for source testing later in 2002.

May 15, 2002 Harry Dillon, APCD Engineer, witnessed source testing of quarry dust collectors that had been installed as part of permit #2834. Source testing was conducted by SCEC on the quarry crusher dust collector and train loading dust collectors on May 15-16, 2002.

Appendix E Archaeological Investigations for the U.S. Gypsum Company Quarry Expansion and Water Pipeline Replacement Project

**Archaeological Investigations
for the
U.S. Gypsum Company
Quarry Expansion and
Water Pipeline Replacement Project
in
Imperial County, California**

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January 2003

MANAGEMENT SUMMARY

United States (U.S.) Gypsum Company is proposing to expand and improve quarrying and wallboard manufacturing operations in Imperial County, California. Currently proposed project activities include expansion of current quarrying operations at U.S. Gypsum Company's Plaster City Quarry located approximately 26 miles north of Plaster City and replacement of an existing water pipeline carrying water from Ocotillo to U.S. Gypsum Company's Plaster City wallboard plant. The proposed quarry expansion encompasses approximately 550 acres and the water pipeline replacement project follows the alignment of County Road (CR) S80 for a distance of approximately 8 miles between Ocotillo and Plaster City. Staging areas, if necessary, for the water pipeline replacement project will be located adjacent to the shoulder of the paved roadway of CR S80. The quarry expansion and water pipeline replacement projects will occur on both private lands and public lands managed by the Bureau of Land Management (BLM). Consequently, the proposed project is subject to the legal requirements of both the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) 1970, as amended, and Section 106 of the National Historic Preservation Act 1966, as amended. Therefore, *Pacific Legacy, Inc.* was contracted by Resource Design Technologies, Inc. to conduct archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects in Imperial County, California.

Archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects included: a records search at the Southeast Information Center at the Imperial Valley College Desert Museum; a sacred lands search conducted by the Native American Heritage Commission; and pedestrian surface survey of the Area of Potential Effects (APE) (i.e., approximately 550 acres at the U.S. Gypsum Company's Plaster City Quarry and an area approximately 8 miles long by 30 meters wide along the southern edge of CR S80 from Ocotillo to Plaster City) associated with the proposed project. The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the APE for the project as currently proposed. The record search did not identify any previous surveys or previously recorded sites either within or near the APE for the expansion project at the Plaster City Quarry. The record search, however, did identify: previous linear surveys that bisected sections of the alignment of the water pipeline replacement project; two previously recorded sites, CA-IMP-179 and CA-IMP-2355, near the APE of the water pipeline replacement project; two previously recorded isolates (i.e., artifacts not found in association with any other cultural resources), CA-IMP-2040 and CA-IMP-2357, near the APE of the water pipeline replacement project; that the Plaster City Quarry and Plaster City Railroad date to 1902 and 1922, respectively; and that the San Diego and Arizona Eastern Railroad, which is in the vicinity of the water pipeline replacement project, dates to 1907. The Plaster City Railroad, remnants of U.S. Highway 80, and the alignment of the San Diego and Arizona Eastern Railroad tracks, however, are located beyond the project APE.

Current archaeological investigations for the quarry expansion and water pipeline replacement projects did not relocate any previously recorded sites or isolates, but did identify historic site USG-01, remnants of U.S. Highway 80, and an isolated flake (i.e., an artifact not found in association with any other cultural resources). USG-01 is located in the quarry expansion area and consists of the remnants of a circular structure associated with an historic trash scatter and the isolated flake was identified along the alignment of the water pipeline replacement project.

Current archaeological investigations did not identify any historic properties, historical resources, or prehistoric sites either within the APE of the quarry expansion or the APE of the water pipeline replacement project that crosses lands managed by the BLM. Current pedestrian surface survey, however, did identify: a new historic site, USG-01, within the APE of the quarry expansion project; and remnants of U.S. Highway 80 near, but beyond the APE of the water pipeline replacement project. In addition, the Plaster City Quarry, the Plaster City Railroad, site USG-01, and remnants of U.S. Highway 80 were documented for the current project. The Plaster City Railroad and remnants of U.S. Highway 80 are located beyond the project APE, and the Plaster City Quarry and site USG-01 do not seem to meet the eligibility criteria for inclusion in the CRHR or as a unique archaeological resource as defined under CEQA. No additional archaeological research or mitigation is recommended for site USG-01 or the Plaster City Quarry prior to or during project implementation, and the remnants of U.S. Highway 80 and the Plaster City Railroad would not likely be affected by any project related activities. Therefore, implementation of the quarry expansion water and pipeline replacement projects would not likely affect any historic properties or historical resources, and a finding of "No Historic Properties Affected" seems appropriate for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects in Imperial County, California.

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1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

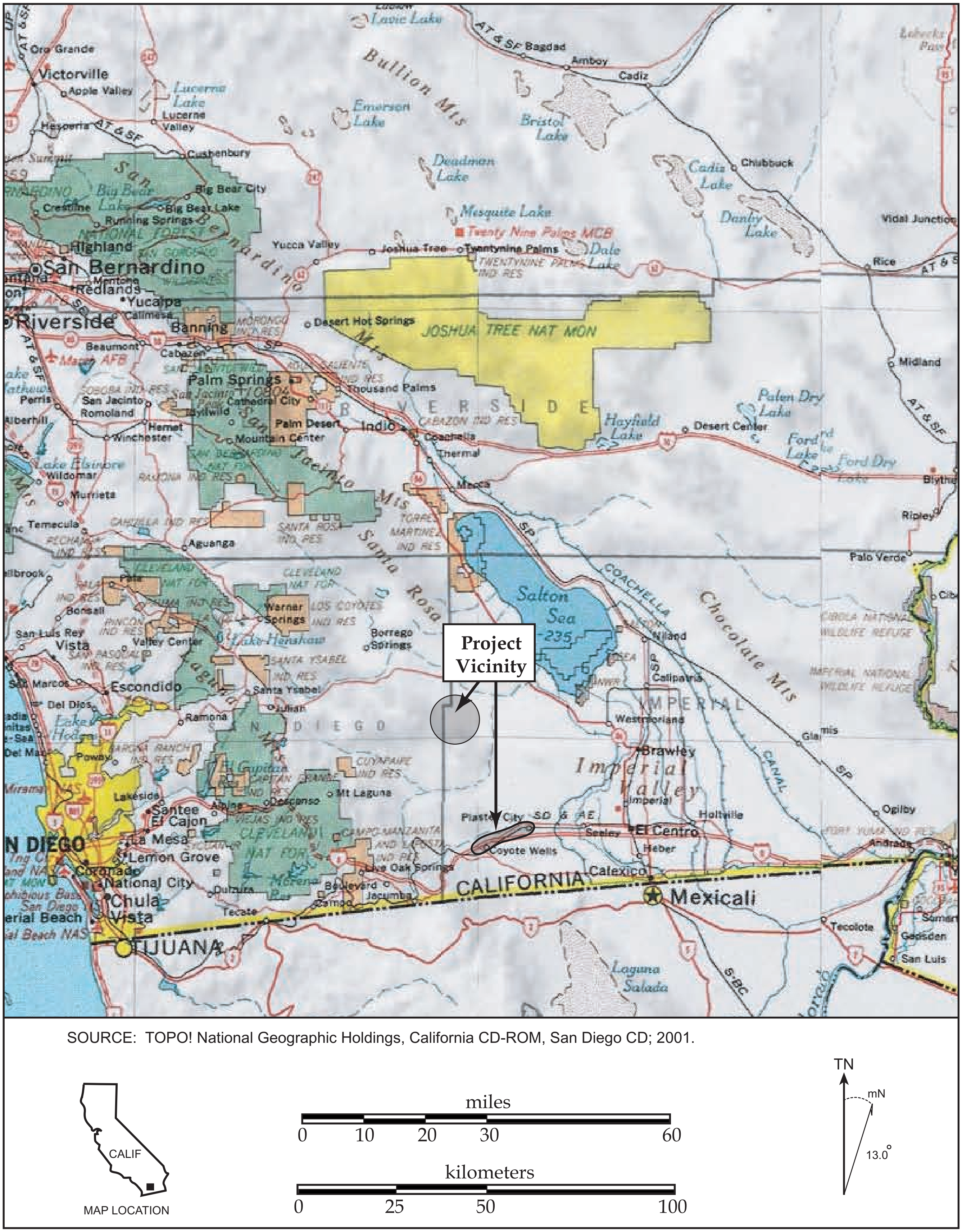
United States (U.S.) Gypsum Company is proposing to expand and improve quarrying and wallboard manufacturing operations in Imperial County, California. Currently proposed project activities include expansion of current quarrying operations at U.S. Gypsum Company's Plaster City Quarry located approximately 26 miles north of Plaster City and replacement of an existing water pipeline carrying water from the Ocotillo Aquifer to U.S. Gypsum Company's Plaster City wallboard plant. The proposed quarry expansion encompasses approximately 550 acres and the water pipeline replacement project follows the alignment of County Road (CR) S80 for a distance of approximately 8 miles between Ocotillo and Plaster City. Staging areas, if necessary, for the water pipeline replacement project will be located adjacent to the shoulder of the paved roadway of CR S80. The quarry expansion and water pipeline replacement projects will occur on both private lands and public lands managed by the Bureau of Land Management (BLM). Consequently, the proposed project is subject to the legal requirements of both the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) 1970, as amended, and Section 106 of the National Historic Preservation Act 1966, as amended.

1.2 PROJECT LOCATION

U.S. Gypsum Company's Plaster City Quarry is located in the western portion of Imperial County, at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and southwest of Fish Creek Wash near Ocotillo Wells (Figures 1 and 2). The address of the quarry is 7801 Split Mountain Road. The water pipeline replacement project is located along the south/southeast side of CR S80, and follows its alignment for approximately 8 miles from the Ocotillo Aquifer to U.S. Gypsum Company's wallboard plant at Plaster City (Figures 1 and 3).

1.3 SCOPE OF WORK

Archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects included: a records search at the Southeast Information Center at the Imperial Valley College Desert Museum; a sacred lands search conducted by the Native American Heritage Commission (The sacred lands search was requested by *Pacific Legacy*, but not as a Government-to-Government consultation.); pedestrian surface survey of the Area of Potential Effects (APE) (i.e., approximately 550 acres at the U.S. Gypsum Company's Plaster City Quarry and an area approximately 8 miles long by 30 meters wide along the south side of the alignment of CR S80 from Ocotillo to Plaster City) associated with the proposed project; and completion of a report documenting the results of archaeological investigations.



SOURCE: TOPO! National Geographic Holdings, California CD-ROM, San Diego CD; 2001.

Figure 1. Project Vicinity Map.

Figure 2

This Figure contains proprietary information and has been intentionally omitted from this Appendix.

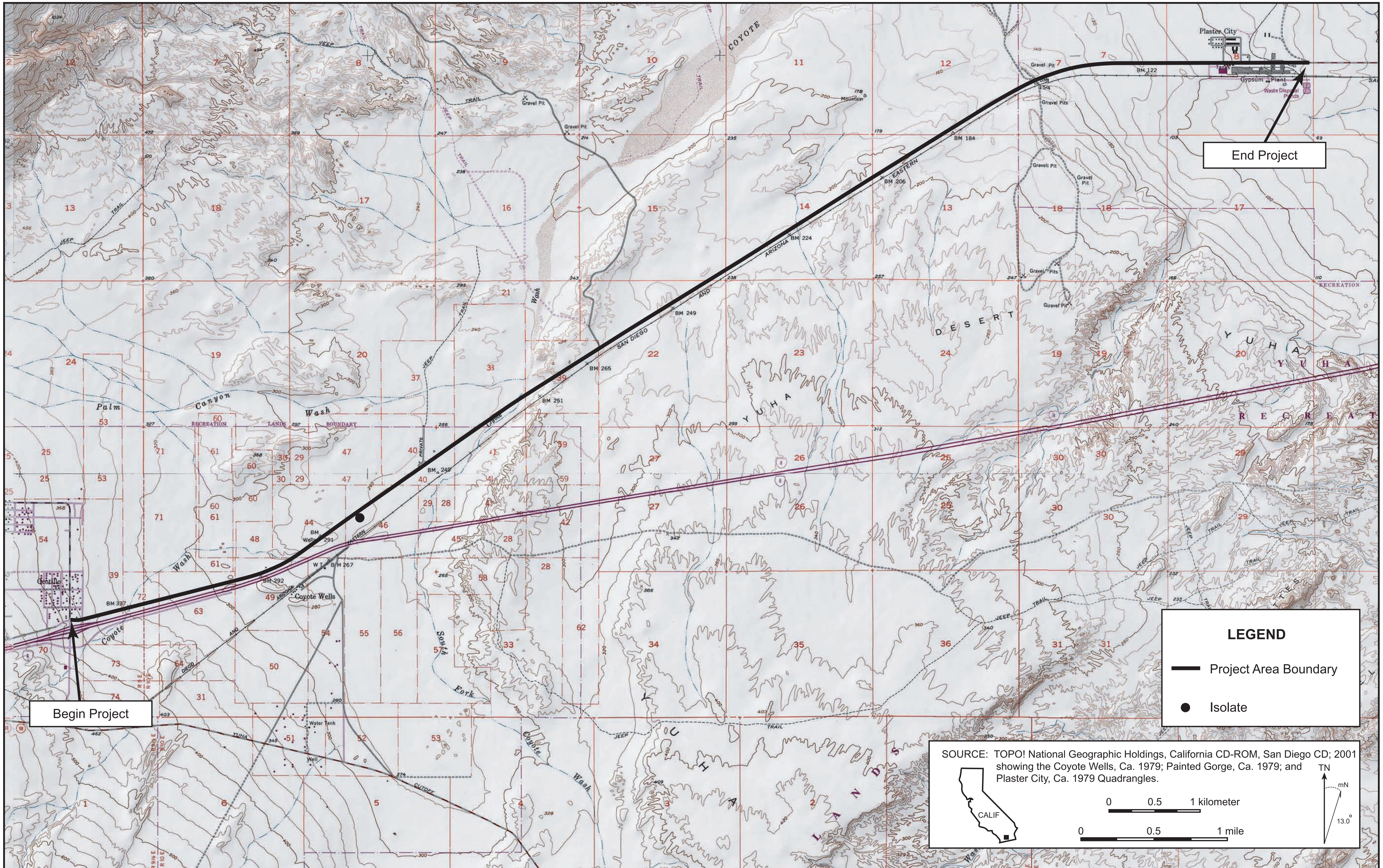


Figure 3. Water Pipeline Corridor Project Area and Isolate Location.

1.3.1 Archaeological Resource Identification

The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the APE for the project as currently proposed. The record search did not identify any previous surveys or previously recorded sites either within or near the APE for the expansion project at the Plaster City Quarry. The record search, however, did identify: previous linear surveys that bisected sections of the alignment of the water pipeline replacement project; identified two previously recorded sites, CA-IMP-179 and CA-IMP-2355, near the APE of the water pipeline replacement project; two previously recorded isolates, CA-IMP-2040 and CA-IMP-2357, near the APE of the water pipeline replacement project; that the Plaster City Quarry dates to 1902; that the narrow gauge Plaster City Railroad was built by the Imperial Valley Oil and Gypsum Company from 1921-1922; and that the San Diego and Eastern Arizona Railroad was built from 1907-1919. Current archaeological investigations for the quarry expansion and water pipeline replacement projects: did not relocate any previously recorded sites or isolates; identified historic site USG-01; identified and recorded remnants of U.S. Highway 80; identified an isolated flake; recorded the Plaster City Quarry; and recorded the Plaster City Railroad. USG-01 is located in the quarry expansion area and consists of the remnants of a circular structure associated with an historic trash scatter, and the isolated flake was identified during pedestrian surface survey along the alignment of the water pipeline replacement project. The Plaster City Railroad, remnants of U.S. Highway 80, and the San Diego and Eastern Arizona Railroad tracks are located beyond the project APE.

1.3.2 Site Recording

The historic sites identified during current archaeological investigations for the U.S. Gypsum Company Plaster City Quarry expansion and water pipeline replacement projects were recorded using appropriate Department of Recreation site record forms. The Plaster City Quarry Site, site USG-01, the Plaster City Railroad, and remnants of U.S. Highway 80 were recorded as part of the currently proposed project. The records for these sites are included in Appendix A of this report.

1.4 NATIVE AMERICAN CONSULTATION

Pacific Legacy requested a sacred lands search and a list of Native American contacts for the project area from the Native American Heritage Commission. The sacred lands search did not identify any Native American cultural resources either within or near the project APE. *Pacific Legacy* contacted all groups and/or individuals on the list provided by the Native American Heritage Commission regarding the U.S. Gypsum Company quarry expansion and water pipeline replacement projects (Appendix B, Native American Consultation). Native American consultation by *Pacific Legacy,* however, was not conducted as an official Government-to-Government consultation.

1.5 PERSONNEL AND SCHEDULE

Professional staff of *Pacific Legacy, Inc.* performed all current archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects. Field and archival research for the project was conducted during August and September 2002. John A. Nadolski, M.A. was responsible for overall project management and implementation. Mr. Nadolski was assisted in completion of the project by: Amy Holmes, M.A., who directed the field investigations and contributed to the report for the project; Kurt Lambert, B.A.; Chris Suwyn, B.A.; and Ayako Walker, B.A. All of the archaeological personnel that participated in this project meet Secretary of Interior Standards and Guidelines for Professional Qualifications.

2.0 ENVIRONMENTAL CONTEXT

2.1 PHYSIOGRAPHY

The U.S. Gypsum Company's Plaster City Quarry and water pipeline replacement projects are located in the Colorado Desert, which includes the Imperial Valley. This area is east of the Peninsular Ranges and west of the Colorado River. The climate is arid with hot summers, mild winters, and annual precipitation of 2.8 inches. The landscape is characterized by basin-and-range topography with north-south trending mountain ranges separated by valleys.

Imperial Valley is the northernmost extension of the Gulf of California geologic trough that extends east to the Chocolate and Cargo Muchacho Mountains and west to the Coyote and Fish Creek Mountains (Zimmerman 1981). The Salton Sea currently occupies the deepest part of this basin. The U.S. Gypsum Company's Plaster City wallboard plant is located in the Yuha Desert at an elevation of 100feet above mean sea level (MSL). The Plaster City Quarry is located approximately 26 miles northwest of the plant along the western slopes of the Fish Creek Mountains at an elevation of 360feet MSL. Indeed, the quarry expansion area is located in an active alluvial plain created in a relatively narrow valley by runoff from intermittent drainages along the western slopes of the Fish Creek Mountains and the eastern slopes of Split Mountain.

2.2 GEOLOGY AND SOILS

The APE for the quarry expansion primarily consists of Quaternary alluvium and salt, with the adjacent Fish Creek Mountains primarily consisting of Mesozoic granite (Strand 1962). The alignment of the APE for the water pipeline replacement project between Ocotillo and Plaster City traverses Quaternary alluvium and Quaternary terrace deposits (Strand 1962).

Soils within the APE for the quarry expansion area are not mapped. Soils, however, along the alignment of the water pipeline replacement project area are mapped as Rositas and Superstition loamy fine sands (Zimmerman 1981). Rositas Series soils are weakly-developed soils exhibiting only C-horizons. These soils form in eolian or alluvial sands on flood plains, basins, terraces, and sand hills. Superstition Series soils form in sandy eolian and alluvial sands on old Quaternary terraces and alluvial fans. These soils are slightly more developed than the Rositas soils and exhibit A-C horizonation (Zimmerman 1981).

2.3 FLORA AND FAUNA

The areas surrounding the quarry expansion and water pipeline replacement projects are comprised of desert succulent shrub, desert scrub, and desert wash habitats (Mayer and Laudenslayer 1988). These habitats include a number of shrub species including creosote (*Larrea tridentate*), bursage (*Ambrosia dumosa*), wild buckwheat (*Eriogonum fasciculatum*), ephedra (*E. californica*), and mesquite (*Prosopis glandulosa*). A variety of cactus species are also common in these habitats and include barrel cactus (*Ferocactus cylindraceus)*, cholla (*Opuntia bigelovii*), and ocotillo (*Fouquieria splendens*) (Bowers 1993). Animal species present in these habitats include big horned sheep (*Ovis canadensis californiana*), which are listed as an endangered species, coyote (*Canis latrans*), desert woodrat (*Neotoma lepida*), sidewinder (*Croatlus cerastes)*, Mojave rattlesnake (*Crotalus scutulatus*), and other birds and reptiles such as the flat-tail horned lizard, which is under consideration for inclusion on the endangered species list (The project area may be within the Flat-tail Horned Lizard Management Area.) (MacMahon 1985).

3.0 CULTURAL CONTEXT

3.1 REGIONAL PREHISTORY

The prehistory of the Southern California Deserts spans at least the last 12,000 years and is usually characterized by four cultural and temporal periods (Table 1). Wallace et al. (1962), Warren (1967), Bettinger and Taylor (1974), and Warren and Crabtree (1986) provide detailed reviews and interpretations of the prehistory of the Southern California Deserts and the surrounding areas. The work of these researchers is synthesized in the following discussion of regional archaeological cultures and chronologies.

The Paleoindian period (12,000 – 7,500 BP) represents the first well-dated Native American occupation of the region. This time period is highlighted by a transition from cool and moist conditions of the Late Pleistocene to the arid and hot conditions of the Early Holocene. There are three distinct cultural complexes associated with this time period: fluted point complexes; the Lake Mohave Complex; and the San Dieguito Complex. Fluted point complexes have been identified both in the southern California Deserts and the surrounding areas. Fluted point complexes, although present in the southern California deserts, are primarily identified in surface contexts. These contexts do not facilitate the recovery of data necessary to fully understand the culture and behaviors of the groups responsible for the manufacture of the points. There is more data, however, for the Lake Mojave and San Dieguito Complexes. These two complexes are more common in the area than fluted point complexes and also share several key artifacts types. Artifacts usually associated with these two complexes include crescents, scrapers, and large bifaces. The Lake Mojave complex is centered in the southwestern Great Basin while the San Dieguito complex extends from coastal California to the Colorado Desert. San Dieguito sites in the Colorado Desert typically include cleared circles, rock rings, other rock features, and heavily varnished crude stone tools.

The Early Archaic Period (7,000 – 4,000 BP) was very hot and dry, and is poorly represented in the Colorado Desert. Although reasons for this are not fully understood, it has been suggested that seasonal river flooding may have affected the numbers of sites dating to this time period. Regardless, neighboring regions provide data regarding the Archaic Period. In these areas the Early Archaic Period is generally characterized by a diversification of artifact assemblages, including the introduction of groundstone technologies for seed processing. It is likely that these trends also occurred in the Lower Colorado Desert. Pinto, Gypsum, Silver Lake, and possibly concave base projectile points are associated with the Early Archaic Period.

The Middle Archaic Period (4,000 – 1,500 BP) is also poorly represented in the Colorado Desert. Climatic conditions became cooler and moister, and seed collecting and processing characterize economic pursuits during this time period. Artifacts typically associated with the Middle Archaic include manos, metates, handstones, and the bow and arrow. The bow and arrow, however, generally does not appear in artifact assemblages until the end of the time period.

Table 1. Chronology of the Southern California Deserts (Bettinger and Taylor 1974; Warren and Crabtree 1986; Wallace et al. 1962; Warren 1967).

Adaptive Strategy (Regional Phases)	**Age (BP)**	**Climate** (Thompson et al, 1993; Spaulding 1990)	**Diagnostic Artifacts/Features**
Paleoindian (Lake Mojave) (San Dieguito)	ca. 12,000 – 7,500	Moist and cool supporting marshes and pluvial lakes until 10,000; progressively warmer and drier	Lake Mojave, Parman, and Silver Lake points; leaf-shaped points, drills, and knives; absence of milling technology.
Early Archaic (Pinto) (Pinto Basin Complex)	ca. 7,500 – 4,000	Increased aridity; conditions were considered to be relatively hot and dry.	Pinto, Gypsum, and Silver Lake and possibly Humboldt series projectile points; use of manos and metates but no major seed processing technology; use of caves and rockshelters for the storage of goods and equipment for burials.
Middle Archaic (Gypsum) (Newberry Phase)	ca. 4,000 – 1500	Conditions become cooler and moister than previously.	Elko, Gypsum, concave base, Rose Spring points; seed processing technology (handstones, basins, milling stones); transition to bow and arrow late in the period.
Late Archaic (Saratoga Springs) (Payatan)	1500 – A. D. contact	A warming and drying trend begins sometime around A.D. 1 and reaches its peak about A.D. 500; Little Ice Age A.D. 1400-1850.	Desert Side Notched and Cottonwood Triangular points; Tizon Brown Ware and Colorado Buff Ware; seed processing technology; arrow straighteners, baskets, cordage, and Lake Cauhilla aquatic adaptation.

The Late Archaic (1,500 – 450 BP) is characterized by the expansion of territorial boundaries of many Native American groups in the region. During this time period changes in the flow of the Colorado River into Lake Cahuilla expanded it and created a series of fresh-water lakes around it. These changes facilitated the development of agriculture and semi-permanent villages along the Lower Colorado River. Simultaneously with the development of agriculture, extensive trade networks were established to connect agricultural settlements in the greater Southwest with the Gulf of California and the Pacific Ocean.

Following the Late Archaic Period, Euroamerican exploration of the area and contact with local Native Americans gradually increases across the area. Euroamerican activity in the area, as in other areas of California, dramatically affected Native American populations and culture. Indeed, Native American populations and culture generally begin to decline subsequent to contact with Euroamericans.

3.2 ETHNOGRAPHY

Kumeyaay inhabit the area currently encompassed by western Imperial County, and comprise groups formerly identified as Tipai and Ipai (Carrico 1983; Cline 1979; Hedges 1975; Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991). Kumeyaay territory extends east nearly to Yuma, AZ, southwest to Todos Santos Bay, west to the Pacific Ocean, and northwest to the San Luis Rey River and San Felipe Creek. Quechan and Cahuilla border Kumeyaay territory to the east and north, respectively.

Kumeyaay language, formerly called Diegueño, is part of the Hokan stock of the Yuman language family (Langdon 1990). Kumeyaay were organized into autonomous tribelets under the control of a chief (*kwaaypaay*) who had at least one assistant (Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991). The position of chief was inherited from father to eldest son. The chief directed ceremonies and resolved differences within the group. Kroeber (1925:712) suggests that Tipai and Ipai populations numbered approximately 3,000 at the time of contact, circa 1770–1790. Subsequent to contact, the Native American population decreased, and in 1821 Mission San Diego records document a population of 1,711, which would have included Kumeyaay (Luomala 1978).

Kumeyaay relied heavily on seasonally available vegetal foods on valley floors and in the foothills and mountains (Ladastida and Caldeira 1995). In the spring, blossoms and buds were collected from blooming plants in the foothills. During the summer, cactus fruits, agave, and mesquite pods were collected in valleys. Small animals were hunted during both seasons. During the fall and winter months, Kumeyaay moved into the mountains seeking shelter and food. Rockshelters and overhangs provided shelter from winter rain and snow, and acorns, pinyon nuts, and small game provided food.

Kumeyaay material culture includes: seed processing implements such as the mortar and pestle and milling stones; baskets which were used for seed winnowing and storage; plain and decorated reddish-brown ceramic vessels were used for both cooking and storing water; and the bow and arrow (Ladastida and Caldeira 1995). Structures built by the Kumeyaay varied in form depending on the season. For example, summer residential structures often consisted only of a windbreak while winter residential structures were semi-subterranean pit houses with a with-tie pole framework and brush thatch. Kumeyaay also built ceremonial structures, such as rock-supported brush fence circles, for events such as harvest dances (Luomala 1978 and Shipek 1991).

Kumeyaay primarily interacted and traded among themselves, but did involve neighboring groups in certain trading activities. For example, coastal groups traded salt, dried seafood, and abalone shells with interior valley groups for gourds, acorns, agave, and mesquite pods. Kumeyaay also traded for granite to manufacture mortar and pestles, and Quechans traded with the Kumeyaay for acorns and acorn flour (Luomala 1978 and Shipek 1991).

3.3 REGIONAL HISTORY

Spanish exploration of Southern California dates to the 1500s. Hernando de Alarc∴n discovered Alta California while sailing up the Rio de los Tizones (Colorado River) in 1540, and was the first European to encounter the Quechan Indians (Hoover et al. 1990). The impact of 16th century exploration on the Native peoples in the area, however, appears to have been relatively minimal. Spanish exploration of the area continued into the 18th century and in 1774, Juan Batista de Anza volunteered to find an overland trail to connect Spanish settlements in Sonora, Mexico with new missions on the California Coast (Beck and Haase 1974; Hoover et al. 1990). Juan Batista de Anza, however, was not completely successful in his attempt to identify a practical trail across the southern California deserts, and the Spanish were generally unsuccessful in establishing settlements in the area. Regardless, the Spanish used de Anza’s trail and established two missions, Misi∴n La Purisima Concepci∴n de la Virgϑn Santisima and Misi∴n y Pueblo San Pedro y San Pablo de BucuZer, along it in 1780. There was conflict, however, between the Spanish and the local Native American community and hostile Yuma Indians dissatisfied with their treatment by the Spanish destroyed the two missions and killed 100 people in 1781 (Hoover et al. 1990).

Regardless of the failure of the Spanish to establish missions and/or settlements in the area, the Anza Trail became a well-traveled route across what is now Imperial County. Indeed, the Anza Trail was used by other explorers, trappers, and eventually Argonauts on their way to the gold fields of California, and subsequently became known as the Sonora Road, the Colorado Road, the Emigrant Trail, and the Butterfield Stage Route (Hoover et al. 1990). The Sonora Road/Emigrant Trail was used from 1825 to 1865 for cattle drives from New Mexico and Texas to ranches in the Coastal Range (Imperial County General Plan 1993). The Butterfield Stage also used the Anza Trail as part of its route from St Louis to San Diego beginning in 1857 and continuing until completion of the Southern Pacific Railroad across the region in 1878 (Zimmerman 1981).

The Southern Pacific and the San Diego and Arizona Eastern Railroads improved the transportation of both people and commodities across the region. The Southern Pacific linked Los Angeles with Yuma in 1878, with a maintenance camp at Niland, and continued to Tucson in 1880, finally reaching New Orleans in 1883 (Daggett 1966). As the need for transportation facilities increased across the area currently encompassed by Imperial County, the Southern Pacific built a branch line from Niland to Imperial in 1903 and linked San Diego with El Centro in 1919 (Daggett 1966). The Southern Pacific, however, was not the only railroad in the area. The San Diego and Arizona Eastern Railroad was constructed across San Diego and Imperial County from 1907-1919, with passenger service available from San Diego to El Centro beginning in 1919. The San Diego and Arizona Eastern Railroad provided a vital link across the area until it ceased operation in 1984. Indeed, "Buffalo Soldiers" (the all-Black unit formed in 1866) of the 9th and 10th Cavalry Regiments stationed at Camp Lockett in Campo patrolled the railroad during the early years of World War II. Subsequently, the United States military maintained a presence in the area in the form of training (e.g., General George S. Patton, Jr. trained troops in the area) and test facilities (e.g., current military installations in the area).

Euroamerican contact with Native Americans across the southern California deserts became more frequent as Argonauts heading to the gold fields of the Mother Lode passed through the area along the Emigrant Trail in 1848 and 1849. Indeed, construction of Yuma Crossing and the military fortification of Fort Yuma (originally Camp Calhoun) in 1852 were due to numerous hostile confrontations between Euroamericans and Native Americans in the area. Increasing numbers of Euroamericans had a dramatic effect on and contributed to the decline of local Native American populations and culture. The rediscovery of gold, which was originally discovered by Spanish prospectors in the 1700s, near Julian, Banner Grade, and in the Cargo Muchacho Mountains in the 1870s-1890s caused the Euroamerican population to expand in the area and also fostered the development of towns such as Hedges (Van Wormer and Newland 1996). Indeed, gold mining flourished in the area from the 1890s through the early 1900s. Regardless of these events, the population of Imperial County did not begin to dramatically increase until the introduction of irrigation.

Prior to irrigation, the Imperial Valley was used for cattle ranching, which dates to the Spanish occupation of the area (e.g., Father Eusebio Kino encouraged cattle ranching in the area during the 1700s). Imperial County, however, did not attract large numbers of settlers until its agricultural potential was developed in the early 1900s. Irrigation of the valley was first suggested by Oliver Wozencraft in the late 1800s, and was accomplished in 1901 by Charles R. Rockwood and George Chaffey (Hoover et al. 1990). The introduction of irrigation in Imperial Valley spawned the development of both large and small-scale agriculture and the establishment of many small towns. The area grew rapidly, and by 1907 nearly 15,000 people lived in Imperial Valley. At this time Imperial Valley was officially incorporated as a jurisdiction separate from San Diego County. The growth of the area was supported by the construction of the Southern Pacific Railroad branch line from Niland to Imperial and the construction of the San Diego and Arizona Eastern Railroad, both of which facilitated commercial export of agricultural products. The construction of U.S. Highway 80, a transcontinental highway extending from San Diego, California to Tybee Island, Georgia originally commissioned in 1926, also improved transportation across the area (www.gbcnet.com/ushighways/US80/US80.html). The highway was decommissioned in 1964, but remained in use until Interstate 8 was completed in 1974.

Imperial Valley was accidentally flooded between 1905 and 1907 due to a faulty irrigation canal gate, and consequently the Salton Basin was inundated and the Salton Sea was formed.

Subsequently, major improvements were made to the irrigation system to prevent future flooding. The Imperial Irrigation District (IID) took control of the irrigation system in 1916 and by 1941 a more reliable and consistent water supply was assured for the area with the completion of the All-American Canal. Although agriculture still continues to be the predominant activity in Imperial Valley, other major industries are now becoming part of a wider economic base such as geothermal energy development, mining, customs brokers, tourism, and the provision of essential regional and national facilities such as correctional institutions and military training facilities (Zimmerman 1981). Indeed, gypsum has been mined at the Plaster City Quarry since 1902 and the proposed expansion of the Plaster City Quarry and associated facilities owned by U.S. Gypsum Company represent the contribution of these industries in Imperial County.

4.0 RESULTS OF ARCHAEOLOGICAL INVESTIGATIONS

Pacific Legacy, Inc. has completed archaeological investigations for the proposed expansion of U.S. Gypsum Company's Plaster City Quarry and replacement of an existing water pipeline between Ocotillo and Plaster City. Archaeological investigations included: a records search at the Southeast Information Center at the Imperial Valley College Desert Museum; a sacred lands search conducted by the Native American Heritage Commission; and pedestrian surface survey of the APE (i.e., approximately 550 acres at the U.S. Gypsum Company's Plaster City Mine and an area approximately 8 miles long by 30 meters wide along the southern edge of CR S80 from Ocotillo to Plaster City) associated with the proposed project.

The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the APE for the project as currently proposed. The record search did not identify any previous surveys or previously recorded sites either within or near the APE for the expansion project at the Plaster City Quarry. The record search, however, did identify: previous linear surveys that bisected sections of the alignment of the water pipeline replacement project; two previously recorded sites, CA-IMP-179 and CA-IMP-2355, near the APE of the water pipeline replacement project; two previously recorded isolates, CA-IMP-2040 and CA-IMP-2357, near the APE of the water pipeline replacement project; and that the Plaster City Quarry and Plaster City Railroad date to 1902 and 1922, respectively. Site CA-IMP-179 was recorded in 1975 and is interpreted as a campsite with possible sleeping circles, a hearth feature, and white chert and porphyry debitage. Site CA-IMP-2355 was recorded in 1977 and is a small lithic scatter consisting of 6 green porphyry flakes. Isolate CA-IMP-2040, recorded in 1977, is a quartzite scraper with orange patina. Isolate CA-IMP-2357, recorded in 1977, is a schist hammerstone with orange patina. The Plaster City Quarry has been an active mining operation since 1902, and currently is the largest gypsum mine in the United States (Imperial County General Plan 1993). The Plaster City Railroad was completed in 1922 and is still used to haul gypsum from the Plaster City Quarry to U.S. Gypsum Company's wallboard plant in Plaster City.

Pedestrian surface survey was conducted across the APE for both the currently proposed quarry expansion and water pipeline replacement projects. The APE for the expansion of the Plaster City Quarry primarily consists of a wash located west and south of current quarrying operations, but also includes areas along the western slopes of the Fish Creek Mountains (Figure 2). The area was surveyed using 20-30 meter transects, and visibility was generally good across the APE. The southern end of the APE, however, consists of areas of steep terrain (e.g., 30% slope). Areas consisting of steep terrain, approximately 30% slope, were not surveyed due to the nature of the terrain and the low archaeological sensitivity typically associated with these areas. Pedestrian surface survey also identified that large portions of the APE, particularly areas in the wash, have been previously disturbed by natural events (e.g., flooding and erosion across the wash) and activities associated with previous and current quarrying activities (e.g., stock piles of gypsum and overburden). Regardless, pedestrian surface survey of the APE for the quarry expansion project was adequate for project needs. Pedestrian surface survey did not identify any prehistoric sites or artifacts, but did identify non-diagnostic historic debris (e.g., fragments of sanitary cans and glass bottles) and one new historic site, USG-01, which consists of the remnants of a circular structure associated with an historic trash scatter. Historic site USG-01 was recorded, and the Plaster City Quarry and the Plaster City Railroad were also recorded for the currently proposed project.

The APE for the water pipeline replacement project follows the alignment of CR S80 between Ocotillo and Plaster City, a distance of approximately 8 miles, and extends approximately 30 meters from the southern edge of pavement of the roadway. This area also encompasses locations that might be used for staging areas during project implementation. The area was surveyed using 5-8 meter transects, and visibility was generally good across the APE. The APE and the area adjacent to it, however, have been and continue to be disturbed by off-road vehicles. Pedestrian surface survey did not relocate the two previously recorded sites (i.e., CA-IMP-179 and CA-IMP-2355) or the two previously recorded isolates (i.e., CA-IMP-2040 and CA-IMP-2357) that the record search identified as being located near the APE. Pedestrian surface survey, however, did identify one isolated flake within the APE. Pedestrian surface survey also identified remnants of abandoned U.S. Highway 80 beyond the APE for the water pipeline replacement project. The remnants of U.S. Highway 80 were recorded for the currently proposed project at the request of the BLM and the Southeast Information Center since there were no records for this site.

4.1 SITE CHARACTERIZATION

The Plaster City Quarry and site USG-01 are within the APE for the currently proposed U.S. Gypsum Company quarry expansion and water pipeline replacement project. The Plaster City Railroad and the abandoned remnants of U.S. Highway 80 are near, but beyond the APE of the currently proposed project. Regardless, all four sites were recorded during archaeological investigations for the currently proposed project.

Section 106 of the National Historic Preservation Act presents guidance for the identification of historic properties and determining their historical significance. Section 106 presents the following eligibility criteria for inclusion in the NRHP at 36 CFR 60.4 [a-d]. The criteria at 36 CFR 60.4 are:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made significant contributions to the broad patterns of our history; or
> (b) that are associated with the lives of persons significant in our past; or
> (c) that embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may likely yield, information important in prehistory or history.

Similarly, CEQA presents guidelines at §15064.5 and §21083.2 for the identification of historical resources and determining their historical significance. CEQA §15064.5(a)(3) presents the following eligibility criteria for inclusion of historical resources in the CRHR:

(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
(B) Is associated with lives of persons important in our past;
(C) Embodies the distinctive characteristics of a type. Period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
(D) Has yielded, or may be likely to yield, information important in prehistory or history.

CEQA §21083.2 also presents criteria for the determination of unique archaeological resources:

(1) Contains information needed to answer important scientific research questions and that there is demonstrable public interest in that information.
(2) It has a special and particular quality such as being the oldest of its type or the best available example of its type.
(3) Is directly associated with a scientifically recognized important prehistoric or historic event.

The Plaster City Quarry (Figures 4-5) was not previously recorded. Consequently, the quarry was recorded for the current project. The quarry is the sole active gypsum mine in Imperial County and is the largest gypsum mine in the United States (Imperial County General Plan 1993). The first mining operations at the quarry date to 1902, but mining activities were sporadic and did not produce a large volume of gypsum until the completion of the San Diego and Arizona Eastern Railroad in 1920 and the Plaster City Railroad in 1922 (Imperial County General Plan 1993). The San Diego and Arizona Eastern Railroad provided an efficient means of moving gypsum out of Imperial Valley and the Plaster City Railroad provided an efficient means of transporting large quantities of gypsum from the Plaster City Quarry to the San Diego and Arizona Eastern Railroad depot at Plaster City. The Imperial Gypsum and Oil Corporation owned the quarry in the early 1900s and built the Plaster City Railroad to facilitate removal of large quantities of gypsum from the quarry (Imperial County General Plan 1993). The Imperial Gypsum and Oil Corporation, however, was not very successful and sold the quarry to the Pacific Portland Cement Company in 1924. The Pacific Portland Cement Company operated the quarry until 1945. In 1945, the Plaster City Quarry and Plaster City Railroad were purchased by U.S. Gypsum Company who continues to own and operate the quarry and its facilities.

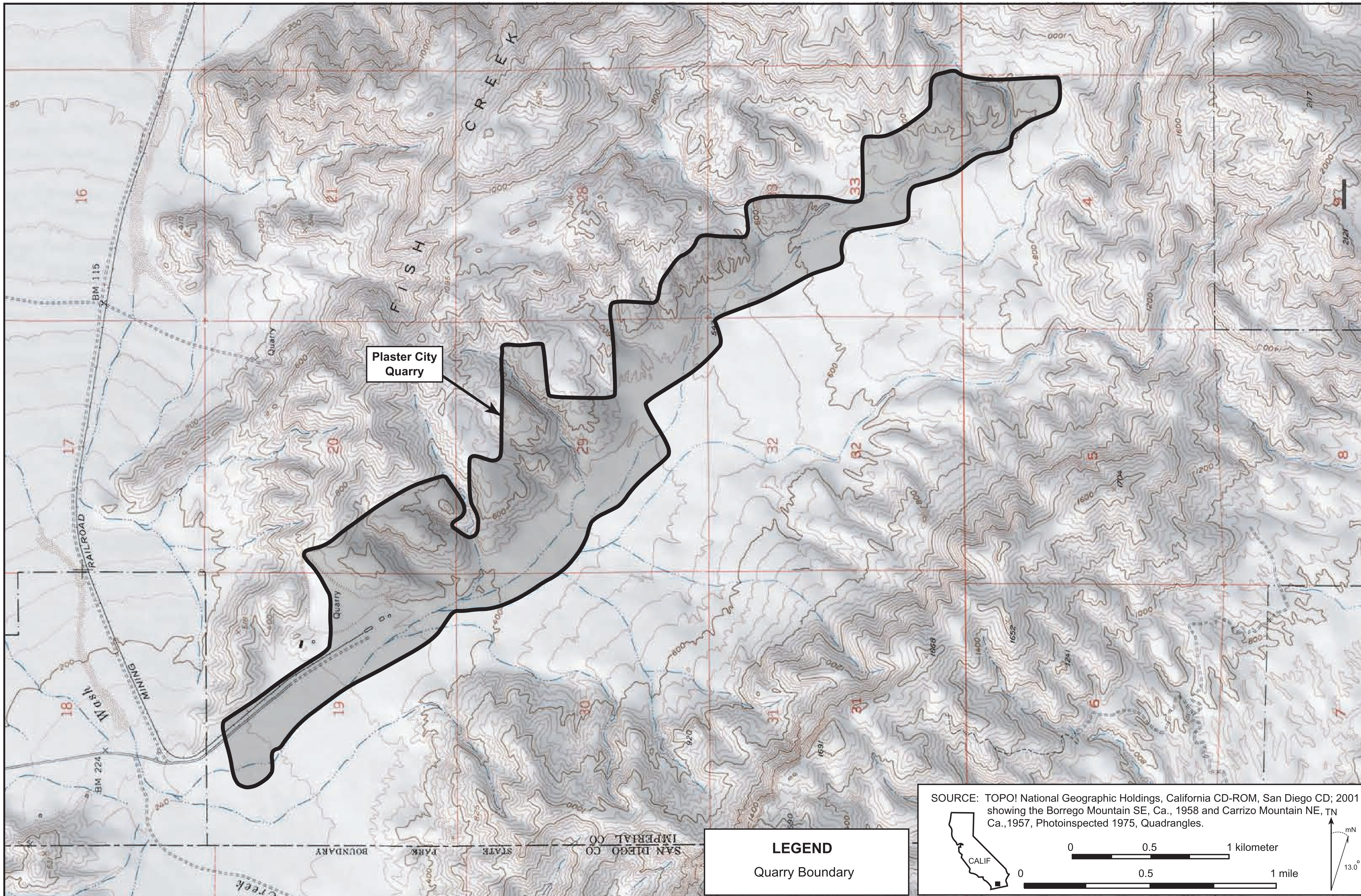


Figure 4. Plaster City Quarry Location Map

Figure 5. Plaster City Quarry and Associated Facilities

Overview of Quarry and Associated Facilities Facing Northeast

Overview of Trucks and Quarry Facing Northeast

Overview of Quarry Area Facing East

The Plaster City Quarry has been in operation for 100 years and it has undergone several modifications during that time. Quarry modifications range from changes in mining practices to improvements in mineral preparation, crushing, and transportation. The quarry currently consists of: outcrops of exposed and buried gypsum; a crusher; a building for gypsum samples; a gypsum stockpile building where railcars are loaded; a building for vehicle maintenance; offices; an enclosed parking structure; and an equipment yard. The buildings are relatively new and primarily constructed of corrugated steel. Current archaeological investigations within present quarry boundaries did not identify any remnants of previous facilities, offices, or residences for mining personnel. Indeed, current quarry operations reflect modern technology (e.g., mining practices, equipment, and mineral processing facilities) with virtually no suggestion of a 100-year history of mining operations at the site. The Plaster City Quarry does not seem to be associated with any individuals or events important in regional or local history, does not reflect various historic mining practices, and does not seem to have the potential to yield significant historical information regarding mining in or development of Imperial Valley. Therefore, the Plaster City Quarry does not seem to meet any of the eligibility criteria for inclusion in either the NRHP or the CRHR or for consideration as a unique archaeological resource as described in CEQA.

Site USG-01 is located in the proposed quarry expansion area and consists of the remnants of a stone structure, hearth, and an historic trash scatter (Figures 6-8). The structure consists of an approximately 3 foot high U-shaped stonewall surrounding a hearth. The wall is constructed of dry laid weathered outcrop gypsum and granite stones. The original entrance to the structure seems to be on its south side. A rectangular rock-lined hearth is located in the center of the structure with fire-cracked around it and also scattered outside the structure. The trash scatter associated with the structure contained sanitary cans, glass bottles, and other fragmentary debris. The design and construction of the structure are not diagnostic, but the sanitary cans and maker's marks (e.g., Hazel-Atlas and Glass Containers, Inc.) on glass bottles do provide some information regarding the period of use of the site. Indeed, the cans suggest an occupation of the site during the 1930s and the maker's marks on glass bottles suggests use of the site from the 1940s through the 1960s (Toulouse 1971). Staff of the Plaster City Quarry stated that the site was one of many former quarry "test sites" which were used to test sediments for their content of gypsum prior to quarrying specific deposits. Regardless of its use, the site lacks integrity of design, feeling, and association. Indeed, the site has been affected by both seasonal flooding and brush fires (e.g., artifacts originally associated with the site are scattered across a wide area surrounding it and many of the glass artifacts are melted suggesting that the area has been subjected to brush fires). Site USG-01 does not seem to be associated with any individuals or events important in regional or local history, does not reflect various historic mining practices, and does not seem to have the potential to yield significant historical information regarding mining in or development of Imperial Valley. Therefore, the extant remnants of site USG-01 do not seem to meet any of the criteria for inclusion in the NRHP or the CEQA or for consideration as a unique archaeological resource as described in CEQA.

The Plaster City Railroad was built in 1922 by the Imperial Gypsum and Oil Corporation to transport gypsum from the Plaster City Quarry to the San Diego and Arizona Eastern Railroad depot at Plaster City. The railroad is a narrow gauge railway that spans approximately 26 miles

Figure 6

This Figure contains proprietary information and has been intentionally omitted from this Appendix.

Figure 7

This Figure contains proprietary information and has been intentionally omitted from this Appendix.

Figure 8. Stone Structure at USG-01 Facing Southeast

from the Plaster City Quarry to Plaster City (Figure 9). Pacific Portland Cement Company bought the railroad and quarry in 1924, and operated both of them until 1945. U.S. Gypsum Company bought the railroad and quarry in 1945, and has operated the quarry and maintained the railroad it for the last 57 years (Brueckman 1970).

The Plaster City Railroad is still in operation and consists of diesel locomotives and cars designed to transport large quantities of gypsum from the Plaster City Quarry to U.S. Gypsum Company's wallboard plant in Plaster City. The narrow gauge Plaster City Railroad is a unique facility designed and built to haul gypsum from the Plaster City Quarry to Plaster City. Indeed, the completion and operation of the railroad facilitated the growth of gypsum mining in Imperial Valley. The Plaster City Railroad is important in the history of Imperial Valley and the development of mining in the region, and represents a unique type of railway design and construction (i.e., narrow gauge track). Therefore, the Plaster City Railroad seems to meet the criteria for inclusion in the NRHP, the CRHR, and/or as a unique archaeological resource as described in CEQA. The railroad, however, is still operational, will remain in operation, is well maintained, and will not be affected by any activities related to the currently proposed project. Indeed, the railroad is a critical component of quarry operations at the Plaster City Quarry and will remain fully operational until the quarry is closed and reclaimed. Therefore, the

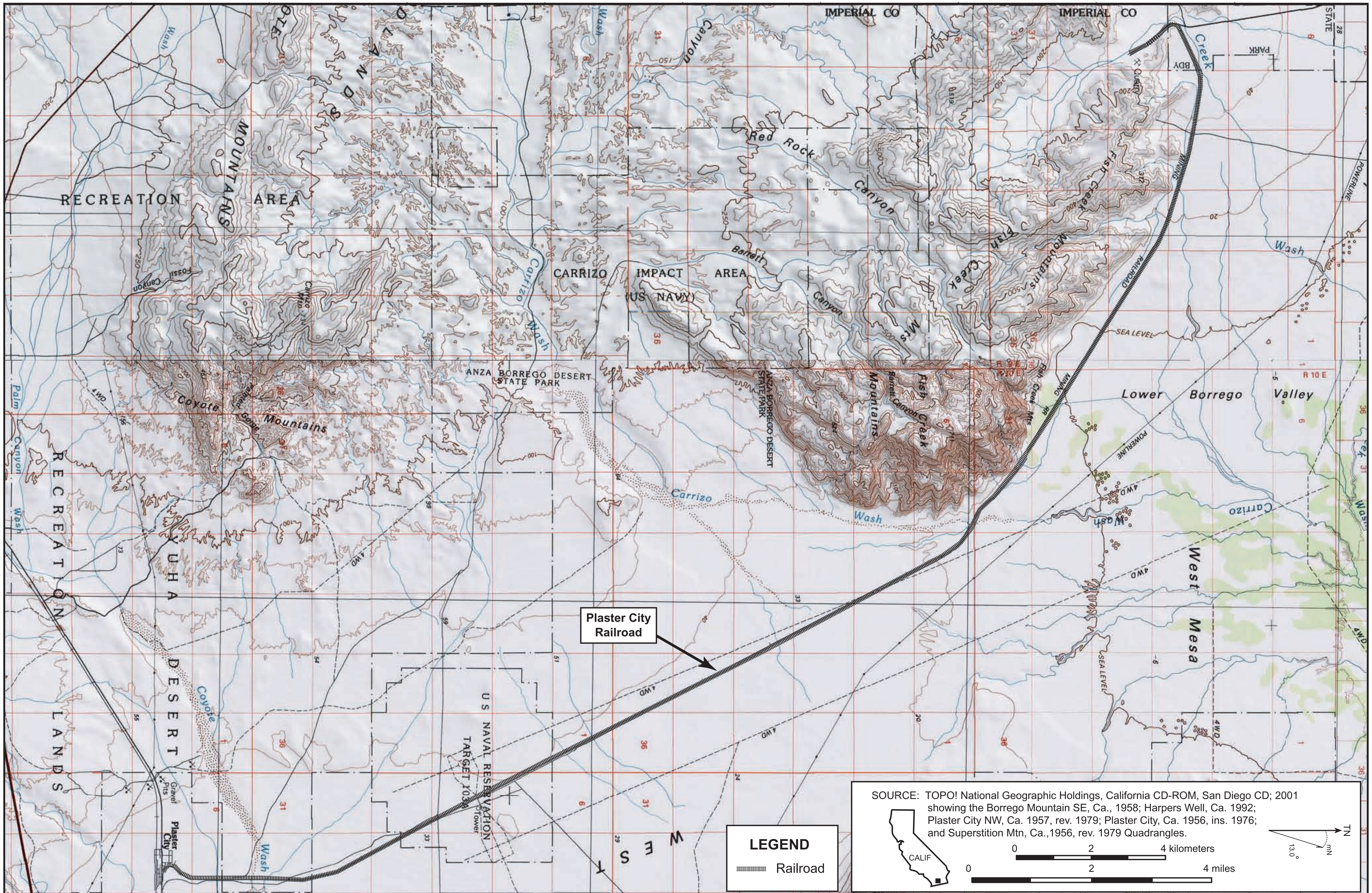


Figure 9. Plaster City Railroad Location Map

disposition of the Plaster City Railroad should be addressed at the time the quarry is closed.

U.S. Highway 80 was a transcontinental highway extending from San Diego, California to Tybee Island, Georgia (www.gbcnet.com/ushighways/US80/US80.html). In southern California, the highway extended from U.S. Highway 101 in San Diego to the Arizona border near Yuma. U.S. Highway 80 was originally commissioned in 1926 and it was decommissioned in 1964 (www.gbcnet.com/ushighways/US80/US80.html). Regardless, the highway remained in use until Interstate 8 was completed in 1974. Sections of the original highway were subsequently realigned and replaced by roads such as CR S80. Remnants of U.S. Highway 80, however, still exist along an alignment that roughly parallels the route of CR S80. These remnants were encountered during pedestrian surface survey for the water pipeline replacement project between Ocotillo and Plaster City. The remnants of the highway are beyond the APE of the water pipeline replacement project, but the highway was recorded in the area at the request of the Southeast Information Center and the BLM. Since old U.S. Highway 80 is located beyond the project APE its eligibility for inclusion in either the NRHP or CRHR will not be addressed ion this report. Regardless, the alignment and features of the highway would not likely be affected by any project related activities.

The San Diego and Arizona Eastern Railroad was constructed across San Diego and Imperial County from 1907-1919. The alignment of the San Diego and Arizona Eastern Railroad tracks parallels the alignment of CR S80 and the water pipeline replacement project. The railroad tracks, however, are beyond the APE of the project and would not likely be affected by any project related activities.

One isolated green porphyry flake was identified during pedestrian surface survey for the water pipeline replacement project between Ocotillo and Plaster City (Figures 3 and 10). The isolate is an unmodified middle stage flake located at UTM 0597490m E, 3623425m N. No other artifacts were observed in the vicinity of the isolate.

Figure 10. Green Porphyry Flake

4.2 SITE MANAGEMENT RECOMMEDATIONS

Archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement projects identified the Plaster City Quarry, historic site USG-01, the Plaster City Railroad, abandoned U.S. Highway 80, and an isolated flake either within or near the project APE. None of these sites or isolates requires any additional research or mitigation prior to implementation of the proposed project, and archaeological monitoring of project activity seems unwarranted.

The Plaster City Quarry is approximately 100 years old and is still in operation. The quarry has grown and been altered over its years of use. Current archaeological investigations within existing quarry boundaries did not identify any evidence of historic mining techniques, historic occupation of the quarry, or that it is important in regional or local history. Therefore, the quarry does not seem to meet any of the eligibility criteria for inclusion in either the NRHP or the CRHR, and does not require any additional research or mitigation prior to or during project implementation.

Site USG-01 consists of the remnants of a stone structure, hearth, and an historic trash scatter. Current archaeological investigations did not identify any evidence to suggest a specific use or period of occupation for the site or that it is important in regional and local history. Therefore, site USG-01 does not seem to meet any of the eligibility criteria for inclusion in either the NRHP or the CRHR, and does not require any additional research or mitigation prior to or during project implementation.

The Plaster City Railroad is approximately 80 years old and is still in operation. Some of the original rolling stock used by the railroad has been donated or sold to various railroad museums, and improvements in technology have facilitated modifications to locomotives and railcars. Regardless, the alignment of the narrow gauge railroad has remained relatively unchanged. The Plaster City Railroad is unique in terms of its design, a narrow gauge railroad, and its function, hauling gypsum. Therefore, the railroad seems to meet the eligibility criteria for inclusion in either the NRHP or the CRHR. Regardless, the railroad does not require any additional research or mitigation prior to or during project implementation since it will remain in operation, is well maintained, and will not be affected by any project related activity. Indeed, the railroad is a critical component of quarry operations at the Plaster City Quarry and will remain fully operational until the quarry is closed and reclaimed. Therefore, the disposition of the Plaster City Railroad should be addressed at the time the quarry is closed.

Remnants of old U.S. Highway 80 are located beyond the project APE. The highway was recorded at the request of the Southeast Information Center and the BLM, but its eligibility for inclusion in either the NRHP or the CRHR was not addressed in this report since it is beyond the project APE. Regardless, old U.S. Highway 80 is beyond the project APE and would not likely be affected by any project related activities.

The alignment of the San Diego and Arizona Eastern Railroad tracks parallels the alignment of CR S80 and the water pipeline replacement project. The railroad tracks, however, are beyond the APE of the project and would not likely be affected by any project related activities.

The isolated flake identified along the alignment of the water pipeline replacement project between Ocotillo and Plaster City is adequately documented and does not require any additional research or mitigation prior to or during project implementation.

In summary, no additional research or mitigation is recommended prior to or during project implementation for either the Plaster City Quarry, site USG-01, the Plaster City Railroad, remnants of old U.S. Highway 80, or an isolated flake. In addition, archaeological monitoring of any project related activity seems unwarranted based on the findings presented in this report.

5.0 MANAGEMENT CONSIDERATIONS

U.S. Gypsum Company is proposing to expand and improve quarrying and wallboard manufacturing operations in Imperial County, California. Currently proposed project activities include expansion of current quarrying operations at U.S. Gypsum Company's Plaster City Quarry located approximately 26 miles north of Plaster City and replacement of an existing water pipeline carrying water from the Ocotillo Aquifer to U.S. Gypsum Company's Plaster City wallboard plant. The proposed quarry expansion encompasses approximately 550 acres and the water pipeline replacement project follows the alignment of County Road (CR) S80 for a distance of approximately 8 miles between Ocotillo and Plaster City. The quarry expansion and water pipeline replacement projects will occur on both private lands and public lands managed by the Bureau of Land Management (BLM). Consequently, the proposed project is subject to the legal requirements of both the California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) 1970, as amended, and Section 106 of the National Historic Preservation Act 1966, as amended.

Current archaeological investigations within the boundaries of the U.S Gypsum Company's quarry and facilities expansion project are adequate. The record search did not identify any previously recorded prehistoric or historic sites within the project APE. The record search, however, did identify two previously recorded sites, CA-IMP-179 and CA-IMP-2355, and two previously recorded isolates, CA-IMP-2040 and CA-IMP-2357, near the APE of the water pipeline replacement project. The record search also identified that: the Plaster City Quarry and Plaster City Railroad were not previously recorded, and date to 1902 and 1922, respectively; and the San Diego and Arizona Eastern Railroad was built from 1907-1919. Pedestrian surface survey for the current project identified a new historic site, USG-01, in the proposed area of quarry expansion, but did not relocate any of the previously recorded sites or isolates reported to be near the APE of the alignment of the water pipeline replacement project. Pedestrian surface survey, however, along the alignment of the water pipeline replacement project did identify an isolated flake and remnants of old U.S. Highway 80 beyond the project APE.

The Plaster City Quarry, the Plaster City Railroad, historic site USG-01, the remnants of old U.S. Highway 80 between Ocotillo and Plaster City, and an isolated flake were recorded for the current project. The Plaster City Quarry and site USG-01 do not seem to meet any of the eligibility criteria for inclusion in either the NRHP or the CRHR, and do not require any additional research or mitigation prior to or during project implementation. The Plaster City Railroad seems to meet the eligibility criteria for inclusion in either the NRHP or the CRHR. Regardless, it will not be affected by any project related activity, and does not require any additional research or mitigation prior to or during project implementation. Indeed, the railroad is a critical component of quarry operations at the Plaster City Quarry and will remain fully operational until the quarry is closed and reclaimed. Therefore, the disposition of the Plaster City Railroad should be addressed at the time the quarry is closed. The remnants of U.S. Highway 80 are located near, but beyond the project APE. The highway was recorded at the request of the Southeast Information Center and the BLM, but its eligibility for inclusion in either the NRHP or the CRHR was not addressed in this report since it is beyond the project APE. Regardless, the highway remnants are beyond the project APE and would not likely be affected by any project related activity. The San Diego and Eastern Arizona Railroad tracks also are located beyond the APE for the water pipeline replacement project and would not likely be affected by any project related activity. The isolated flake identified along the alignment of the water pipeline replacement project between Ocotillo and Plaster City is adequately documented and does not require any additional research or mitigation prior to or during project implementation.

Archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement project are complete and adequate for project needs. Regardless, it is always prudent to develop an inadvertent discovery plan for projects that include ground disturbance across large areas. An inadvertent discovery plan: addresses the unanticipated discovery of cultural resources (i.e., prehistoric, historic sites, and/or artifacts); facilitates their protection; and also facilitates the uninterrupted progress of project related activities by providing construction staff with information regarding the nature and identification of historic resources and a set of protocols (e.g., a list of individuals who will respond to questions and/or go to the job site to make determinations regarding unanticipated discoveries of cultural resources) to follow if cultural resources are identified during project activity. Therefore, it is recommended that development of an inadvertent discovery plan be considered prior to implementation of the U.S. Gypsum Company quarry expansion water pipeline replacement project in Imperial County.

In summary, archaeological investigations for the U.S. Gypsum Company quarry expansion and water pipeline replacement project are complete. These investigations did not identify any historic properties, historical resources, or significant archaeological resources either within or near the project APE. Therefore, a finding of "No Historic Properties Affected" seems appropriate for the U.S. Gypsum Company quarry expansion and water pipeline replacement project.

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APPENDIX A
SITE RECORDS

This Appendix contains proprietary information and has been intentionally omitted from this Appendix.

APPENDIX B
NATIVE AMERICAN CONSULTATION

STATE OF CALIFORNIA Gray Davis, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390
Web Site www.nahc.ca.gov

July 2, 2002

John Nadolski
Pacific Legacy, Inc.
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

RE: Proposed expansion of a US Gypsum mining operations (i.e., replacement of an underground water line between Ocotillo and Plaster City and expansion of a gypsum mining), Imperial County.

Sent by Fax: (530) 677-9762
Pages Sent: 2

Dear Mr. Nadolski:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend other with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Rob Wood
Environmental Specialist III

Pacific Legacy Incorporated

Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

Ewiiaapaayp Tribal Office
Harlan Pinto, Chairperson
PO Box 2250
Alpine, CA 91903-2

RE: Quarry Expansion and Water Pipeline Replacement

Dear Mr. Pinto:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Pacific Legacy Incorporated
Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

La Posta Band of Mission Indians
Gwendolyn Parada, Chairperson
PO Box 1048
Boulevard, CA 91905

RE: Quarry Expansion and Water Pipeline Replacement

Dear Ms. Parada:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Pacific Legacy Incorporated

Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

Kumeyaay Cultural Heritage Preservation
Paul Cuero
36190 Church Road, Suite 5
Campo, CA 91906

RE: Quarry Expansion and Water Pipeline Replacement

Dear Mr. Cuero:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Pacific Legacy Incorporated
Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

Manzanita Band of Mission Indians
Leroy J. Elliot, Chairperson
PO Box 1302
Boulevard, CA 91905

RE: Quarry Expansion and Water Pipeline Replacement

Dear Mr. Elliot:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Pacific Legacy Incorporated
Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

La Posta Band of Mission Indians
James Hill, Tribal Administrator
PO Box 1048
Boulevard, CA 91905

RE: Quarry Expansion and Water Pipeline Replacement

Dear Mr. Hill:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Pacific Legacy Incorporated
Sierra & Central Valley Division
3081 Alhambra Drive, Suite 208
Cameron Park, CA 95682

Phone: 530.677.9713
Fax: 530.677.9762
www.pacificlegacy.com

October 31, 2002

Campo Band of Mission Indians
Ralph Goff, Chairperson
36190 Church Road, Suite 1
Campo, CA 91906

RE: Quarry Expansion and Water Pipeline Replacement

Dear Mr. Goff:

I obtained your name from the Native American Commission in order to inform you of the proposed Quarry Expansion and Water Pipeline Replacement Project in Imperial Valley. The project will include ground disturbing activities, although the area of the Water Pipeline Replacement has been previously disturbed. Regardless, if you have any questions and /or concerns regarding the project please do not hesitate to contact me.

Sincerely,

John A. Nadolski

John A. Nadolski
Project Manager

Appendix F Visual Resource Analysis for the U.S. Gypsum Company Expansion/Modernization Project

VISUAL RESOURCE ANALYSIS FOR THE U.S. GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT

Prepared For:

USDI Bureau of Land Management
El Centro Field Office
1661 South Fourth Street
El Centro, California 92243

Prepared By:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

January 2005

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VISUAL ANALYSIS
FOR THE
UNITED STATES GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT

1.0 INTRODUCTION

United States Gypsum Company (USG) owns and operates an existing wallboard manufacturing plant and gypsum quarry in Imperial County, California. The company is modernizing and expanding the manufacturing facilities at its Plaster City Plant (Plant) and gypsum quarrying at its Plaster City Quarry (Quarry) that supports the Plant. USG has studied growth trends for the southwestern United States. The company anticipated a need to increase production at its Plant and Quarry to supply the demand for wallboard and related products and to continue providing gypsum to the agriculture industry and cement manufacturers.

USG's Quarry represents a significant source of gypsum in the region and the west coast. Located in western Imperial County, the Quarry and Plant are optimally situated to supply California and the southwestern region of the United States with its products, mainly wallboard and related products. Most other west coast gypsum production plants rely on water borne rock shipments from Mexico.

This Visual Analysis evaluates the visual impact of the expansion/modernization of the Quarry and Plant.

1.1 Location of Project Site

The Quarry is located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Figure 1 (Vicinity Map) shows the regional location of the project. The site is further defined as being located in the northwest end of the Fish Creek Mountains, east of Split Mountain and south and west of the Fish Creek Wash. Developed and undeveloped properties are bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and to the south, and public lands administered by the BLM. USG's properties are located in portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 9 East (San Bernardino Baseline and Meridian), as shown on the U.S. Geological Survey Borrego Mountain South East Quadrangle.

Figure 2 (Project Setting) shows project setting of the Plant, Quarry, narrow gauge rail line, Plaster City waterline, and Plaster City water tank and wells.

Access to the Quarry is via State Highway 78 from both San Diego and Imperial counties. The site is also accessible to southern California and Arizona via Interstate 10 and I-8 to State Highway 86. It is located approximately 26 miles northwest of the Plaster City Plant. Gypsum is transported between the Quarry and the Plant via the narrow-gauge railroad owned and operated by USG. The Quarry is specifically located in a valley between the Fish Creek Mountains to the east and Split Mountain (part of the larger Vallecito Mountains) to the west. The site lies in an elongated valley along an unnamed wash and on the lower hillsides of the Fish Creek Mountains.

The Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City, California approximately 18 miles west of El Centro, the County seat. Access to the Plant is via Evan Hewes Highway immediately north of I-8. The Plant is also located less than 15 miles from the United States/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

The Plant is located approximately 26 miles southeast of the Quarry and is at an elevation of approximately 100 feet above mean sea level (amsl). The existing narrow gauge rail line alignment runs from the Quarry near the Fish Creek Mountains, at about 350 feet elevation, to Plaster City. It follows a northwesterly direction from the Quarry for about 1 mile, then turns to the east and southeast, following the bajada of the Fish Creek Mountains and descends to just below sea level after about another 5 miles; it then continues to the south-southeast, generally at about 100 feet elevation to Plaster City.

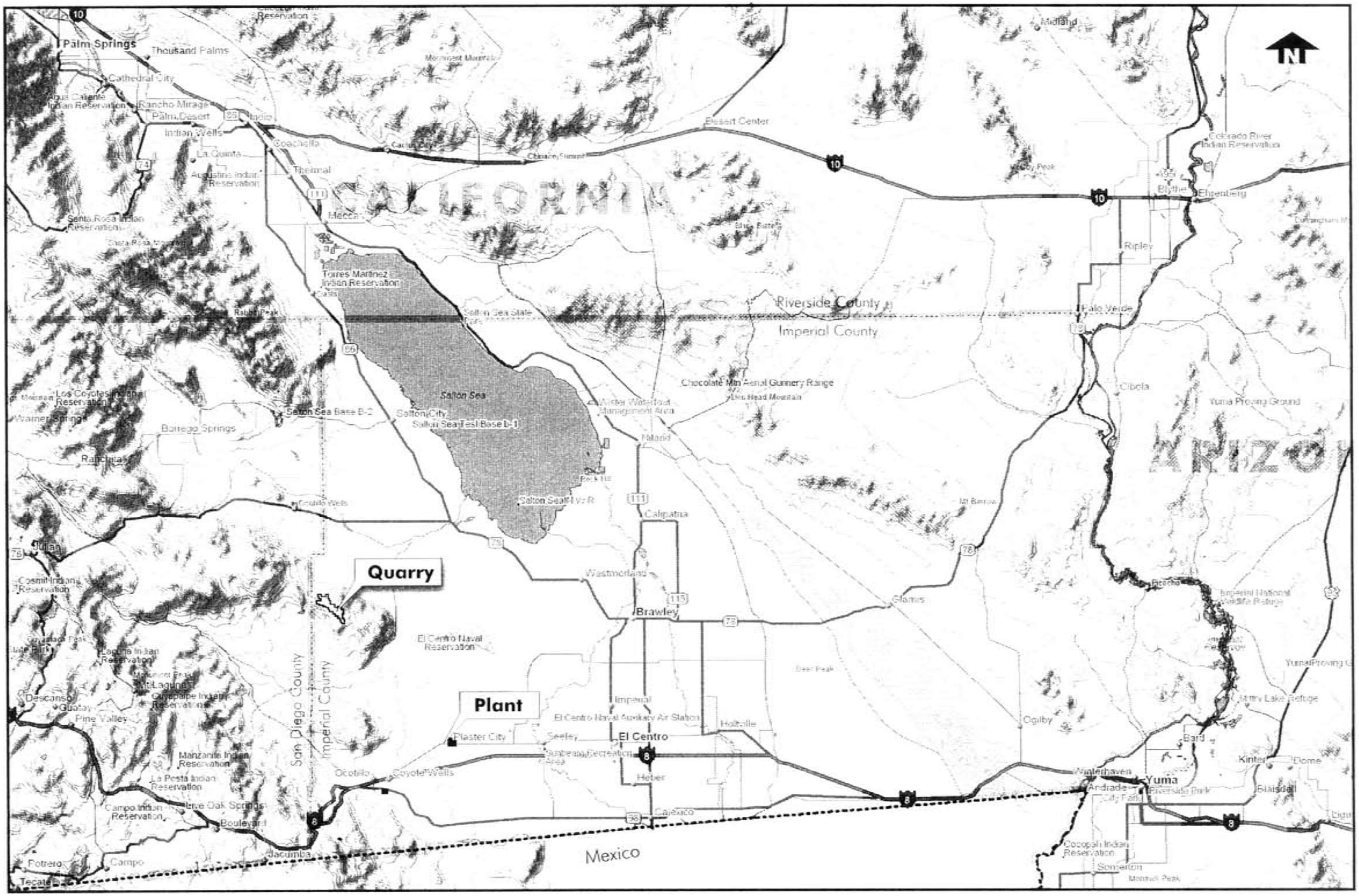
An existing water pipeline originates at a well field just south of the I-8 freeway in Ocotillo at about 375 feet elevation. It crosses beneath the freeway, and parallels Evan Hewes Highway to the north and east to Plaster City. The pipeline lies within an existing Evan Hewes Highway right-of-way as authorized by an encroachment permit issued by the California Division of Highways. The eastern 5 miles of the water line are at the boundary of the Bureau of Land Management's "Plaster City Open Area" for off-highway vehicles (OHVs), and a designated OHV staging area is found on the north side of Evan Hewes Highway west of the Plant. The proposed project would replace the existing water line by installing a larger line within approximately 20 feet of the existing alignment.

The Quarry consists of 2,048 acres – 1,640 acres owned by USG, 380 acres of unpatented placer mine claims, which are included in Mining Claim Patent Application No. CACA 24563, and 28 acres of mill sites included in Patent Application No. CACA 34637. Both patent applications are under consideration by the Bureau of Land Management (BLM).

1.2 History of the Plaster City Quarry and Plant

Quarry activities have been ongoing since the 1920's. Gypsum occurs along a north-south trend for about 4.5 miles along the northern portion of the Fish Creek Mountains. Contiguous gypsum outcrops range in elevation from 920 feet amsl at the southernmost limit of the deposit to about 325 feet amsl at the northernmost exposures. Outliers of gypsum to the east of the main deposit occur at an elevation of 700 to 1000 feet amsl. The elevation of the alluvial wash varies from about 800 feet amsl to the south and gently slopes to about 250 feet amsl near its confluence with Fish Creek Wash.

The existing reclamation plan for the Quarry was approved in 1983. A second reclamation plan is for the Shoveler Annex property that was acquired from Calmat in 1989. One aspect of the proposed project is to combine the two valid and existing reclamation plans into a single comprehensive reclamation plan.

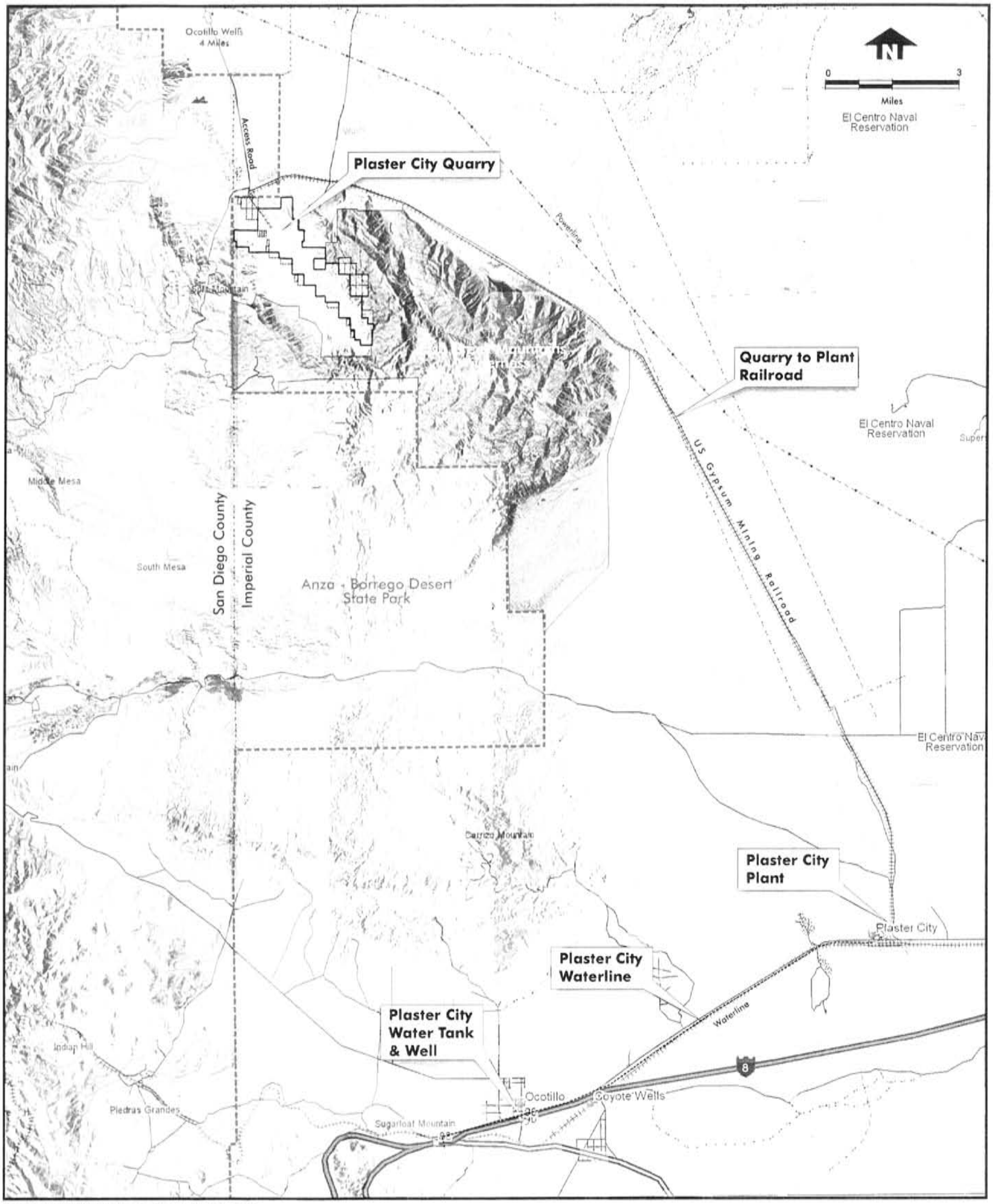


Prepared By
LILBURN CORPORATION

Vicinity Map

United States Gypsum Company
County of Imperial, California

Figure 1



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

Project Setting

Prepared By
LILBURN
CORPORATION

United States Gypsum Company
County of Imperial, California

Figure 2

1.3 Existing Conditions of the Plaster City Quarry and Plant

1.3.1 Plaster City Quarry

The Quarry property holdings consist of 2,048 acres – 1,640 acres owned by USG, 380 acres of unpatented placer mine claims, which are included in pending Patent Application No. CACA 24563, and 28 acres of unpatented mill site claims comprising Patent Application Number CACA 34637. Both Patent Applications are under consideration by the BLM.

Gypsum occurs throughout the site as a contiguous bed striking northwest to southeast and dipping approximately 25-30 degrees to the southwest with gypsum deposits overlying granite. There is no overburden associated with current quarrying activities.

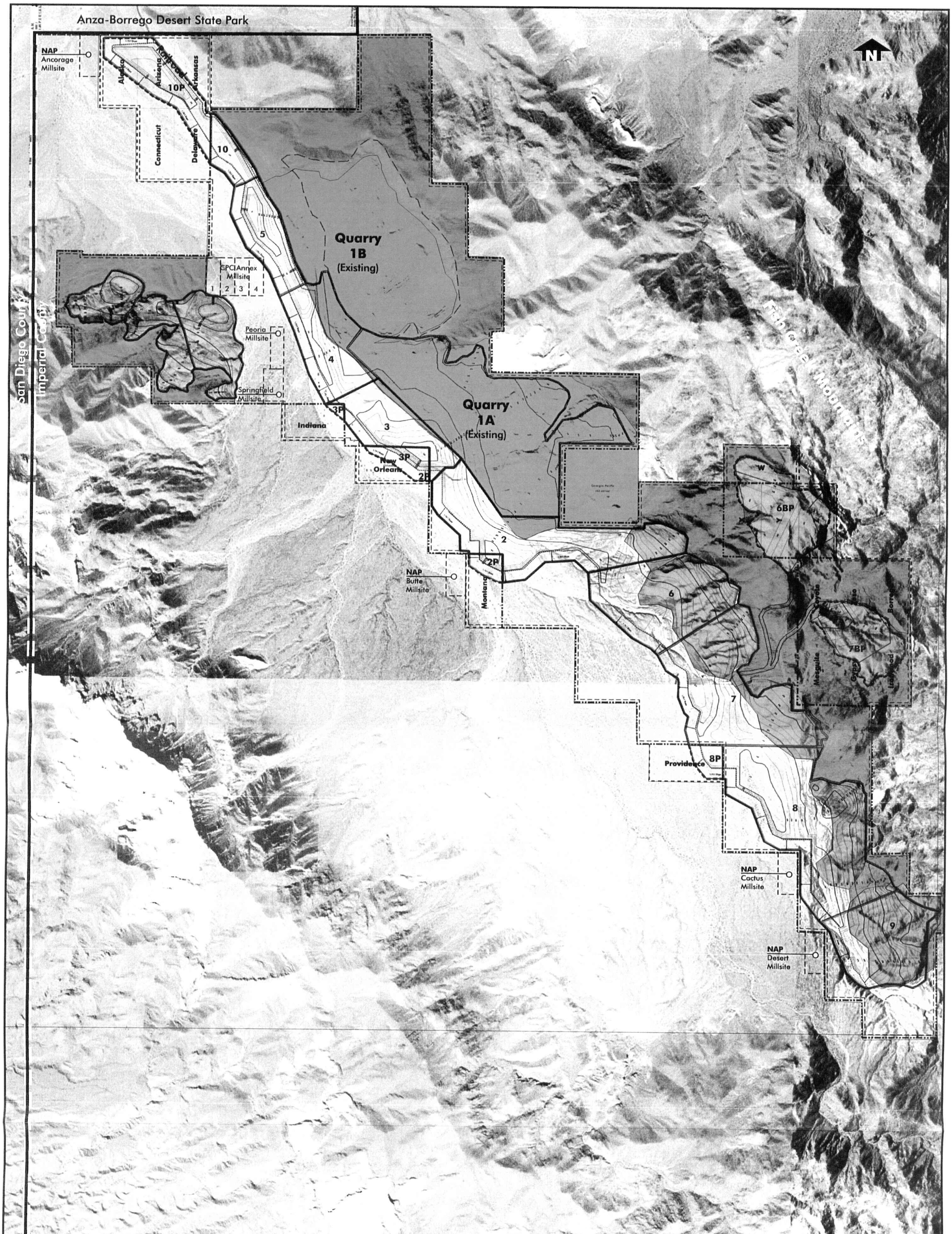
To date, quarrying has occurred in Areas 1A and 1B of the Quarry (east side of the wash) and the Shoveler Annex (west side of the wash) on a total of approximately 338.5 acres with 40.6 acres used for the processing facilities and access roads. The areas of quarrying disturbance include: Quarry 1A – current quarry comprising a total of 129.6 acres; Quarry 1B – 151.8 acres disturbed prior to 1976 (pre-SMARA); the processing facilities comprising a total of 39.2 acres; and the Shoveler Annex – 16.5 disturbed acres located on the western side of the wash from the processing facilities. Roads account for approximately 1.4 acres total. Refer to Figure 3 for Plaster City Quarry -- Existing Conditions.

Since the gypsum occurs in outcrops on the lower mountain slopes at the site, no overburden needs to be removed prior to commencing the hillside quarrying. New areas within the existing permitted quarry areas are drilled to facilitate blasting. Blasting occurs up to four times per month. Each blast results in the fragmentation of an average of 55,000 tons of gypsum. The gypsum is loaded into 60-ton capacity haul trucks by front-end loaders, and then hauled to the processing area via partially paved 60-foot wide haul roads.

Haul trucks transport the material to the processing area to be crushed then moved to the rock storage building. The rock storage facility is situated over a tunnel where hopper cars are moved into place beneath the building and loaded with gypsum rock. When all the cars are filled, the train transports the load to the Plant for processing. USG also operates a processing facility at the Quarry where material is crushed, screened and shipped in bulk by haul truck as agricultural soil amendment or for use in the manufacture of Portland cement. Portland cement rock and agricultural gypsum are shipped by bulk truck from the Quarry as approved by Conditional Use Permit No. 807-88 and Permit No. 956-90.

An area of approximately 39.2 acres adjacent to pre-SMARA Quarry Area 1B serves as the location of the Quarry's existing processing area where quarried material is crushed before being transported via rail to the Plant or processed for sale directly from the Quarry.

The gypsum that has been hauled to the primary crusher is dumped directly into the rock feeder, fed into a jaw crusher, conveyed to a primary screen, fed into a secondary crusher and crushed to minus four-inch size. The crushed gypsum is then conveyed into the stockpile building where it is stored for loading into the railroad hopper cars for transport to the Plant.



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

LEGEND

Plaster City Quarry Private Land Boundary

Plaster City Quarry Public Land Boundary

100' Quarry Setback

2 — Quarry Area Boundary and Number

NAP — Not a Part

Existing Quarry and Processing Plant

Gypsum Outcrops

Alluvium

Non-gypsum Upland

Shoveler Annex

Plaster City Quarry - Existing Conditions

Prepared By:
LILBURN CORPORATION

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 3

The train consists of up to 25 bottom-dump hopper cars (45-ton capacity) and currently makes an average of 950 round trips between the Quarry and the Plant each year.

When the train arrives at the Quarry, the engine switches to the last car of the train and pushes the string of cars into a tunnel beneath the Rock Stockpile Building, where the crushed gypsum is gravity loaded into the cars. Up to eight cars can be filled at one time. Crushing, screening, and loading operations are conducted within enclosed structures with baghouse dust collectors collecting dust from pick-up points on the process equipment and rock loading points to minimize fugitive dust emissions.

Gypsum is also processed at the Quarry Agri Plant to produce raw gypsum products of varying screen sizes for direct sales from the Quarry. Trucks haul gypsum from the quarry and dump it into a surge pile adjacent to the crusher. Gypsum is drawn from the surge pile, then crushed and screened into agricultural products and for use in the making of cement. This Agri Plant also includes a baghouse to collect dust from the crusher, screens, mill, and conveyor belts. These materials are stored at the Quarry in storage bins and tanks to the northeast of the rock storage building. Customers enter the site at the scalehouse, located near the front gate, then drive into the loading area where they self-load their trucks from the customer loading areas. They then return to the scalehouse to be weighed again and to complete their bill before leaving the site. Approximately 30 trucks travel to and from the site per weekday.

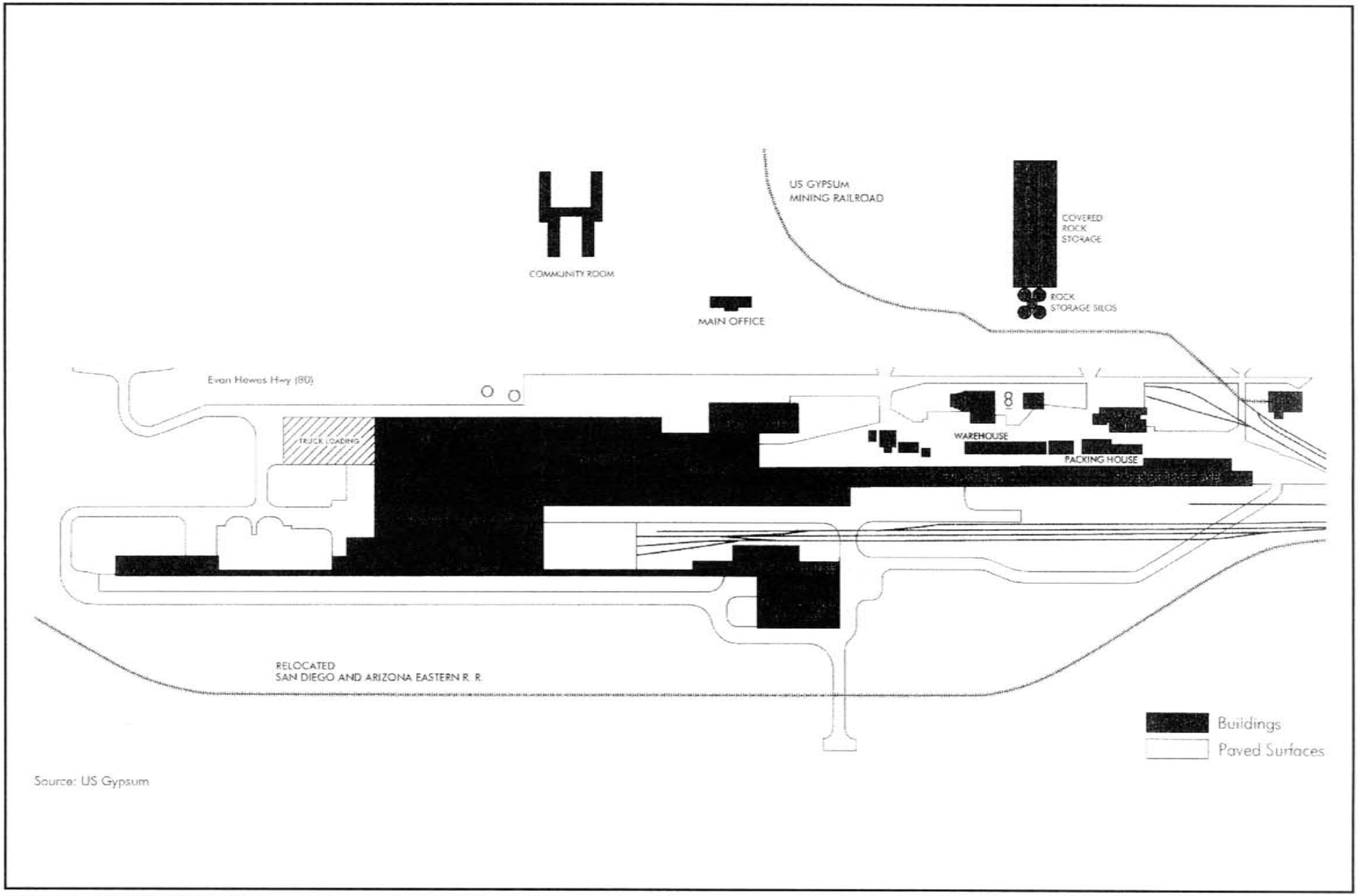
Other quarry related uses and buildings include restrooms, a scalehouse, a building to house quarry core samples, vehicle maintenance buildings, and storage buildings. There is also an equipment yard and a covered parking area for employees.

1.3.2 Plaster City Plant

Raw gypsum rock that has been processed to minus four-inch size is hauled by train from the Quarry along USG's narrow-gauge rail line, which unloads the raw material at the mill where it is stored in the enclosed rock storage area. The gypsum is further processed at the Plant into a variety of products including gypsum wallboard, industrial and building plasters, as well as other gypsum products and for the manufacture of Portland cement. Figure 4 shows the Plaster City Plant Expansion Layout; I-8 is located approximately 3 miles south of the Plant.

The Plant houses two board lines that produce wallboard. In the Board Department, stucco is mixed with water and additives and spread between two pieces of heavy paper. The board is cut to length, dried in kilns, finished into two sheet bundles and then stacked in the finished product warehouses. Board is then brought to the loading area where it is loaded on truck or train for delivery to market.

As part of the modernization/expansion, USG installed additional equipment to recycle damaged or out-of-specification material from the IMSA and feed it back into the Plant rock supply where it is used in the manufacture of wallboard. The new recycling system is capable of reclaiming material generated on a daily basis as well as reclaiming material from the IMSA..



Source: Resource Design Technology, Inc., 2004.

Plaster City Plant - Expansion Layout

United States Gypsum Company
County of Imperial, California

Prepared By
LILBURN
CORPORATION

Figure 4

Off-specification wallboard is stored in an area located south of the Plant. This area encompasses approximately 89 acres of land and is referred to by USG as an Inert Material Storage Area (IMSA). Damaged or out-of-specification gypsum products are moved from the production facility to the IMSA for storage and reclamation. The IMSA is managed and monitored by USG under the Regional Water Quality Control Board, Colorado River Region, Order No. 96-001 (RWQCB Order No 96-001).

In addition to the mill, storage sheds, production lines and loading areas, the Plant includes the rail lines (the USG narrow gauge line and an interstate rail line) and main road (Evan Hewes Road), USG offices and parking areas for employees.

1.4 Components of the U.S. Gypsum Company Expansion/Modernization Project

The Proposed Action consists of improvements already made to the Plant and Quarry between 1999 and 2002, as well as planned improvements that had not yet been undertaken.

1.4.1 Plaster City Quarry

1.4.1.1 Objectives

- Develop the gypsum deposits consistent with quantity and quality parameters required to meet current and future demands for gypsum products.
- Combine the two valid and existing quarry reclamation plans into a single reclamation plan.
- Develop the known resource at the Quarry to provide optimum efficiency and economy of operation using the existing permitted processing and transportation infrastructure.
- Maximize the recovery and utilization of known gypsum reserves needed for the Plant to fulfill its estimated operational design life.
- Develop the Quarry operations to limit disturbed areas and to achieve reclamation goals.
- Provide continued employment for people in sparsely populated County where industrial jobs are limited.
- Implement a reclamation program designed to minimize erosion, reestablish vegetation, reduce the aesthetic impacts, and eliminate public safety concerns created by quarrying.
- Reclaim the site for post-quarry uses as open space.

1.4.1.2 Proposed Action for Quarry

The Quarry processing plant modernization consists of a new crusher building and an extension to the existing rock storage building to allow additional hopper cars to be loaded. Since 1998, improvements to processing facilities at the Quarry were made to support the increased capacity at the Plant. This was done using existing gypsum reserves. Continued quarrying activities require that additional areas be developed to allow continuous supplies of gypsum rock to the

Plant. The Proposed Action at the Quarry consists of the improvements already made to the crushing and loading facilities plus the additional components identified below.

1.4.1.2.1 Quarry Operation and Production

The Quarry portion of the Proposed Action includes the adoption of a long-term quarrying and reclamation plan for the extent of USG mineral holdings. The proposed Mine Reclamation Plan combines the two valid and existing quarry reclamation plans, one for the Quarry and the other for the Shoveler Annex Quarry purchased from Calmat Corporation in 1989, into a single comprehensive plan.

To date, mining has occurred in Area 1A, the Shoveler Annex, and Area 1B on a total of approximately 338.5 acres with 40.6 acres used for the processing facilities and access roads. The proposed mine reclamation plan is designed to allow recovery of gypsum on 845.2 acres. The cumulative area to be disturbed and reclaimed totals approximately 1,032 acres (planned quarry areas plus existing disturbed areas minus Quarry 1B). Quarry Area 1B has been in existence since before the enactment of the Surface Mining and Reclamation Act (SMARA) and thus is not subject to reclamation requirements. However, USG will re-grade and contour the pre-SMARA Quarry 1B hillside consistent with the planned final reclamation contours.

1.4.1.2.2 Quarry Well No. 3

A reliable water supply must be developed that is capable of producing approximately 23,000 gallons per day (or 26 acre-feet per year), to meet the needs for dust suppression on the haul roads and crushing equipment, as well as transplanting desert plant species during reclamation, and a possible supply of potable water for use by employees. A new production water well, proposed Well No. 3, would be drilled and water transported by a pipeline installed alongside of the existing alignment of the narrow-gauge railroad to the Quarry facilities. In conjunction with the development of the pipeline, USG would install an electric supply to serve the well pump.

The proposed new Quarry Well No. 3 is located on USG property about three miles east of the Quarry in the southeast quarter of Section 16 in Tract 49 along the rail line right-of-way. The proposed pipeline to convey water from the well site to the Quarry would be located within the existing right-of-way.

The proposed Quarry Well No. 3 site represents approximately 1/8 acre on USG property. The associated water pipeline would be developed within an existing right-of-way over an additional 11 acres (30 foot wide by 3 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed water pipeline and electric supply line (if solar panels are not used) between the well site and entrance to the Quarry site would be developed within the already disturbed access road (existing right-of-way) adjacent to the tracks. This well and its associated underground pipeline (and underground power line, if utilized) would allow USG the non-potable water necessary to continue dust suppression activities at the Quarry.

1.4.1.2.3 Overburden

The soil overburden within the wash would be stockpiled. Stockpiled material could also be used for berms to channel surface water flow in the wash. Overburden stockpiles would contain vegetative detritus and seed base for surface application. During mining, the balance of the overburden (sand) would be removed and deposited in the bottom of an adjacent quarry area.

USG does not propose to haul alluvial sands onto the outcrop exposures. Upon completion of quarrying, these surface exposures will consist of thin layers of gypsum, anhydrite or granite. Benches will be scarified and surfaces revegetated with species native to the gypsum substrate such as pygmy cedar. In some areas, clays from Quarry 1B may be spread to enhance revegetation.

1.4.1.2.4 Outcrop Quarrying

Some areas within the Quarry consist of outcrops of gypsum above the level of the alluvial wash. Production in these areas would continue with the extension and development of 25-foot high benches. The final configuration of the benches would be based upon: (1) the contact with underlying low-purity gypsum and basement materials and (2) the updip limit of the outcrops. This would progress to each of the additional subsequent areas. Overburden on these outcrops is almost nonexistent. When surface clays are encountered, they would be removed for use in reclaiming previously mined outcrops.

1.4.1.2.5 Alluvial Wash Quarrying

As mining of gypsum outcrops extends westward from the currently active quarry area, the gypsum underlying alluvial overburden would be developed and extracted. Quarrying of the alluvial wash deposits would progress down and westward to a maximum overburden depth of 100 feet. Extraction of the gypsum would progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V until the bottom of the excavation zone is reached.

Bench face slopes would be re-contoured using direct waste (low purity, clay sand material), where available, or the remaining bench would be angle drilled and blasted to leave a talus slope toe. Additional re-contouring, using the above material and/or the alluvial overburden, would be applied.

Overburden would be stockpiled or used as retention berms constructed from engineering drawings approved by the County. This action could result in review by the California Department of Fish and Game and U.S. Army Corps of Engineers and could require their approval. These retention berms would be pushed over the western wash quarry slopes as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time, but would typically be pushed into the adjoining mined areas for reclamation of their slopes as well.

1.4.1.2.6 Quarry Reclamation

The Mine Reclamation Plan consists of a multi-phased plan that would systematically quarry and process up to the current air quality permit process rate of approximately 1.92 million tons of gypsum annually.

The Mine Reclamation Plan is divided into areas based upon the current geological data, quantity and quality of gypsum, market demand and proximity to the existing processing plant. Each area has been numbered for purposes of identification.

To date, quarrying has occurred in Area 1A, the Shoveler Annex, and Area 1B prior to 1976 on a total of approximately 338.5 acres including 40.6 acres used for the processing plant and access roads. The Proposed Action is designed to allow recovery of gypsum on 845.2 acres. Approximately 150 acres of the planned excavation areas are within existing Quarry areas with approved mine reclamation plans. The cumulative area to be disturbed and reclaimed totals approximately 1,184 acres (planned quarry areas plus existing disturbed areas including Quarry 1B).

Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. Reclamation will be conducted concurrently where feasible during operations within Quarry Phase 1A. The steepest portion of the hillside quarries would consist of maximum 1H:1V slopes along a backwall with a broad area excavated to approximately 100 feet in depth at the base of the excavations and in the wash. The hillsides are currently sparsely vegetated and the lack of rainfall limits revegetation. The wash is somewhat more diverse in its plant productivity due to surface material and drainage, which concentrates the limited rainfall. The site access on the north would remain gated. The privately held lands would not be open to public recreational use. The benched hillsides would be re-contoured by blasting or dozing the benches to soften the topography.

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

Revegetation

Gypsum outcrops are hostile environments for vegetation due to their sulfate content. Hills that have high clay content are more conducive to the establishment of a root system. As of July 2004, vegetation on the site consisted of scant (less than four percent cover) Sonoran Creosote

Bush Scrub on the hillsides (outcrops) and alluvial fans, and low cover (twelve percent) Desert Dry Wash Woodland in the central area (wash).

Over the past several years, USG has re-contoured portions of mined areas within Quarry 1A and allowed the area to remain undisturbed as a test of natural revegetation. The revegetation effort is dependent on infrequent precipitation that occurs in this arid region. The natural revegetation is consistent with pre-existing plant densities.
Revegetation efforts would follow a series of steps that can be varied over the life of the operation. The steps are proposed as guidelines that would be followed until new information or techniques become available which could improve the results of the revegetation activities. Revegetation efforts would use seeds and plants of native species collected locally (on-site and on adjacent areas). Due to the limited vegetation and highly variable seed production, it is likely that on-site collection alone would not provide an adequate supply of seeds when needed. Therefore, seeds may be collected and stored by a contractor specializing in native plant seed collection.

The undisturbed portions of the Quarry and areas adjacent to the Quarry provide the models for what should be achieved through the revegetation effort. The areas to be disturbed by future mining would also provide specimens for direct transplanting and the undisturbed areas would provide a source of seeds for the revegetation effort.

1.4.2 Plaster City Plant

1.4.2.1 Objectives

- Meet current and future residential and commercial building products demand in the Southwestern United States;
- Provide for haulage of construction materials over the most efficient available routes;
- Fulfill estimated operational design life of the Plant;
- Replace older, less-efficient production line with a new state-of-the-art high speed wallboard line;
- Provide continued employment for people in a sparsely populated county where industrial jobs are limited;
- Provide for potential addition of a natural gas fired cogeneration facility to efficiently provide both heat for wallboard processing as well as electrical power;
- Sustain an adequate water supply for manufacturing operations; and
- Replace deteriorating eight-inch diameter pipeline with a ten-inch diameter pipeline.

1.4.2.2 Proposed Action for Plant

1.4.2.2.1 Water Line Replacement

A new 10-inch diameter water pipeline 8.5 miles long would replace the worn 8-inch water pipeline from the wells at Ocotillo to the Plant. The new 10-inch pipe would provide a more reliable water supply, minimizing line surges and associated leaks/ruptures, providing a quicker water system recovery after waterline breaks/leaks or maintenance, and improving fire protection at the Plant.

The new pipeline will be placed in a trench excavated adjacent to the existing pipeline alignment. The trench will be excavated and soil placed adjacent to the trench while the pipeline is being laid. Upon completion, the contractor will carefully backfill the trench using the excavated material. Once the new pipeline is completed, tested and operational, the existing pipeline would be abandoned in place. It will only be exposed where the contractor will be connecting the new pipeline to the well and where the new pipeline connects to the plant. Maintenance strategies for the proposed pipeline would not differ from existing maintenance. The pipeline alignment is periodically inspected by driving the right-of-way. Also, routine maintenance is performed at the wellhead and connection at the plant.

1.4.2.2.2 Cogeneration Unit

Installation of a 14.4-megawatt (MW) cogeneration unit may possibly provide heat to the Board Plant in order to dry wallboard as well as provide electrical power for the Plant. The natural gas-fired turbine and electrical cogenerator unit would be installed in the southwest portion of the plant in a fully enclosed sound attenuated building. This unit would be sized to provide electrical power for the entire plant while delivering waste heat to the No. 3 kiln to assist in drying board, reducing the amount of heat needed by the kiln.

2.0 Visual Resource Management (VRM) Analysis

The following analysis was conducted in accordance with the BLM/VRM Program guidelines.

2.1 BLM/VRM Methodology

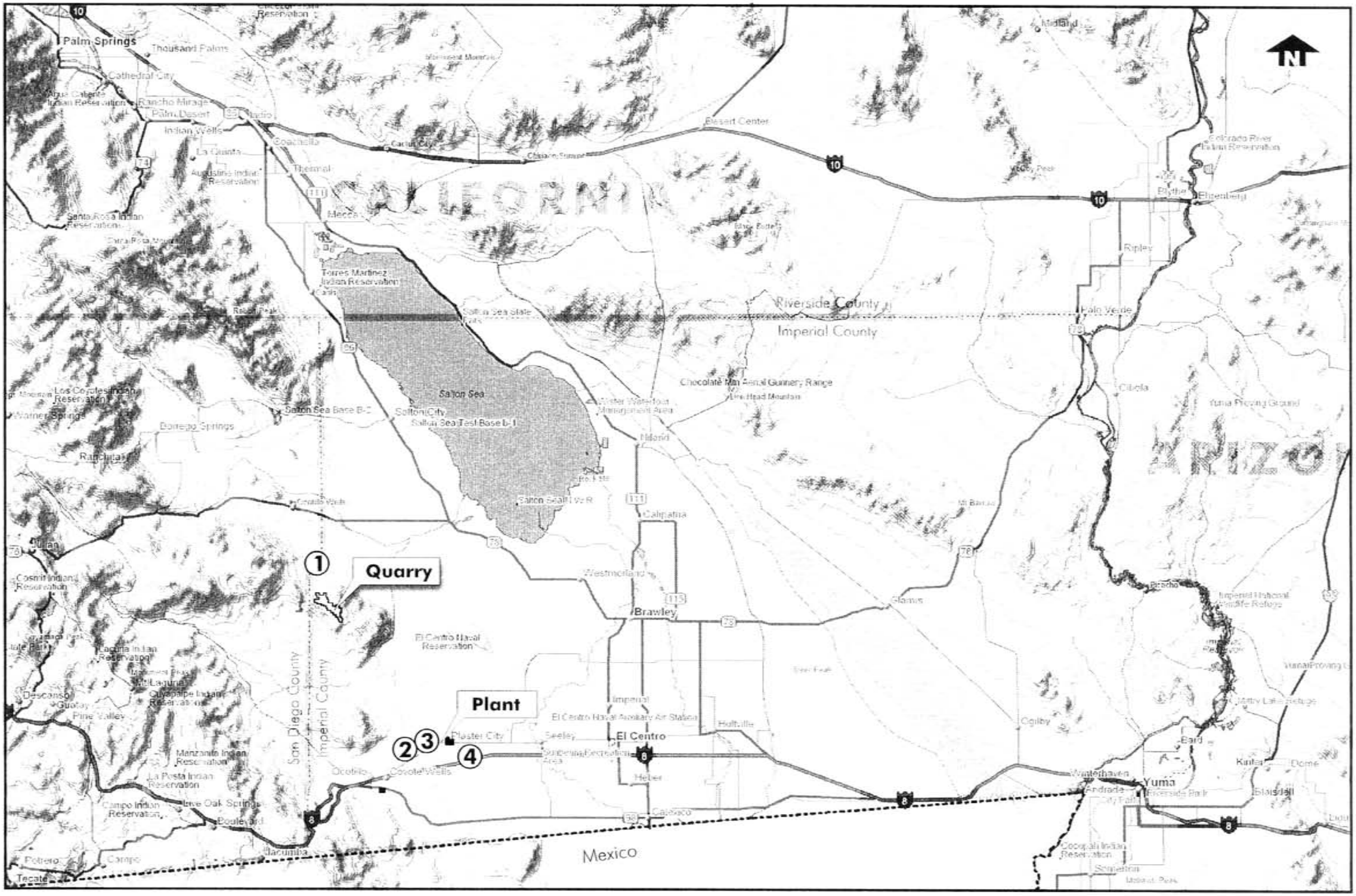
The BLM's VRM system provides a way to identify and evaluate scenic values to determine the appropriate levels of management. It also provides a way to analyze potential visual impacts and apply visual design techniques to ensure that surface-disturbing activities are in harmony with their surroundings.

Information was gathered from site visits, photographs, and existing documents including the Reclamation Plan. Figure 5 shows Site Photo Locations. The photographs that follow show examples of potential public views of the project sites.

2.2 Scenic Quality

Scenic quality is a measure of the visual appeal of a tract of land. In assessing the visual effect of the proposed project, rating scenic quality required a description of the existing scenic values in the landscape both on-site and surrounding the site. The following factors were considered in the assessment of scenic quality of the USG Plaster City Quarry, Plant, and vicinity:

- Landform
- Vegetation
- Water
- Color
- Adjacent Scenery
- Scarcity
- Cultural Modifications



Site Photo Locations

United States Gypsum Company
County of Imperial, California

Figure 5

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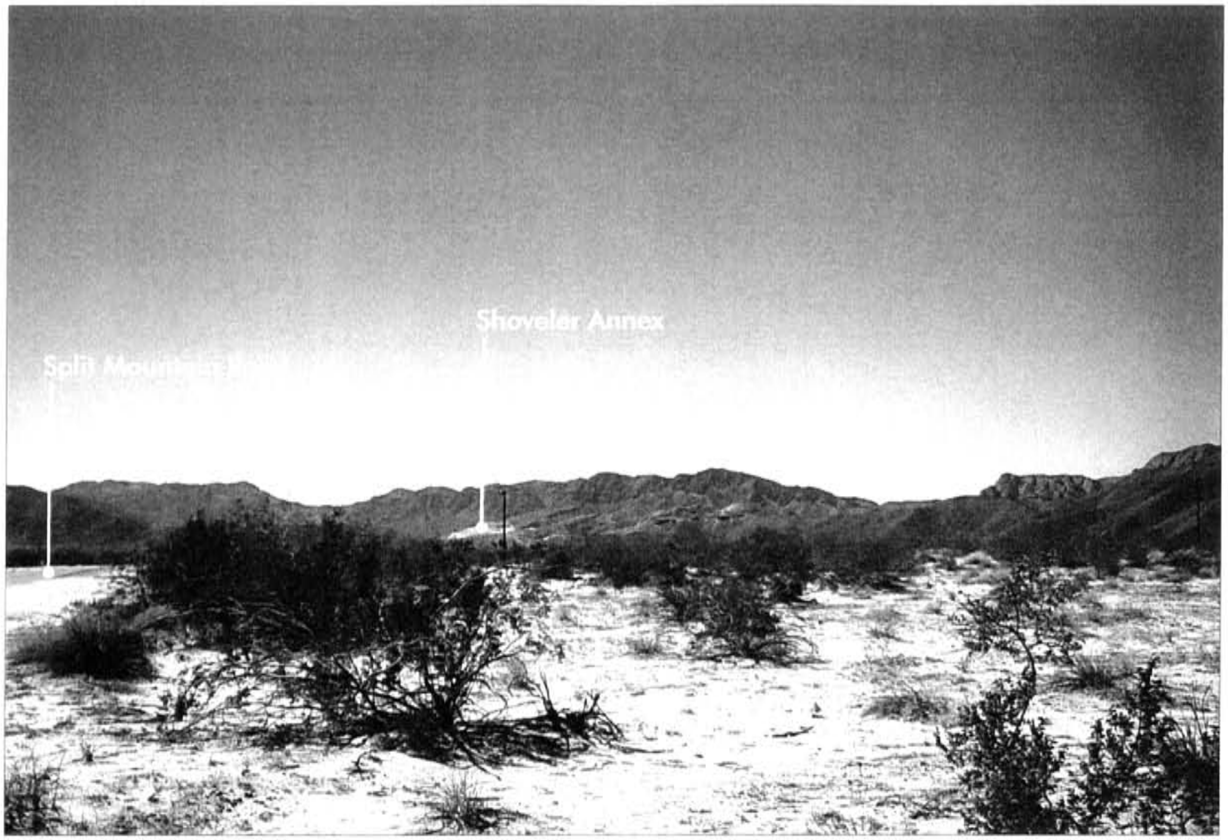
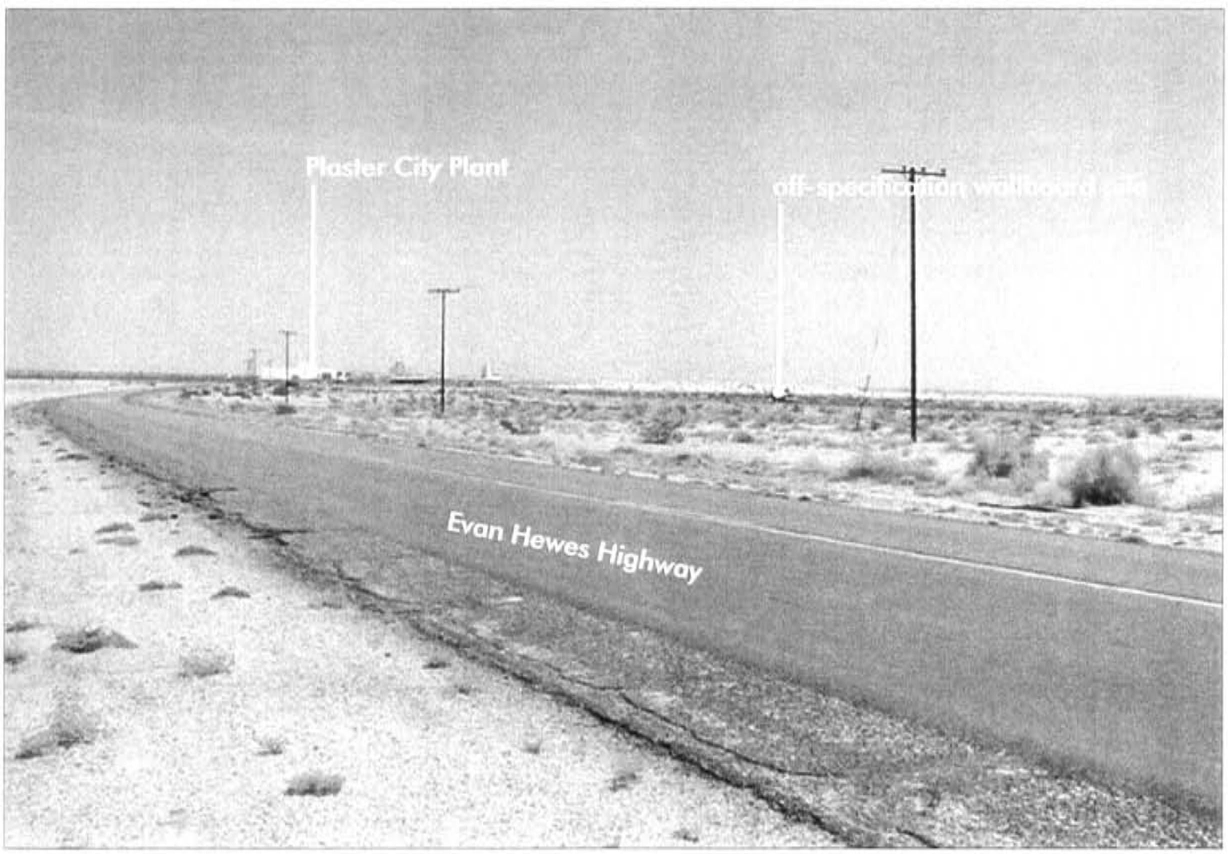


Photograph 1: Looking south along Split Mountain Raod at Plaster City Quarry entrance, approximately 3 miles away.



Photograph 2: Looking east along Evan Hewes Highway at Plaster City Plant and off-specification wallboard pile, approximately 2.5 miles away.

Site Photos

United States Gypsum Company
County of Imperial, California

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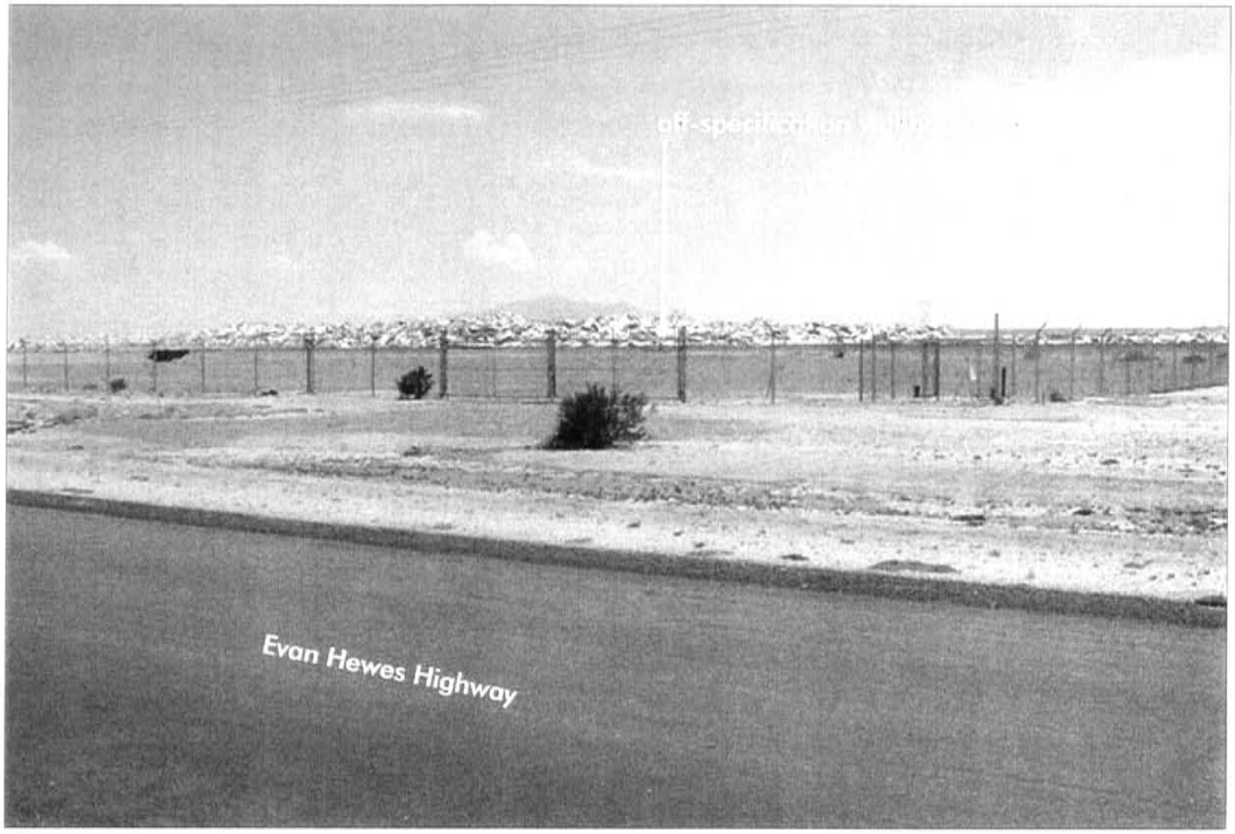
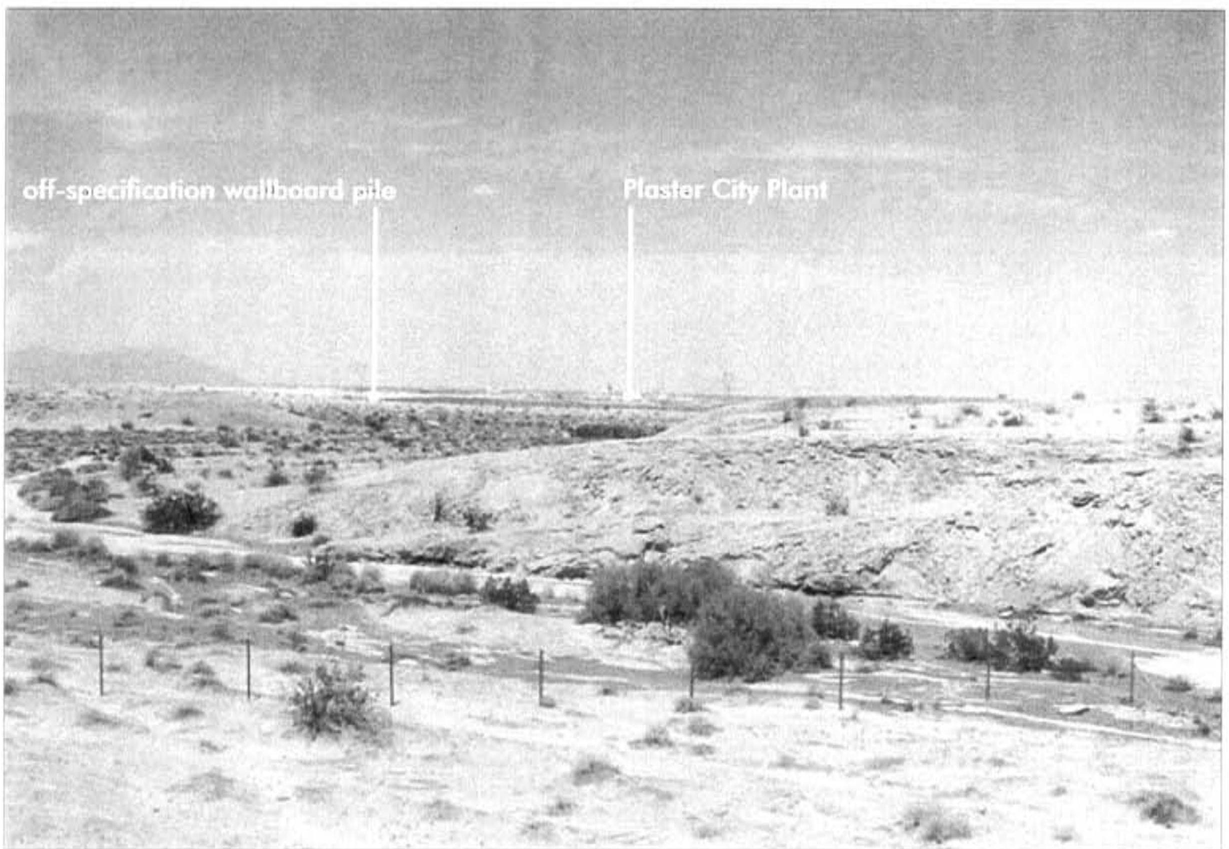


Photograph 3: Looking southeast along Evan Hewes Highway, approximately 3/4 miles west of the Plant.



Photograph 4: Looking northwest from north side of Interstate 8, approximately 2 miles southeast of the Plant.

Site Photos

United States Gypsum Company
County of Imperial, California

The BLM/VRM system uses points to evaluate the changes in scenic quality attributed to a proposed change. The scenic quality inventory and evaluation rating criteria used by the BLM is shown in Table 1.

Table 1. Scenic Quality Inventory and Evaluation Chart

Key factors	Rating Criteria and Score		
Landform	High vertical relief as expressed in prominent cliffs, spires, or massive rock outcrops, or severe surface variation or highly eroded formations including major badlands or dune systems; or detail features dominant and exceptionally striking and intriguing such as glaciers. **5**	Steep canyons, mesas, buttes, cinder cones, and drumlins; or interesting erosional patterns or variety in size and shape of landforms; or detail features which are interesting though not dominant or exceptional. **3**	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features. **1**
Vegetation	A variety of vegetative types as expressed in interesting forms, textures, and patterns. **5**	Some variety of vegetation, but only one or two major types. **3**	Little or no variety or contrast in vegetation. **1**
Water	Clear and clean appearing, still, or cascading white water, any of which are a dominant factor in the landscape. **5**	Flowing, or still, but not dominant in the landscape. **3**	Absent, or present, but not noticeable. **0**
Color	Rich color combinations, variety or vivid color; or pleasing contrasts in the soil, rock, vegetation, water or snow fields. **5**	Some intensity or variety in colors and contrast of the soil, rock and vegetation, but not a dominant scenic element. **3**	Subtle color variations, contrast, or interest; generally mute tones. **1**
Influence of adjacent scenery	Adjacent scenery greatly enhances visual quality. **5**	Adjacent scenery moderately enhances overall visual quality. **3**	Adjacent scenery has little or no influence on overall visual quality. **0**
Scarcity	One of a kind; or unusually memorable, or very rare within region. Consistent chance for exceptional wildlife or wildflower viewing, etc. * 5+	Distinctive, though somewhat similar to others within the region. **3**	Interesting within its setting, but fairly common within the region. **1**
Cultural modifications	Modifications add favorably to visual variety while promoting visual harmony. **2**	Modifications add little or no visual variety to the area, and introduce no discordant elements. **0**	Modifications add variety but are very discordant and promote strong disharmony. **-4**

* A rating of greater than 5 can be given but must be supported by written justification.
Source: Bureau of Land Management, Visual Resource Management Guidelines (2004)

An important premise of the evaluation is that all public lands have scenic value, but areas with the most variety and harmonious composition, have the greatest scenic value. Another important concept is that the evaluation of scenic quality is done in relationship to the natural landscape. This does not mean that man-made features with a landscape necessarily detract from the scenic value. Man-made features that compliment the natural landscape may enhance the scenic value.

Each of the factors above is assigned points based on whether the changes in scenic quality will be of great importance, some importance, or little importance. Examples of point values are shown in Table 1. The lower the number of points, the less that factor influences the overall scenic quality of the site. The values are totaled for the area and a Scenic Quality rating is determines and assigned. These ratings are:

A – 19 or more points
B – 12-18 points
C – 11 or fewer points

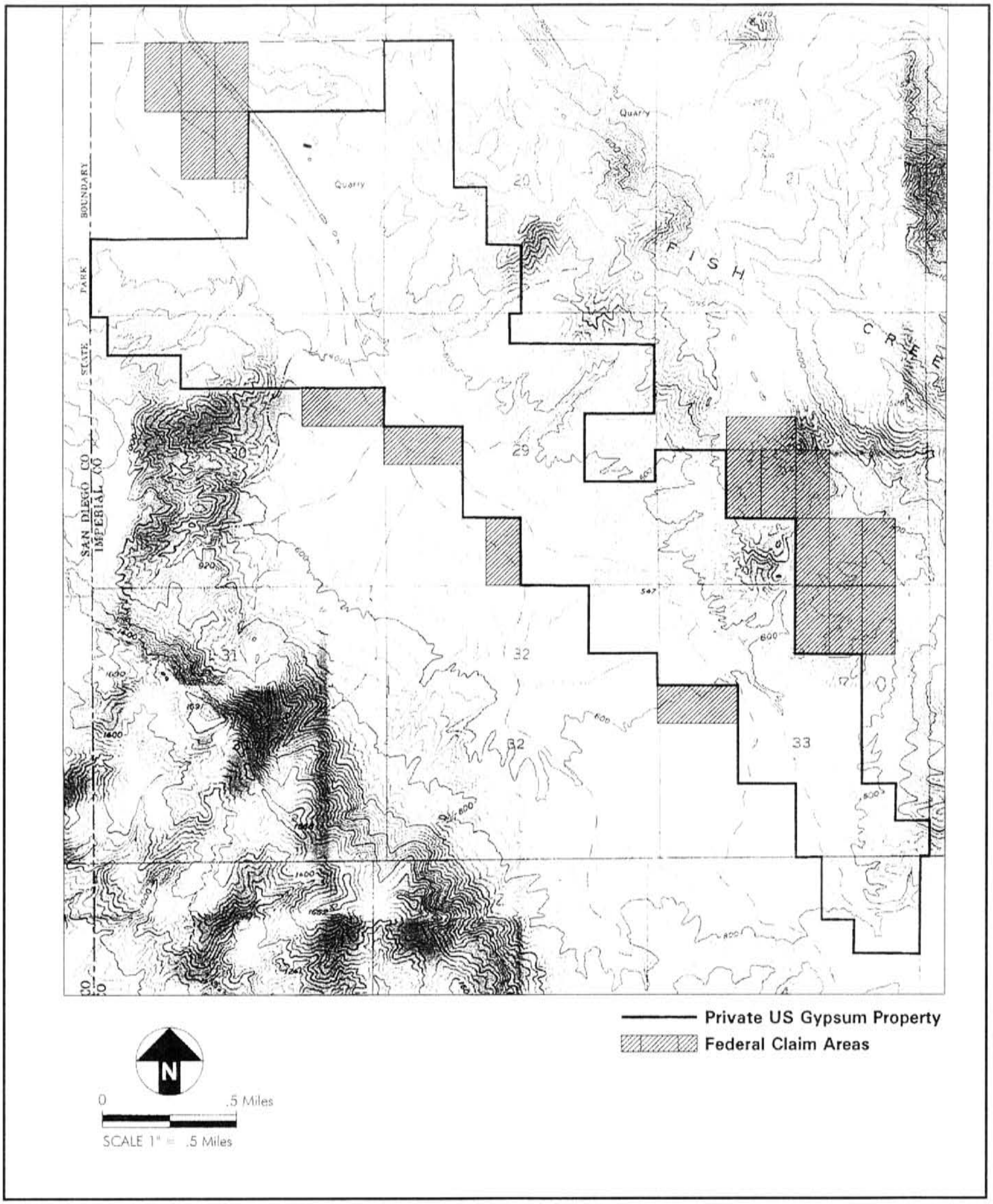
The evaluation of the effects of the proposed expansion/modernization on scenic quality in the area is based on the factors identified by the BLM/VRM and specifically the criteria contained in Table 1. The following is a description of existing conditions and an evaluation of scenic quality at and in the vicinity of the quarry and plant site. The description of existing conditions will then be used as a base for which to evaluate changes in scenic quality that may result from the proposed modernization of the quarry and plant.

2.2.1 Quarry

Landform. Dominant landforms are a broad alluvial wash and adjacent toeslopes and hillsides. The wash slopes gently (about two percent), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and small washlets, and by sheet flow. In some areas, the washes are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the three to ten inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. Mountainsides are very steep (slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus (rock debris). Exposed ridge tops have thin soil overlying bedrock.

Figure 6 shows a topographic representation of the vicinity of the Quarry site. The Quarry is within the Colorado portion of the Sonora Desert, which lies at relatively low elevations, in some places below sea level. The western portion of Imperial County is characterized by a series of low lying mountain ranges opening up to the Imperial Valley and Salton Sea to the east. The Quarry site is located in a valley between the Fish Creek Mountains on the east and Split Mountain (part of the larger Vallecito Mountains) on the west. The site lies in an elongated blind valley and on the lower hillsides along an unnamed wash located along the west side of the Fish Creek Mountains. The wash's gradient is in a northwesterly direction along the Fish Creek Mountains to Fish Creek, northwest of the site.

The Fish Creek Mountains extend approximately 10 miles in a northwest to southeast trending direction. These mountains reach a maximum elevation of about 2,330 feet amsl. In the immediate vicinity of the Quarry, elevations range from 500 to 800 feet amsl along the ridgelines. The topographic relief in the Quarry expansion/modernization area is about 750 feet. The elevation of the alluvial wash varied from about 920 feet amsl at the south end of the USG-owned property to about 250 feet amsl at the northern end. **The landform portion of the scenic quality inventory of the Quarry is rated 3.**



Source: Resource Design Technology, Inc., 2004.

Plaster City Quarry Topography

United States Gypsum Expansion Modernization Project

Prepared By
LILBURN CORPORATION

Figure 6

Vegetation. The majority of the existing Quarry has been disturbed by permitted quarrying activities and therefore, holds little or no vegetation. There is minimal disturbance to the surrounding future Quarry areas, with most of the landscape retaining its natural character. Rainfall at the Quarry site supports a Sonoran mixed woody and succulent scrub and desert dry wash woodland. Vegetation and wildlife are extremely low in density. Lack of vegetation is further pronounced at the Quarry due to the gypsum outcrops and lack of soil substrate. The extremely alkaline environment limits vegetation to a few shrubs and cacti. The site's vegetation consists of two plant communities: desert dry wash woodland in the wash and drainage areas, which is dominated by microphyllous riparian thorn scrub species such as smoke tree (*Psorothamnus spinosus*), catclaw (*Acacia greggii*), and cheesebush (*Hymenoclea salsola*); and Sonoran creosote bush scrub with species like creosote bush (*Larrea tridentate*), indigo bush (*Psorothamnus schotti*), sweetbush (*Bebbit juncea*), and pigmy-cedar (*Peucaplyllum schotti*) on the surrounding hillsides. Plant density on the ore outcrops is sparse. **The vegetation portion of the scenic quality inventory of the Quarry is rated 3.**

Water. The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Except for a narrow strip of the County along the Colorado River, the Colorado Desert drains internally, the major drainage is into the Salton Sea from numerous tributaries east and west, including Fish Creek Wash, just northwest of the Quarry and the San Felipe Creek located approximately 11 miles northeast of the Quarry. Although the Salton Sea is a significant water feature, it is not located on the project site nor is it visible from the site. Rainfall at the Quarry averages 4.5 inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of Mexico. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation. The washes through sections of the Quarry rarely contain water. **The water portion of the scenic quality inventory of the Quarry is rated 0.**

Color. Variations in color are present at the Quarry. In its natural state, gypsum is lighter in color than the surrounding desert land. Therefore, the contrast in color was noticeable prior to existing mining activities and would continue to be noticeable despite whether or not the proposed project is developed. The removal of vegetation and the creation of benches within the Quarry have created additional changes in the visual color and texture of the land surface. The lighter earth colors of disturbed areas are slightly to moderately more noticeable then the undisturbed gypsum outcrops. Reclamation of disturbed surfaces, including distribution of growth media and seeding and planting of vegetation, would occur during the operational period, as the surfaces are complete and discounted from use. However, native vegetation cover is relatively low so the primary color change is related to the mined rock, and the degree that the contrast of light-colored surfaces can be reduced with growth media and with revegetation. **The color portion of the scenic quality inventory of the Quarry is rated 3.**

Adjacent Scenery. USG's developed and undeveloped quarry properties are bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and south, and public lands administered by the BLM. No developed uses are located adjacent to the site. The nearest established residence is approximately four miles north of the USG property line. The project site consists of about 338 acres of past and active quarry activities including crushing and screening plants, and access and haul roads. The Quarry is located in a canyon and for the most part, cannot be seen by the public. However, during mineral extraction on the Shoveler Annex and in the wash, quarrying activities will be slightly visible and may have an impact on the adjacent scenery. **The adjacent scenery portion of the scenic quality inventory of the Quarry is rated 2.**

Scarcity. To the east and south of the Quarry is the Fish Creek Mountain Wilderness Area. To the west and north is the Anza Borrego Desert State Park. Also to the north are Fish Creek, private land, and the Ocotillo Wells State Vehicular Recreation Area. Also to the west is the County of San Diego.

According to the Imperial County General Plan, the Fish Creek Mountains gypsum deposit constitutes the largest reserves of this commodity in California. More than 31.2 million tons of gypsum has been mined from this deposit; of that, 30.1 million tons have been extracted by USG since 1945. Since 1984, USG's Plant has produced an average of one million tons of gypsum each year. This is the sole active gypsum mine in the County, and the largest gypsum mine in the United States. The Quarry accounts for 52 percent of statewide gypsum production, and the expected life of the deposit at current production rate is just over 100 years.

The Fish Creek Mountains gypsum deposits are remnants of a formerly thick bed that probably covered a much larger area than is presently exposed. The largest and thickest remnants are in the northwest half of the property owned by USG. On the southeast portion of USG's property, erosion has separated the gypsum into detached bodies. The gypsum on the northeast side of the wash dips beneath the alluvium and reappears on the other side. This body is controlled by California Portland Cement Company. Another large remnant lies above the cliff near the County boundary on the southwest limb of the previously mentioned anticline and is owned by National Gypsum Company. A 100-foot thick remnant, known to contain celestite (a form of gypsum), occurs just north of Fish Creek Wash on land, which is now on state park property.

Other lesser deposits of gypsum are known to occur in the Coyote Mountains to the south. Most of the beds, which occur interbedded with claystone in the Imperial formation, are only a few feet thick. **The scarcity portion of the scenic quality inventory of the Quarry is rated 4.**

Cultural Modification. The Quarry processing plant modernization consists of a new crusher building and an extension to the existing rock storage building to allow additional hopper cars to be loaded. Since 1998, improvements to processing facilities at the Quarry were made to suppose the increased capacity at the Plant. Continued quarrying activities required that additional areas be developed to allow continuous supplied of gypsum rock to the Plant. The Proposed Action at the Quarry consists of the following:

- Improvements already made to the crushing and loading facilities;
- Adoption of a single, long-term quarrying and reclamation plan for the extent of USG mineral holdings;
- A new production water well, proposed Well No. 3, would be drilled and water transported by a pipeline installed alongside of the existing alignment of the narrow-

gauge railroad to the quarry facilities. In conjunction with the development of the pipeline, USG would install an electric supply to serve the well pump;

- The surface materials within the wash would be graded and overburden would be stockpiled;
- Some areas of the Quarry consist of outcrops of gypsum above the level of the alluvial wash. Production in these areas would continue with the extension and development of 25-foot high benches; and
- As mining of gypsum outcrops extends westward from the currently active quarry area, the gypsum underlying alluvial overburden would be developed and extracted.

Improvements on existing facilities and the development of the well would not significantly affect the visual variety of the surrounding area since similar facilities already exist on-site. The future quarrying in the Shoveler Annex and the berms created by the overburden from the wash will have minor visual impacts due to changes in color and a slight changes in landform. **The cultural modification portion of the scenic quality inventory of the Quarry is rated minus 2.**

The overall scenic quality score for the Quarry is 13 points, giving it a B rating.

2.2.2 Plant

Landform. The Plant is within the Colorado portion of the Sonoran Desert, which lies at relatively low elevations, in some places below sea level. The Plant is located approximately 26 mile southeast of the Quarry on about 473 acres of the desert floor, of which 309 acres had been developed prior to the modernization between 1998 and 2000. That modernization and expansion developed an additional 66 acres of land. The Plant itself encompasses 196 acres. It sits on relatively flat land that is approximately 100 feet above sea level. There are no unusual or unique landforms on the Plant site or its vicinity, as seen in Photos 2 and 4. **The landform portion of the scenic quality inventory of the Plant is rated 1.**

Vegetation. Vegetation and wildlife are extremely low in density on and in the vicinity of the Plant. Vegetation is desert shrubland dominated by creosote bush, white bursage, and saltbush. The Plant site is generally disturbed with typical industrial uses – industrial buildings, railroad tracks, paved driveways and parking lots, roads, utility lines and so forth. The Plant modernization and expansion between 1998 and 2000 resulted in the development of an additional 66 acres.

The narrow gauge rail line is entirely along an existing right of way, crossing through similar vegetation along much of its length, though it also crosses stabilized and active blowsand along several miles of its length. Some dense patches of mesquite occur adjacent to the rail line.

The water line is within an established Evan Hewes Highway right-of –way as authorized by an encroachment permit issued by the California Division of Highways, and also crosses through desert shrubland and, in some places, near washes and small patches of windblown sand. Both the rail line and water line cross intermittent drainageways at several points. There is little native vegetation along the water line's route due to its location alongside a well-traveled highway parallel to a railway line and a powerline, and largely adjacent to a designated OHV open area, including a designated OHV staging area.

Sparse desert vegetation is common throughout the region of the project area. **The vegetation portion of the scenic quality inventory of the Plant is rated 2.**

Water. The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Except for a narrow strip of the County along the Colorado River, the Colorado Desert drains internally, the major drainage is into the Salton Sea from numerous tributaries east and west, including Fish Creek Wash, located approximately 30 miles northwest of the Plant and the San Felipe Creek located approximately 35 miles north of the Plant site. These tributaries are all dry desert swashes that only contain water during storm events, and then usually for no more than a few hours at a time. Although the Salton Sea is a significant water feature, it is not located on or near the Plant site nor is it visible from the Plant site. Rainfall at the Plant averages less than 4 inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of Mexico. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation. **The water portion of the scenic quality inventory of the Plant is rated 0.**

Color. Variations and intense colors are not present on the land surrounding the Plant. Colors consist of sandy earth tones and generally muted vegetation tones. The Plant grounds are consistent with these earth tones. However, the Plant buildings are white, as is the IMSA pile, all of which are visible from I-8 and Evan Hewes Highway. Due to the contrast in color variation, the Plant site and IMSA pile can draw attention. Given the general expansiveness and undeveloped nature of the area, the visual impression near the site is somewhat dominated by these facilities. **The color portion of the scenic quality inventory of the Plant is rated 1.**

Adjacent Scenery. In the vicinity of the Plant site, land uses include the BLM's Plaster City Open Area, a 30,000-acre area set aside for off-highway vehicle (OHV) use, immediately north of the Plant. Directly north of that is the Navy Desert Test Range used for practice bombing and strafing, as well as testing military equipment. This area is closed to public use. East and south of the Plant site on private lands adjacent to I-80 and Evan Hewes Highway are agriculture fields, part of the larger Imperial Valley agricultural area. South and east of the Plant is private land with sparsely scattered rural residences. The Community of Ocotillo is located approximately 8 miles east of the Plant site. **The adjacent scenery portion of the scenic quality inventory of the Plant is rated 1.**

Scarcity. The scenic setting surrounding the Plant is common throughout the region. The Plant itself is a distinctive feature within its environment as the nearest community is located approximately 8 miles to the east (Ocotillo). There are no unique features in the vicinity of the Plant site. **The scarcity portion of the scenic quality inventory of the Plant is rated 3.**

Cultural Modification.

The Proposed Action at the Plant consists of the following:

- A new 10-inch diameter water pipeline 8.5 miles long would replace a worn 8-inch water pipeline from the wells at Ocotillo to the Plant site. The new pipeline would be placed in a trench excavated adjacent to the existing pipeline alignment;
- Potential installation of a 14.4-megawatt cogeneration unit will provide hear to the Board Plant in order to dry wallboard as well as provide electrical power for the Plant.

In addition, the surrounding desert is dark at night, while the Plant facilities are fully illuminated to allow for nighttime operations. This light source continues throughout the night as the Plant operates 24 hours a day, 7 days a week. This is a significant contrast to the surrounding nighttime environment. The Plant is located on land that has been disturbed for decades. The expansion/modernization of the Plant site will add 66 acres to an already highly disturbed area. Since the site has had prior development and disturbance, impacts to cultural modifications would be slight. **The cultural modification portion of the scenic quality inventory of the Plant is rated minus 2.**

The overall scenic quality score for the Plant was 6 points, giving it a C rating.

2.3 Sensitivity Levels

Sensitivity levels are a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels by analyzing the various indicators of public concern. Factors to consider include those listed below.

The transportation system within the study area utilized the local roadway system and an existing rail system for movement of goods and people. The traffic accesses the project site via Evan Hewes Highway. Evan Hewes Highway is aligned parallel to I-8 and connects Plaster City to El Centro, California. Evan Hewes Highway connects to I-8 via Imperial Highway, Dunaway Road and Drew Road.

The expansion/modernization of the USG Quarry and Plant will result in an increase in employment at the Plant by approximately 140 workers. After construction is completed on the Plant expansion/modernization, traffic would increase near the site, but remain consistent with current trends.

2.3.1 Quarry

Types of Users. The Quarry is not accessible by the general public. In order to reach the Quarry, employees drive along SR-78 and then turn south down Split Mountain Road. There are scattered residences along this Road, but they do not have access to the Quarry. Split Mountain Road crosses BLM land and Anza Borrego Desert State Park land. Photo 1 shows a view of Shoveler Annex from the driveway of the nearest residence located north of the Quarry. Shoveler Annex is the only portion of the USG property that can be seen from Split Mountain Road. Recreational OHV drivers may use Fish Creek Wash and can see directly into the Quarry. Recreational visitors would be exposed to the Quarry views only temporarily since most would be riding a vehicle.

Amount of Use. Split Mountain Road is the only route in and out of the Quarry. The amount of use this road has is undeterminable as of now. However, the expansion/modernization of the Quarry would not increase the amount of traffic through this area. Use of the area would mainly be limited to USG employees and USG customers buying material and hauling it off-site. Users of the general area include a few scattered residents (the nearest home driveway is approximately 3 miles north of the Quarry entrance), occasional hikers in the State Park and wilderness areas, and some recreational OHVs. The OHV riders would be the most likely to see into the Quarry from the Fish Creek Wash, which is not a legally designated OHV area.

Public Interest. Quarry site is adjacent to Anza Borrego Desert State Park land, which accounts for some public interest. However, recreational hikers within the State Park would only be able to see the Shoveler Annex portion of the entire Quarry. Their views of the site would be temporary.

Adjacent Land Uses. To the east, southeast, and south of the Quarry is the Fish Creek Mountain Wilderness Area. The Anza Borrego Desert State Park lies to the north, west and south of the Quarry. Also south of the Quarry, within the State Park is the Carrizo Impact Area, another military bombing practice area. The areas on either side of Split Mountain Road are characterized by large rural residential properties with a few scattered residences. At the intersection of Split Mountain Road and Highway 78 are Ocotillo Wells and the Ocotillo Wells State Vehicular Recreation Area, a 14,000-acre OHV recreation area. The small community includes a restaurant and general store. Recreational visitors are only exposed temporarily to the site of Shoveler Annex.

Special Areas. To the east, southeast, and south of the Quarry is the Fish Creek Mountain Wilderness Area. To the south, west, and north is the Anza Borrego Desert State Park. Also to the north are Fish Creek, private land, and the Ocotillo Wells State Vehicular Recreation Area. These areas expose people only temporarily to the sites of the Quarry. No portion of the Quarry is located on land within the Fish Creek Mountain Wilderness Area.

2.3.2 Plant

Types of Users. The majority of the people viewing the Plant are USG employees. Recreational land visitors are able to view the site, as they travel along Evan Hewes Highway in order to access the OHV staging area and recreational area. Travelers between San Diego, CA and Yuma, AZ, specifically between Coyote Well and El Centro, are also able to see the Plant from I-8. The vicinity of the Plant site is sparsely populated and most vehicles are just passing by.

Amount of Use. The two roads that extend by the Plant are Evan Hewes Highway and I-8. The amount of use of these roads is undeterminable at this time. However, the expansion/modernization of the Plant will only result in an increase in employee traffic (through the addition of 140 jobs). The addition of 66 acres of developed Plant land may affect passers-by on I-8 and Evan Hewes Highway since those travelers may notice that use of the site has expanded. However, they would only be traveling through, and the Plant only takes up approximately a ¾-mile strip of land. As travelers continue east, they begin to see agricultural fields and suburban development, especially as they approach El Centro.

Public Interest. There is little public interest in the Plant site. However, the IMSA pile has been an issue with local residents. As seen in Photos 2, 3 and 4, the pile is visible from adjacent areas.

Adjacent Land Uses. In the vicinity of the Plant site, land uses include the BLM's Plaster City Open Area, a 30,000-acre area set aside for OHV use, immediately north of the Plant. Directly north of that is the Navy Desert Test Range used for practice bombing and strafing, as well as testing military equipment. This area is closed to public use. East and south of the Plant site on private lands adjacent to I-80 and Evan Hewes Highway are agriculture fields, part of the larger Imperial Valley agricultural area. South and east of the Plant is private land with sparsely scattered rural residences. The Community of Ocotillo is located approximately 8 miles east of the Plant site. The Plant land is zoned Heavy Industrial and Industrial. The surrounding land is zoned Recreation/Open Space.

To the south of the water supply wells is Yuha. To the north are both the community of Ocotillo and Highway 8, surrounded by the Yuha Desert. To the west are the Coyote Mountains. To the east is the community of Coyote Wells. The pipeline runs in an easement parallel to Evan Hewes Highway between Ocotillo and the Plant site. The San Diego and Arizona East railroad line also parallels the highway in the vicinity. To the southeast of the Plaster City water tank and well is the BLM managed Jacumba Outstanding Natural Area, an area closed to vehicles. Other areas of the Jacumba Mountains that are less sensitive are open to recreational hiking and OHV use.

Special Areas. The Sunbeam Recreation Area lies to the east of the Plant site. This area is used for recreational OHVs. To the southeast of the Plaster City water tank and well is the BLM managed Jacumba Outstanding Natural Area, an area closed to vehicles. Other areas of the Jacumba Mountains that are less sensitive are open to recreation including hiking and OHV use. No portion of Plant land is located within the Jacumba Outstanding Natural Area.

Table 2 provides the Sensitivity Level Matrix used to determine overall sensitivity levels for existing conditions in this analysis. The area is then assigned a high, medium, or low rating according to a predetermined classification.

Table 2
Sensitivity Level Matrix

	Factors	**High**	**Medium**	**Low**
Quarry	Type of User			X
	Amount of Use			X
	Public Interest		X	
	Adjacent Land Uses		X	
	Special Areas			X
	Overall			X
Plant	Type of User			X
	Amount of Use		X	
	Public Interest		X	
	Adjacent Land Uses		X	
	Special Areas			X
	Overall			X

2.4 Distance Zones

Landscapes are subdivided into 3 distance zones based on relative visibility from travel routes or observation points. Since areas that are closer have a greater affect on the observer, these areas require greater attention than areas farther away. Distance zones, therefore, offer proximity of the observer to the landscape to be considered. The 3 zones are:

- Foreground-Middleground Zone – This is the area that can be seen from each travel route for a distance of less than 3 to 5 miles where management activities might be viewed in detail. The outer boundary of this distance zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. In some areas, atmospheric conditions can reduce visibility and shorten the distance normally covered by each zone.

- Background Zone – This is the remaining area that can be seen from each travel route beyond the foreground-middleground zone, but usually from less than approximately 15 miles. Areas in the background that are so far that the only thing discernible is the form or outline of objects are not included. In order to be included within this distance zone, vegetation should be visible at least as patterns of light and dark.

- Seldom-Seen Zone – These are areas that are not visible within the foreground-middleground and background zones and areas beyond the background zones.

Selection of key viewing points and assessment of distance zones generally requires some judgment especially when there are multiple viewpoints where foreground views for one location could be background views when seen from another location. Therefore, numerous locations were used for the Plant to determine public viewsheds. Only one viewshed was used for the Quarry due to lack of access from any other point. Figure 5 shows photo locations and Photos 1 through 4 show examples of potential public views of the project site.

2.4.1 Quarry

The Quarry was given a Scenic Quality B Rating, which means a combination of outstanding feature and some that are fairly common to the physiographic region. In this portion of the Anza Borrego Desert, mountain ranges become common. However, the gypsum is a unique feature in itself due to its contrast in color with the rest of the landscape. Due to the angle of the Fish Creek Mountains, the majority of the Quarry is hidden from public view. Photo 1 was taken from Split Mountain Road looking south at Shoveler Annex, approximately 3 miles away. This photograph was taken at the corner of the road and the nearest residential driveway to the Quarry. This viewpoint is an example of the only viewpoint readily available to the public. Vegetation and common desert landscape is in the Foreground-Middleground Zone, the Shoveler Annex is considered to be in the Background Zone of the viewshed and the texture of the Fish Creek Mountains, as well as the rest of the Quarry, are in the Seldom-Seen Zone. Due to the formation of the Fish Creek Mountains, the Shoveler Annex is less visible the farther away the viewer.

2.4.2 Plant

The Plant was given a Scenic Quality C Rating, which means that the landscape is fairly common and there is little public interest in the site. Since the Plant is located within a vicinity of relatively flat topography, it is visible from numerous points. Photos 2 through 4 show three various points of view along the two major thoroughfares – Evan Hewes Highway and I-8.

Photo 2 was taken from Evan Hewes Highway looking east, approximately 2.5 miles west of the Plant. Photos were taken from this viewpoint because, due to the size of the existing plant, this view shows the entire Plant site in its setting, taking in both the Plant site, OHV area and surrounding desert environment. Photo 3 shows a closer view with the Plant in the Foreground-Middleground view. In Photo 2, the power lines are the dominant feature in the Foreground-Middleground Zone. As the road curves, there are portions of the plant that are visible in the Background Zone. These portions include the main plant and the IMSA pile. Other portions of the plant are in the Seldom-Seen Zone because they are single story in height and in some views are blocked by larger Plant buildings. As seen in the photograph, there is a slight haze on the horizon. It is likely the Plant would be more visible to travelers on Evan Hewes Highway on a clear day. Much of the haze can be attributed to blowing sand in the vicinity of the Plant associated with both the open desert and the OHV area.

Photo 3 was also taken along Evan Hewes Highway looking southeast, approximately ¾ miles west of the Plant. The IMSA pile is quite visible from this point of view, as is the fence surrounding the property. The fence and pile are in the Foreground-Middleground Zone. The Background and Seldom-Seen Zones are not visible in the photograph due to haze and topography.

Photo 4 was taken from the north side of I-8 looking northwest, approximately 2 miles southeast of the Plant. This is a typical public view from the public highway. Some desert vegetation and a slight change in topography fill the Foreground-Middleground Zone, while more desert landscape occupies the Background Zone. The Plant and IMSA pile are barely visible within the Seldom-Seen Zone. There is the potential for the Plant and pile to be more visible on a clear day, but they would still remain in the Seldom-Seen Zone from this viewpoint.

2.5 Visual Resource Classes and Objectives

Visual resource classes are categories assigned to public lands that serve two purposes: 1) an inventory tool that portrays the relative value of the visual resources, and (2) a management tool that portrays the visual management objectives. There are four classes (I, II, III, IV):

Class I – This class is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, the wild section of national wild and scenic rivers, and other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape.

Class II, III, and IV – These classes are assigned based on a combination of scenic quality, sensitivity level, and distance zones. This is accomplished by combining the three overlays for scenic quality, sensitivity level, and distance zone and then using the VRM guidelines to assign the proper class. Inventory classes are informational in nature and provide the basis for considering visual values; they do not establish management direction and should not be used as a basis for constraining or limiting surface disturbing activities. Table 3 below shows the basis for determining visual resources inventory classes.

<u>Objectives</u>

Class I Objective – The objective of this class is to preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II Objective – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

Class III Objective – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

Class IV Objective – The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high.

Table 3
Basis for Determining Visual Resource Inventory Classes

		Visual Sensitivity Levels						
		High			**Medium**			**Low**
Special Areas		I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II
	B	II	III	III* IV*	III	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV
		f/m	**b**	**s/s**	**f/m**	**b**	**s/s**	**s/s**
		DISTANCE ZONES						

* If adjacent areas is Class III or lower, assign Class III, if higher assign Class IV.

2.5.1 Quarry

The Plaster City Quarry is not located within any Special Areas, was given a Scenic Quality Rating of B, has a Visual Sensitivity Level of Low, and is considered to be in the Background Zone of viewsheds. **Therefore, the Quarry was determined to be in Visual Resource Inventory Class IV.** The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. The expansion and modernization of the Plaster City Quarry will not significantly affect visual resources within its vicinity.

2.5.2 Plant

The Plaster City Plant is not located within any Special Areas, was given a Scenic Quality Rating of C, and has a Visual Sensitivity Level of Low. However, the Plant is in different visual Zones depending on traveler location along Evan Hewes Highway and I-8. **The Plant is still determined to be in Visual Resource Inventory Class IV.** Travelers along the stretches of road that have a view of the Plant and IMSA pile will only be impacted during the short time it takes to drive past the Plant. The surrounding area is already disturbed by OHV use and the existing Plant development. The objective of Class IV is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. Therefore, the expansion and modernization of the Plaster City Plant will not significantly affect visual resources within its vicinity.

2.6 Contrast Rating Analysis

The previous exercises were designed to evaluate and characterize the existing landscape by preparing an inventory and evaluation, and designating a management class in order to more objectively assess the visual impacts of the proposed project.

To further evaluate the effects of a proposed project using the BLM/VRM system, a Contrast Rating System is used to measure the degree of contrast between the new activity and existing conditions. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The contrast can be measured by comparing the project features with the major features (land/water, vegetative, structural) in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison and to describe the visual contrast created by the project.

Proposed activities are compared to existing conditions for each element and feature according to the degree of contrast: strong, moderate, weak and none. Table 4 describes the criteria for the degrees of contrast.

Table 4
Degree of Contrast Criteria

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

2.6.1 Quarry

Table 5
Contrast Rating Worksheet for Quarry

		Features											
		Land/Water Body				Vegetation				Structures			
	Degree of Contrast	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form			X					X				X
	Line			X					X				X
	Color			X					X				X
	Texture			X					X			X	

Photo 1 shows a viewshed of Shoveler Annex, the only portion of the Quarry that is visible from Split Mountain Road. This photo was taken from approximately 3 miles north of the site, at a 90-degree angle. For residents in the area, Shoveler Annex is visible at all times, though the rest of the Quarry is out of view. Recreational users of the land will see the Shoveler Annex when in the same area as where the photo was taken. The farther east and north an individual is, the less visible and smaller Shoveler Annex appears. Shoveler Annex would most likely have more of an impact in the springtime when more OHVs and visitors to the Anza Borrego Desert State Park would likely be in the vicinity of the project. Desert vegetation blooms during these months. Photo 1 was taken in September of 2004, when little or no desert vegetation is green or flowering.

The photograph was also taken around 10:30 in the morning with the sun still to the east of the Quarry. Shoveler Annex will be more visible during the morning hours when the sun reflects off its naturally lighter color than in the afternoon and evening hours when a shadow will be cast across the area due to the mountains to the west. On hazy or rainy days, it is likely that Shoveler Annex will be less noticeable due to loss of visibility. However, while mining activities are in action in this area of the Quarry, the motion of the trucks and loaders will draw more attention to the site.

The degree of contrast to the landscape as a result of further development of the Quarry will be **Weak or None** according to the criteria in Table 4. A long-term timeframe was used to determine the contrast rating since the Quarry operations may continue in excess of 80 years.

No bodies of water are present close enough to the Quarry to draw any attention. Therefore, only the land portion of the land/water feature was examined. The majority of the existing Plaster City Quarry is enclosed within the Fish Creek Mountains. Only the Shoveler Annex is visible from the surrounding area. The existing landscape in the vicinity of the project contains relatively flat desert land, with contrasting tall, irregular mountains to the south and east. These mountains are a dominant feature for the area. The mountains rise abruptly from the desert floor creating a butt edge that is noticeable even from far distances. The mountains themselves are a complex series of ruts and ridges, creating a jagged line on the horizon. The northern and eastern faces of the mountains also contain sections of relatively smooth surfaces that contrast with the rough look of the adjacent ruts and ridges. Landscape colors consist of brown hues, growing darker with elevation. The movement of the sun and the shifting of shadows affect the color of the area throughout the day. Shoveler Annex is least noticeable in the afternoon and evening as the sun heads west and a shadow diminishes the contrasting color of the gypsum deposit. The general texture is of medium grain.

In the long-term expansion and modernization of the Quarry, the degree of contrast to the land will be weak. The only noticeable difference will be with the quarrying of Shoveler Annex. Eventually, this area of the Quarry will be quarried to basement rock. This will slightly affect all of the degree of contrast elements. The finished grade of Shoveler Annex may cause a silhouette line on the mountain face. There will also be a slight change in texture along this portion of the viewshed. However, the domination of the surrounding scenery should overpower any blemish the Quarry operations may cause. The Reclamation Plan calls for reclaiming the Quarry as Open Space. Vegetation should grow again in the washes and on topsoil replaced after mining operations cease. However, any soil that still contains gypsum will naturally not grow vegetation as readily.

Vegetation in the vicinity of the Quarry can be described as regular in form, though there is less noticeable vegetative detail with distance. There is minimal disturbance to the surrounding areas, with most of the landscape retaining its natural character. Rainfall at the Quarry site supports a Sonoran mixed woody and succulent scrub and desert dry wash woodland. The Quarry site holds little or no vegetation. Lack of vegetation in the Quarry is due to the gypsum outcrops and lack of soil substrate. The extremely alkaline environment limits vegetation to a few shrubs and cacti. The site's vegetation consists of two plant communities: desert dry wash woodland in the wash and drainage areas, which is dominated by microphyllous riparian thorn scrub species such as smoke tree (*Psorothamnus spinosus*), catclaw (*Acacia greggii*), and cheesebush (*Hymenoclea salsola*); and Sonoran creosote bush scrub with species like creosote bush (*Larrea tridentate*), indigo bush (*Psorothamnus schotti*), sweetbush (*Bebbit juncea*), and pigmy-cedar (*Peucaplyllum schotti*) on the surrounding hillsides. Plant density on the outcrops is sparse. Vegetation on the desert floor is of medium density and grows in uneven, random patterns. Colors can contrast from browns to greens with miscellaneous colored flowers depending on the time of year. Late winter and early spring bring rain to the desert, which then results in flowering desert vegetation. The expansion of the Quarry will not change the type or density of the vegetation of the area. Therefore, there will be no degree of contrast to any of the four elements at any point in the lifetime of the Quarry. The Quarry Reclamation Plan calls for reclaiming the Quarry to open space. Vegetation should grow again in the washes and on topsoil replaced after quarry operations cease. Any soil that still contains gypsum will naturally not grow vegetation as readily.

There are limited views of structural features in the Quarry at this time, views of the process plant are limited to OHV enthusiasts who venture up the Fish Creek Wash. This situation will not change at any time in the future. Shoveler Annex will be mined using loaders and haul trucks, but the Quarry plant will stay in its current location along the eastern side of the Quarry. In this location, all Quarry buildings are out of the view of the public except for the few OHV enthusiasts in the Fish Creek Wash. Therefore, there will be no degree of contrast to any of the four elements (form, line, color, or texture) in regards to structures.

2.6.2 Plant

Table 6
Contrast Rating Worksheet for Plant

		Features											
		Land/Water Body				Vegetation				Structures			
	Degree of Contrast	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form				X				X				X
	Line				X				X				X
	Color				X				X				X
	Texture				X				X				X

Photos 2 and 4 show two different viewpoints of the Plant. Photo 2 was taken along Evan Hewes Highway, looking east at the Plant and IMSA pile, from approximately 2.5 miles away. Photo 4 was taken along I-8, looking northwest at the Plant and IMSA pile, from approximately 2 miles away. The majority of the people that will view the Plant are USG employees.

Table 6 shows the results of the contrast rating analysis for the quarry using criteria identified in Table 4.

Recreational land visitors are able to view the site, as they travel along Evan Hewes Highway in order to access the OHV staging area and recreational area. Travelers between San Diego, CA and Yuma, AZ specifically between Coyote Well and El Centro, are also able to see the Plant from I-8. The vicinity of the Plant site is sparsely populated and most vehicles are just passing by. On hazy or rainy days, it is likely that the Plant will be less noticeable due to loss of visibility. The Plant and its surrounding area are also less noticeable and less visible the farther away viewers are. However, the motion of the Plant activities could draw attention to the site. The Plant is also more noticeable at night due to the lighting that is necessary for operations to continue after sundown. Travelers along Evan Hewes Highway and I-8 will continue to see the Plant at night after the expansion/modernization.

The degree of contrast to the landscape as a result of further development of the Plant will be **None** according to the criteria in Table 4. A long-term timeframe was used to determine the contrast rating since the Plant operations may continue in excess of 80 years.

No bodies of water are present close enough to the Plant to draw any attention. Therefore, only the land portion of the land/water feature was examined. When traveling east along Evan Hewes Highway, the desert terrain appears flat. Though not visible in Photo 2, views to the northwest include the southern edge of the Fish Creek Mountains, which can be seen on a clear day. Views of the terrain along I-8 appear to be a mixture of flat and rolling land. The horizon line along both roads is horizontal and even. The color of the land surrounding the Plant contains light tan to brown hues. Along I-8, the texture of the terrain is of small to medium grain, while the texture of the terrain along Evan Hewes Highway is of small grain. Land textures along both roads are relatively smooth. The expansion and modernization of the Plant will not impact the four elements (form, line, color, and texture). There will be no degree of contrast to land features resulting from the long-term development and use of the Plant.

Vegetation in the vicinity of the Plant can be described as irregular in form and sparse in density (See Photo 2 and 4). The surrounding area is already disturbed by the existing Plant development and the surrounding OHV staging area and recreational land. Vegetation and wildlife are extremely low in density on and in the vicinity of the Plant. Vegetation is desert shrubland dominated by creosote bush, white bursage, and saltbush. The Plant site is generally disturbed with typical industrial uses – industrial buildings, railroad tracks, paved driveways and parking lots, roads, utility lines and so forth. The expansion and modernization of the Plant will not further impact the four elements (form, line, color, and texture). There will be no degree of contrast to vegetation features resulting from the long-term development and use of the Plant.

The Plant and the IMSA pile are visible in both of the photos. The buildings that make up the Plant can be described as rectangular and angular, and rises vertically from the desert floor. The IMSA pile appears to be rounded, but becomes more flat and horizontal with increased distance. From I-8, the Plant is only slightly visible, and the IMSA appears only as a white discoloration in an otherwise tan terrain. The Plant's buildings also appear white against the blue background of the sky. On a clear day, the Plant and IMSA pile would be more visible while the vertical lines of the buildings would become more dominant on the horizon. At night, the Plant is lit in order to continue operations after sundown. This draws attention to the Plant from travelers on both Evan Hewes Highway and I-8 by adding light to an otherwise dark desert. The texture of the Plant and IMSA pile is of medium density from the viewpoint in Photo 2. The IMSA pile appears smooth in the viewpoint of Photo 4. As the viewer gets closer to the IMSA pile, its texture becomes coarser. The entire Plant site becomes more distinctive the closer the viewer. The expansion and modernization will not significantly impact the visual characteristic of the landscape due to existing disturbance.

3.0 Imperial County General Plan, Scenic Highway Element

The Circulation and Scenic Highways Element of the County of Imperial General Plan identifies the location and extent of transportation routes and facilities. It is intended to meet the transportation needs of local residents and businesses, and as a source for regional coordination. The inclusion of Scenic Highways provides a means of protecting and enhancing scenic resources within highway corridors in Imperial County. The purpose of the Circulation and Scenic Highways Element is to provide a comprehensive document that contains the latest knowledge about the transportation needs of the County and the various modes available to meet these needs. Additionally, the purpose of this Element is to provide a means of protecting and enhancing scenic resources within both rural and urban scenic highway corridors.

According to the County of Imperial General Plan, four areas within the County have the potential as state-designated scenic highways. The following routes have been designated or are eligible for state scenic highway designation and are described in the General Plan as follows:

Interstate 8. The segment located between the San Diego County line and its junction with State Route 98. This segment, known as Mountain Springs Grade, has a long, rapid elevation change, remarkable rock and boulder scenery and plant life variations. The Quarry is located approximately 29 miles north of this segment within a mountainous area. The Interstate is not visible from the Quarry, nor is the Quarry visible from the Interstate. The Plant is approximately 3 miles north of I-8, but it is about 8 miles northeast of the designated scenic highway portion of the freeway. Therefore, the expansion/modernization of the Plant and Quarry will not impact the scenic portion of I-8

State Route 78. From the junction with SR-86 to the San Diego County line. The area along SR-78 is considered scenic because of its desert characteristics and view of the Salton Sea. The Plant is located approximately 37 miles south of this area and is not visible from anywhere along SR-78. The Quarry is located approximately 7 miles south of SR-78. However, due to the distance and the fact that the Quarry is within a mountainous area, travelers do not have a visible view of the Quarry.

State Route 111. SR-111 travels along the northeast shore of the Salton Sea, from Bombay Beach to the Riverside/Imperial county line. The drive along the Salton Sea is interesting because of the wildlife and landform features, but also because it is such a large body of water in a desert environment. The contrast between the flat, wide Salton Sea with its sandy beach, and the rugged rise of the Chocolate Mountains has many variations. The panoramic view of the opposite (southwest) shore and its backdrop of mountains is also a sight of pre-historic beauty. The Quarry is located approximately 30 miles and the Plant is located approximately 20 miles west of this road. Neither site is within viewing distance of the scenic portion of State Route 111.

Borrego-Salton Seaway. County Highway S-22 is also known as the Borrego-Salton Seaway. It begins in Salton City and ends at the community of Borrego Springs in San Diego County. Along its route is Clay Point, located a mile and a half west of SR-86, which is a formation ring above the flat desert shore which shows the bed of pre-Columbian Lake Cahuilla. Three and a half miles farther west, the Anza Verde Wash parallels the Borrego-Salton Seaway with uniquely scenic desert landforms and vegetation. The Quarry is located approximately 17 miles south of this scenic route. The line-of-site from this road to the Quarry is inhibited due to the distance between the two points and the mountains surrounding the Quarry. The Plant is located more than 30 miles away and cannot be seen from this route.

4.0 CONCLUSIONS

4.1 BLM/VRM System

Quarry

The Quarry is not located within any Special Areas, was given a Scenic Quality Rating of B, has a Visual Sensitivity Level of Low, and is considered to be in the Background Zone of viewsheds.

Therefore, the Quarry was determined to be in Visual Resource Inventory Class IV. The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. The degree of contrast between the existing Quarry conditions and the long-term future conditions was rated Weak for the Land feature and None for the Vegetation and Structure features. The expansion and modernization of the Quarry will not significantly affect visual resources within its vicinity.

Plant

The Plant is not located within any Special Areas, was given a Scenic Quality Rating of C, and has a Visual Sensitivity Level of Low. However, the Plant is in different visual Zones depending on traveler location along Evan Hewes Highway and I-8. The Plant is still determined to be in Visual Resource Inventory Class IV. Travelers along the stretches of road that have a view of the Plant and IMSA will only be impacted during the short time it takes to drive past the Plant. The surrounding area is already disturbed by OHV use and the existing Plant development. The objective of Class IV is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. The degree of contrast between the existing Plant conditions and the long-term future conditions was rated None for the Land, Vegetation, and Structure features. Therefore, the expansion/modernization of the Plant will not significantly affect visual resources within its vicinity.

4.2 Scenic Highway Element

Although there are four scenic highways within the County of Imperial, travelers on these routes would not be able to see the either the Quarry or the Plant at any time. Therefore the proposed expansion and modernization of the Quarry and Plant would not have an impact on any scenic highways.

5.0 Recommendations

Since the Quarry and Plant already exist and have already disturbed the areas they each contain, the expansion and modernization of their facilities and plans will not substantially affect the visual resources of the area. The Quarry will be required to attempt revegetation through its existing Reclamation Plan, which will ultimately strive to reestablish vegetation throughout the Quarry, including along Shoveler Annex. Therefore, no additional recommendations are necessary.

6.0 Bibliography

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Appendix G Traffic Impact Study

Traffic Impact Study

U.S. Gypsum Plaster City Plant Expansion

Plaster City, California

Prepared For:

Resource Design Technology, Inc.
26941 Cabot Road, Suite 104
Laguna Hills, CA 92653

Date:

June 28, 2002

Job No.:

02-32

PETERS ENGINEERING

200 W. Bullard Avenue, Suite E4 Phone (559) 299-1544
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3.11 TRAFFIC AND CIRCULATION

3.11.1 Introduction and Summary

Introduction

U.S. Gypsum (Applicant) currently operates a manufacturing facility approximately 13 miles west of El Centro, California. The plant is located on Evans Hewes Highway in Plaster City, California as shown in Figure 1. The independent consulting firm of Peters Engineering performed a traffic analysis to determine any potential impacts resulting from the expansion of the wallboard manufacturing operations (Project). The analysis was prepared in accordance with the CalTrans *Guide for the Preparation of Traffic Impact Studies (January 2001)* with the following modifications:

- Due to the fact that the project has already been constructed, accurate before project or "existing" conditions can not be ascertained at each study intersection or segment. Therefore, "existing + project" conditions will be analyzed utilizing current traffic counts and results. If acceptable levels of service are obtained with the "existing + project" conditions, then the "existing" condition scenario would also produce acceptable levels of service due to lower traffic volumes. If acceptable levels of service are not obtained with the "existing + project" scenario, then further analysis will be required to ascertain the "existing" condition.

Summary

The following conclusions or recommendations are made as a result of the traffic analyses based on the analysis:

1. The study intersections operated at acceptable levels of service before the project and currently operate at acceptable levels of service after the project.
2. The study roadway segments operated at acceptable levels of service before the project and currently operate at acceptable levels of service after the project.
3. The project does not have a significant effect on traffic and circulation.

3.11.2 Setting

Proposed Project

The project involves expansion of the existing wallboard manufacturing operation. The expansion will include the replacement of one boardline with a modernized, high speed boardline, the expansion of the crushing facilities, the replacement and expansion of the rockshed and additional building construction. The project will increase employment by 85 workers that will arrive between 7:00 am and 9:00 am and depart between 4:00 pm and 6:00 pm. After construction of the project, traffic would increase, but remain consistent with current trends.

Local Environment

The transportation system within the study area utilized the local roadway system and an existing rail system for movement of goods and people. The traffic accesses the project site via Evans Hewes Highway (S-80). Evans Hewes Highway is aligned parallel to Interstate 8 and connects Plaster City (U.S. Gypsum plant) to El Centro, California. Evans Hewes connects to Interstate 8 via Imperial Highway, Dunaway Road and Drew Road. Descriptions of these roadways are as follows:

- **Evans Hewes Highway** is classified as a collector by the Imperial County General Plan and is a two lane rural highway that connects Ocotillo to El Centro. The posted speed limit is 55 miles per hour. The existing highway structural section is in good condition due to a recent asphalt overlay project.

- **Interstate 8** is a four-lane divided conventional freeway which connects San Diego, Calfornia to Yuma Arizona. The interchanges providing access to the plant within the project area are located at Imperial Highway, Dunaway Road and Drew Road.

- **Dunaway Road** is a two lane undivided rural highway which connect Evans Hewes Highway to Interstate 8. The existing highway structural section is in fair condition.

- **Drew Road (Haskell Road)** is a two lane undivided rural highway which connect Evans Hewes Highway near Dixieland to Interstate 8. The existing highway structural section is in fair condition.

Study Area

The study intersections are as follows:

- Site Access Road/Evan Hewes Highway
- Evan Hewes Highway/Dunaway Road
- Evan Hewes Highway/Huff Road
- Evan Hewes Highway/Drew Road
- I-8/Dunaway Road ramps
- I-8/Imperial Highway ramps.

The study roadway segments are as follows:

- Evans Hewes Highway (between Imperial Highway and Dunaway Road)

Existing lane configurations are shown in Figure 2. Current (2002) traffic volumes for the study intersection are shown in Figure 3.

3.11.3 Impacts and Mitigation Measures

Traffic Analysis

The level of services at the study intersections for the existing and existing plus project conditions were determined using the Highway Capacity Software (HCS2000).

A description of levels of service for unsignalized intersections is presented in Table 1.

Table 1
Level Of Service Characteristics For Unsignalized Intersections

LEVEL OF SERVICE	DESCRIPTION	DELAY
A	Little or no delay.	≤10
B	Short traffic delays.	< 10 and ≤ 20
C	Average traffic delays.	< 20 and ≤ 35
D	Long traffic delays.	< 35 and ≤ 55
E	Very long traffic delays.	< 55 and ≤ 80
F	Stop-and-go conditions.	>80

A description of levels of service for roadway segments is presented in Table 2.

Table 2
Level Of Service Characteristics For Roadway Segments

LEVEL OF SERVICE	DESCRIPTION	VOLUME / CAPACITY
A	Little or no delay.	0.00 – 0.59
B	Short traffic delays.	0.60 – 0.69
C	Average traffic delays.	0.70 – 0.79
D	Long traffic delays.	0.80 – 0.89
E	Very long traffic delays.	0.90 – 0.99
F	Stop-and-go conditions.	≥1.00

Existing Plus Project Conditions

The proposed Project would generate traffic consisting of workers and trucks to transport products traveling to and from the site. The existing and Project generated traffic are presented in Figure 3. Existing plus Project levels of service are shown in Table 3.

Table 3

Existing Plus Project Levels Of Service

INTERSECTION	AM PEAK HOUR	PM PEAK HOUR
Evans Hewes Highway / Imperial Highway	A	A
Evans Hewes Highway / Dunaway Road	A	A

Table 3 (Continued)

Existing Plus Project Levels Of Service

INTERSECTION	AM PEAK HOUR	PM PEAK HOUR
Evans Hewes Highway / Huff Road	A	A
Evans Hewes Highway / Drew Road (Haskell)	A	A
Interstate 8 EB Ramps / Dunaway Road	A	A
Interstate 8 WB Ramps / Dunaway Road	A	A
Interstate 8 EB Ramps / Imperial Highway	A	A
Interstate 8 WB Ramps / Imperial Highway	A	A
SEGMENT	**AM PEAK HOUR**	**PM PEAK HOUR**
Evans Hewes Highway (Imperial Highway to Dunaway Road)	A	A

Standards of Significance

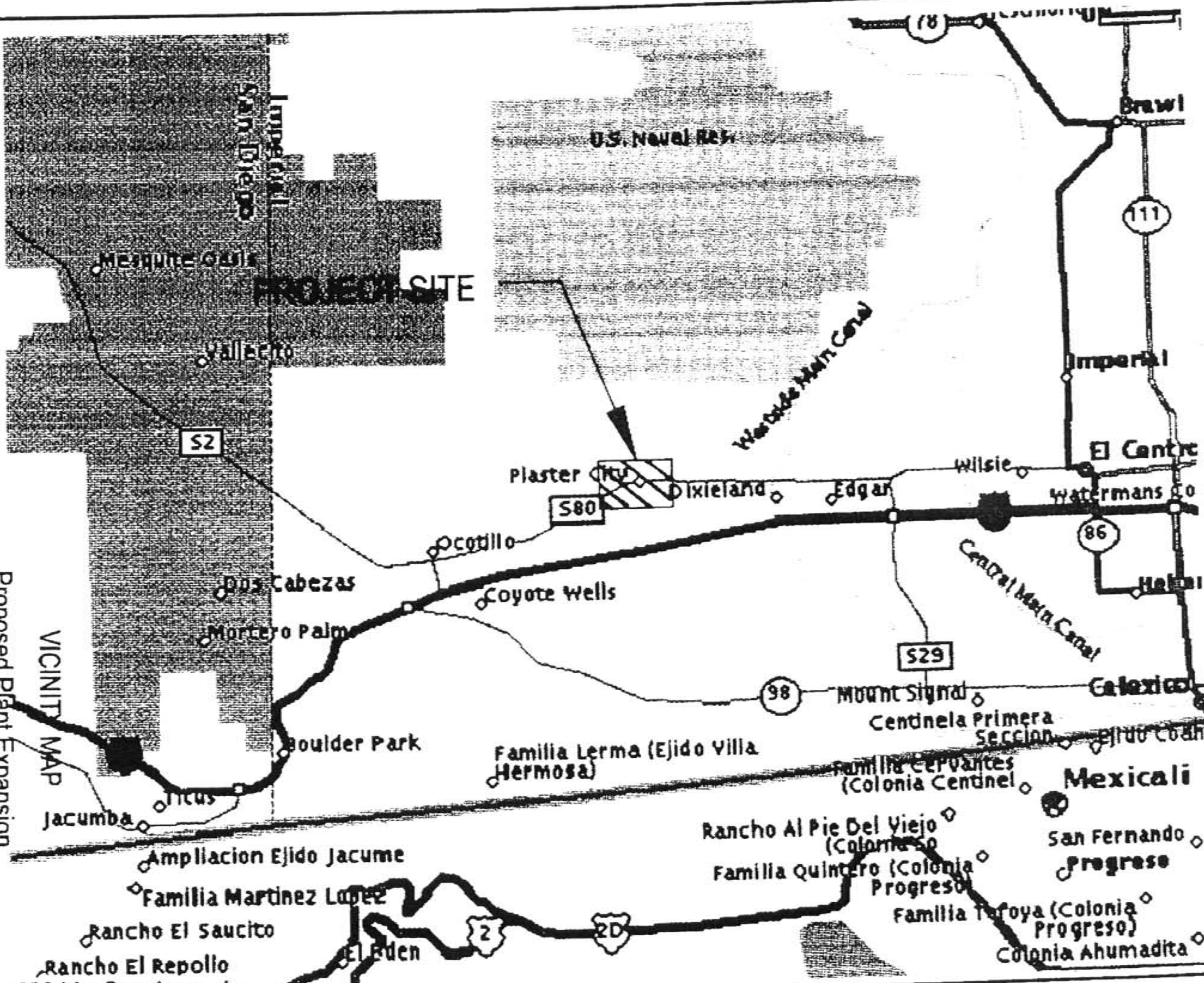
This Project would have a significant effect on traffic and circulation if it results in any of the following changes:

- Change the level of service along a roadway segment or intersection from acceptable levels (LOS C) to unacceptable levels (LOS D, E or F).[1]
- Exacerbate conditions on a roadway segment or an intersection that currently operates at an unacceptable level of service.

[1] *Imperial County General Plan, Circulation / Open Space Element.*

Conclusions

All study intersections and roadway segments operate at a level of service of A for the "existing + project" condition. Therefore, the study intersections and roadway segments operated at level of service of A for the "existing" (before construction) condition. The Project will not create a change in level of service and all study intersections and roadway segments operate at a level of service above the minimum defined by the Imperial County General Plan and therefore does not require mitigation measures.

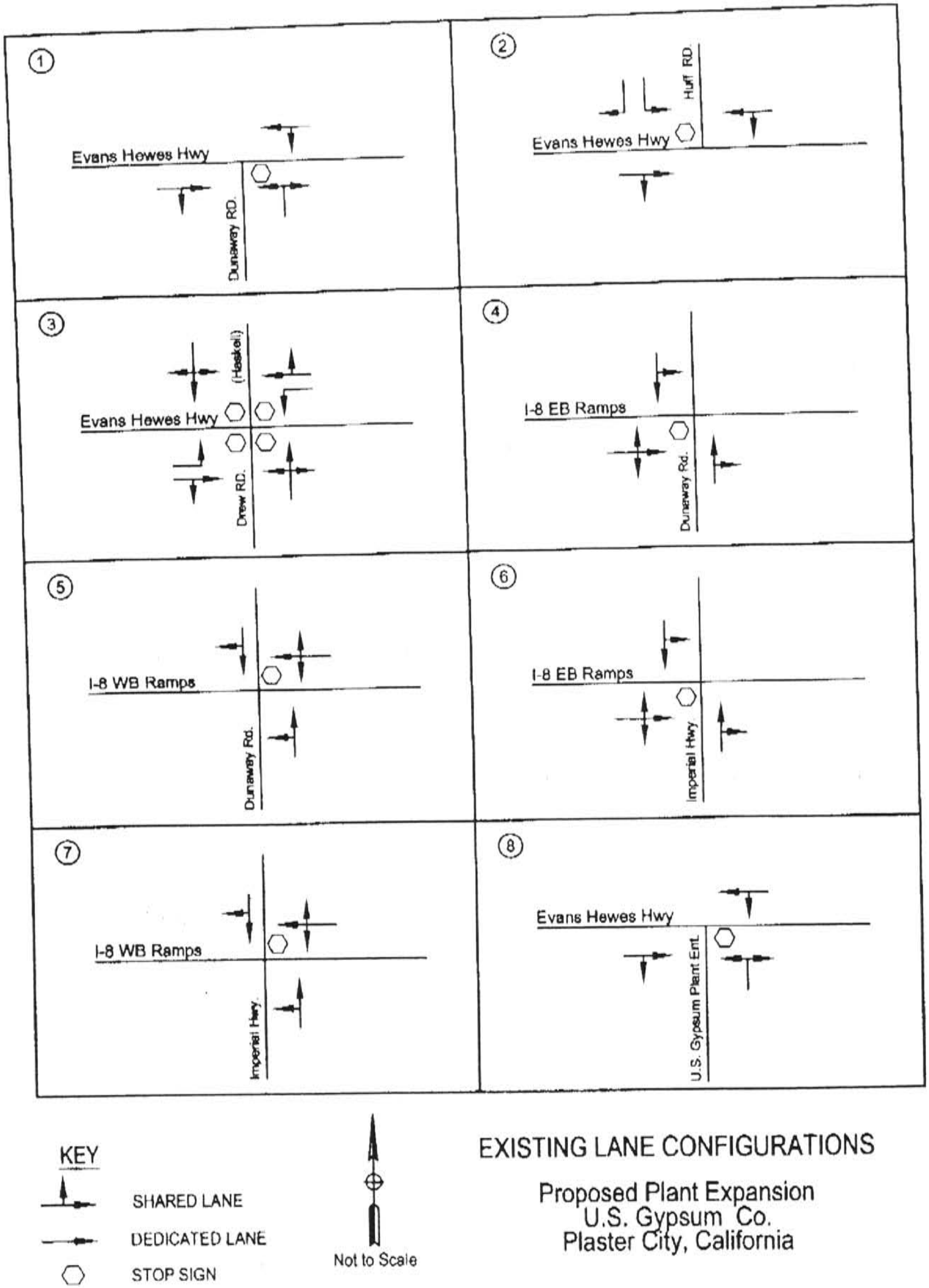


Not to Scale

VICINITY MAP
Proposed Plant Expansion
U.S. Gypsum Co.
Plaster City, California

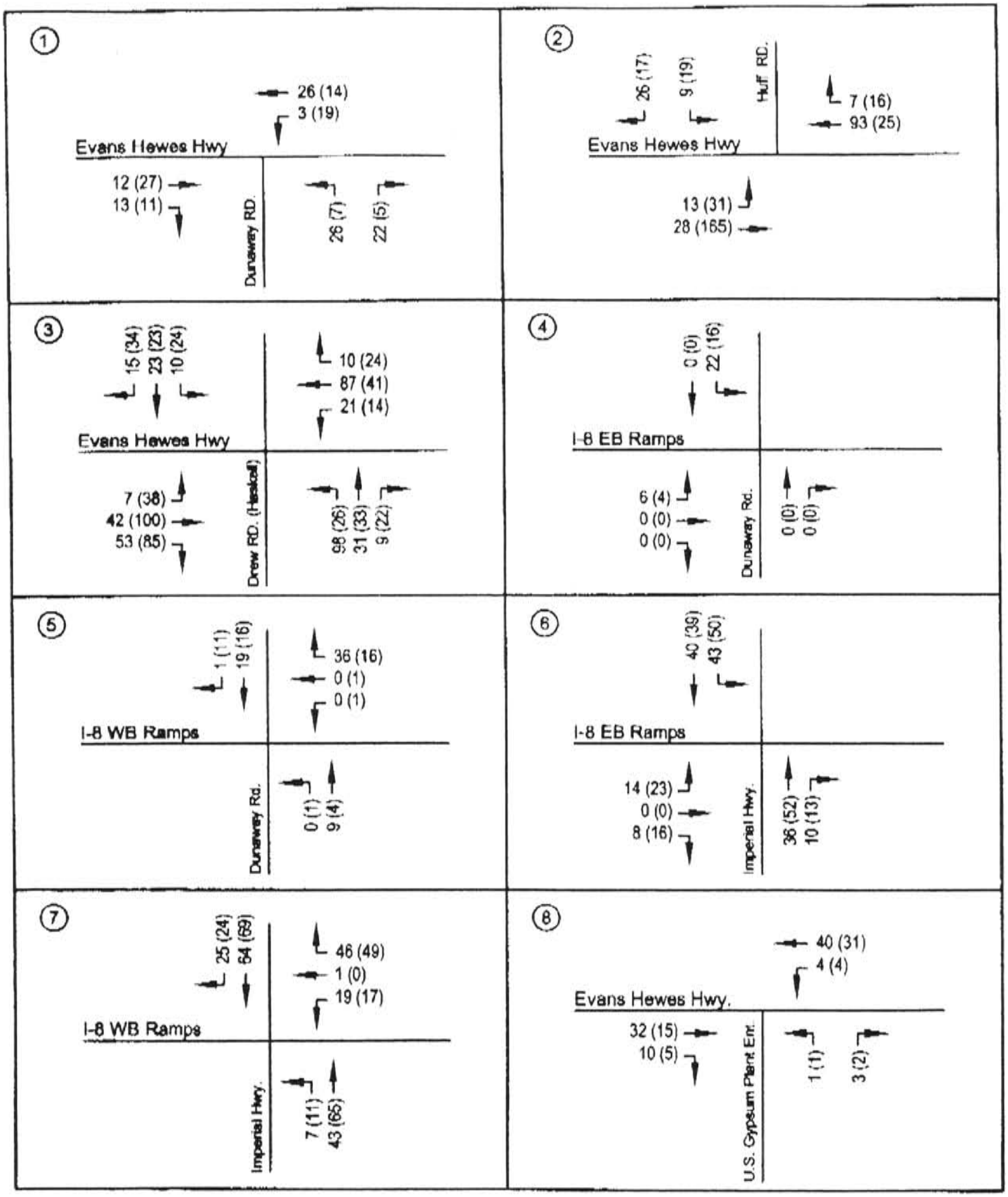
PETERS ENGINEERING

Figure 1



EXISTING LANE CONFIGURATIONS

Proposed Plant Expansion
U.S. Gypsum Co.
Plaster City, California



KEY

20 AM PEAK HOUR VOLUME

(20) PM PEAK HOUR VOLUME

Not to Scale

EXISTING PLUS PROJECT TRAFFIC VOLUMES
AM AND PM PEAK HOUR TRIPS

Proposed Plant Expansion
U.S. Gypsum Co.
Plaster City, California

Appendix – LOS Calculations

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK - EXIST + PROJ		

Project Description 02-32			
East/West Street: EVANS HEWES HIGHWAY		North/South Street: DUNAWAY ROAD	
Intersection Orientation: East-West		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	28	0	0	93	7
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	31	0	0	103	7
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	9	0	26
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	10	0	28
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (vph)	14					10		28
C (m) (vph)	1493					822		954
v/c	0.01					0.01		0.03
95% queue length	0.03					0.04		0.09
Control Delay	7.4					9.4		8.9
LOS	A					A		A
Approach Delay	--	--				9.0		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK - EXIST + PROJ		

Project Description 02-32

East/West Street: EVANS HEWES HIGHWAY — North/South Street: DUNAWAY ROAD

Intersection Orientation: East-West — Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	12	13	3	26	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	13	14	3	28	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	26	0	22	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	28	0	24	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		3		52				
C (m) (vph)		1600		1004				
v/c		0.00		0.05				
95% queue length		0.01		0.16				
Control Delay		7.3		8.8				
LOS		A		A				
Approach Delay	--	--	8.8					
Approach LOS	--	--	A					

TWO-WAY STOP CONTROL SUMMARY

General Information		**Site Information**	
Analyst	DP	Intersection	E HEWES HWY / HUFF
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK - EXIST + PROJ		

Project Description 02-32	
East/West Street: EVANS HEWES HIGHWAY	North/South Street: HUFF ROAD
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	28	0	0	93	7
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	31	0	0	103	7
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	
Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	9	0	26
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	10	0	28
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
v (vph)	14					10		28
C (m) (vph)	1493					822		954
v/c	0.01					0.01		0.03
95% queue length	0.03					0.04		0.09
Control Delay	7.4					9.4		8.9
LOS	A					A		A
Approach Delay	--	--				9.0		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY / HUFF
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK - EXIST + PROJ		

Project Description 02-32	
East/West Street: EVANS HEWES HIGHWAY	North/South Street: HUFF ROAD
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	31	165	0	0	25	16
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	34	183	0	0	27	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT			LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	19	0	17
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	21	0	18
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT	LT				L		R
v (vph)	34	0				21		18
C (m) (vph)	1600	1404				701		1054
v/c	0.02	0.00				0.03		0.02
95% queue length	0.07	0.00				0.09		0.05
Control Delay	7.3	7.6				10.3		8.5
LOS	A	A				B		A
Approach Delay	--	--				9.5		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY / PLANT
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK-EXIST+PROJ		

Project Description 02-32

East/West Street: EVANS HEWES HIGHWAY — North/South Street: PLANT ENTRANCE

Intersection Orientation: East-West — Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	32	10	4	40	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	35	11	4	44	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	3	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	0	3	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		4		4				
C (m) (vph)		1575		1002				
v/c		0.00		0.00				
95% queue length		0.01		0.01				
Control Delay		7.3		8.6				
LOS		A		A				
Approach Delay	--	--		8.6				
Approach LOS	--	--		A				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY / PLANT
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK-EXIST+PROJ		

Project Description 02-32

East/West Street: EVANS HEWES HIGHWAY — North/South Street: PLANT ENTRANCE

Intersection Orientation: East-West — Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	15	5	4	31	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	16	5	4	34	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	2	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	0	2	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	0
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT		LR				
v (vph)		4		3				
C (m) (vph)		1608		1024				
v/c		0.00		0.00				
95% queue length		0.01		0.01				
Control Delay		7.2		8.5				
LOS		A		A				
Approach Delay	--	--		8.5				
Approach LOS	--	--		A				

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 EB RAMPS / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK-EXIST+PROJ		

Project Description 02-32

East/West Street: I8 EB RAMPS	North/South Street: DUNAWAY
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	0	0	22	0	17
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	24	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	6	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	6	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT					LTR	
v (vph)		24					6	
C (m) (vph)		1636					953	
v/c		0.01					0.01	
95% queue length		0.04					0.02	
Control Delay		7.2					8.8	
LOS		A					A	
Approach Delay	--	--				8.8		
Approach LOS	--	--				A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 EB RAMPS / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK-EXIST+PROJ		

Project Description	02-32		
East/West Street:	I8 EB RAMPS	North/South Street:	DUNAWAY
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	0	0	16	0	17
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	17	0	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	4	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	4	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT					LTR	
v (vph)		17					4	
C (m) (vph)		1636					974	
v/c		0.01					0.00	
95% queue length		0.03					0.01	
Control Delay		7.2					8.7	
LOS		A					A	
Approach Delay	--	--				8.7		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 EB RAMPS / IMP HWY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK-EXIST+PROJ		

Project Description 02-32

East/West Street: I8 EB RAMPS	North/South Street: IMPERIAL HIGHWAY
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	36	10	43	40	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	40	11	47	44	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	14	0	8
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	15	0	8
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT					LTR	
v (vph)		47					23	
C (m) (vph)		1568					857	
v/c		0.03					0.03	
95% queue length		0.09					0.08	
Control Delay		7.4					9.3	
LOS		A					A	
Approach Delay	--	--				9.3		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 EB RAMPS / IMP HWY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK-EXIST+PROJ		

Project Description 02-32

East/West Street:	I8 EB RAMPS	North/South Street:	IMPERIAL HIGHWAY
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	52	13	50	39	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	57	14	55	43	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	0	23	0	16
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	0	25	0	17
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT					LTR	
v (vph)		55					42	
C (m) (vph)		1542					842	
v/c		0.04					0.05	
95% queue length		0.11					0.16	
Control Delay		7.4					9.5	
LOS		A					A	
Approach Delay	--	--					9.5	
Approach LOS	--	--					A	

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 WB RAMPS / IMPERIAL HWY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK - EXIST + PROJ		

Project Description 02-32			
East/West Street: I8 WB RAMPS		North/South Street: IMPERIAL HIGHWAY	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	9	13	50	19	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	10	0	0	21	12
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	36	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	40	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	0			40				
C (m) (vph)	1592			1077				
v/c	0.00			0.04				
95% queue length	0.00			0.12				
Control Delay	7.3			8.5				
LOS	A			A				
Approach Delay	--	--	8.5					
Approach LOS	--	--	A					

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 WB RAMPS / IMPERIAL HWY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK - EXIST + PROJ		

Project Description 02-32

East/West Street: I8 WB RAMPS	North/South Street: IMPERIAL HIGHWAY
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	65	0	0	69	24
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	12	72	0	0	76	26
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	17	0	49	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	18	0	54	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	12			72				
C (m) (vph)	1503			940				
v/c	0.01			0.08				
95% queue length	0.02			0.25				
Control Delay	7.4			9.1				
LOS	A			A				
Approach Delay	--	--		9.1				
Approach LOS	--	--		A				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 WB RAMPS / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK - EXIST + PROJ		

Project Description	02-32		
East/West Street:	I8 WB RAMPS	North/South Street:	DUNAWAY
Intersection Orientation:	North-South	Study Period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	9	0	0	19	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	10	0	0	21	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	36	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	0	40	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	0			40				
C (m) (vph)	1607			1077				
v/c	0.00			0.04				
95% queue length	0.00			0.12				
Control Delay	7.2			8.5				
LOS	A			A				
Approach Delay	--	--		8.5				
Approach LOS	--	--		A				

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TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	DP	Intersection	I8 WB RAMPS / DUNAWAY
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	PM PEAK - EXIST + PROJ		

Project Description 02-32	
East/West Street: I8 WB RAMPS	North/South Street: DUNAWAY
Intersection Orientation: North-South	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	4	0	0	16	11
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	4	0	0	17	12
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	1	16	0	0	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	1	17	0	0	0
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	0	0
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT			LTR				
v (vph)	1			19				
C (m) (vph)	1597			1065				
v/c	0.00			0.02				
95% queue length	0.00			0.05				
Control Delay	7.3			8.4				
LOS	A			A				
Approach Delay	--	--		8.4				
Approach LOS	--	--		A				

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DP
Agency/Co.	PETERS ENGINEERING
Date Performed	6/28/02
Analysis Time Period	PM PEAK-EXIST+PROJ

Site Information

Intersection	E HEWES HWY/DREW RD
Jurisdiction	IMPERIAL COUNTY
Analysis Year	2002

Project ID 02-32

East/West Street: EVANS HEWES HWY

North/South Street: DREW RD (HASKELL)

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	38	100	85	14	41	24
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	26	33	22	24	23	34
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	LTR		LTR	
PHF	0.90	0.90	0.90	0.90	0.90		0.90	
Flow Rate	42	205	15	71	88		88	
% Heavy Vehicles	5	5	5	5	5		5	
No. Lanes	2		2		1		1	
Geometry Group	5		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	1.0	0.0	1.0	0.0	0.3		0.3	
Prop. Right-Turns	0.0	0.5	0.0	0.4	0.3		0.4	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.32	5.32	5.32	5.32	5.32		5.32	

Departure Headway and Service Time

hd, initial value	3.20	3.20	3.20	3.20	3.20		3.20	
x, initial	0.04	0.18	0.01	0.06	0.08		0.08	
hd, final value	5.32	5.32	5.32	5.32	5.32		5.32	
x, final value	0.06	0.28	0.02	0.10	0.12		0.11	
Move-up time, m	2.3		2.3		2.0		2.0	
Service Time	3.0	2.5	3.0	2.5	3.0	2.5	3.0	2.5

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	292	455	265	321	338		338	
Delay	8.37	9.37	8.30	8.30	8.42		8.30	
LOS	A	A	A	A	A		A	
Approach: Delay	9.20		8.30		8.42		8.30	
LOS	A		A		A		A	
Intersection Delay	8.76							
Intersection LOS	A							

ALL-WAY STOP CONTROL ANALYSIS

General Information		Site Information	
Analyst	DP	Intersection	E HEWES HWY/DREW RD
Agency/Co.	PETERS ENGINEERING	Jurisdiction	IMPERIAL COUNTY
Date Performed	6/28/02	Analysis Year	2002
Analysis Time Period	AM PEAK-EXIST+PROJ		

Project ID 02-32

East/West Street: EVANS HEWES HWY | North/South Street: DREW RD (HASKELL)

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	7	42	53	21	87	10
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	98	31	9	10	23	15
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	L	TR	L	TR	LTR		LTR	
PHF	0.90	0.90	0.90	0.90	0.90		0.90	
Flow Rate	7	104	23	107	152		52	
% Heavy Vehicles	5	5	5	5	5		5	
No. Lanes	2		2		1		1	
Geometry Group	5		5		2		2	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
Prop. Left-Turns	1.0	0.0	1.0	0.0	0.7		0.2	
Prop. Right-Turns	0.0	0.6	0.0	0.1	0.1		0.3	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	5.44	5.44	5.44	5.44	5.44		5.44	

Departure Headway and Service Time

	EB L1	EB L2	WB L1	WB L2	NB L1	NB L2	SB L1	SB L2
hd, initial value	3.20	3.20	3.20	3.20	3.20		3.20	
x, initial	0.01	0.09	0.02	0.10	0.14		0.05	
hd, final value	5.44	5.44	5.44	5.44	5.44		5.44	
x, final value	0.01	0.14	0.03	0.15	0.20		0.07	
Move-up time, m	2.3		2.3		2.0		2.0	
Service Time	3.1	2.6	3.1	2.6	3.1	2.6	3.1	2.6

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	257	354	273	357	402		302	
Delay	8.20	8.41	8.31	8.78	8.93		7.96	
LOS	A	A	A	A	A		A	
Approach: Delay	8.39		8.69		8.93		7.96	
LOS	A		A		A		A	
Intersection Delay	8.61							
Intersection LOS	A							

HCS2000: Two-Lane Highways Release 4.1b

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Two-Way Two-Lane Highway Segment Analysis

Analyst DP
Agency/Co. PETERS ENGINEERING
Date Performed 6/30/2002
Analysis Time Period AM PEAK HOUR
Highway EVANS HEWES HIGHWAY
From/To IMPERIAL HIGHWAY / DUNAWAY RD
Jurisdiction IMPERIAL COUNTY
Analysis Year 2002
Description 02-32

Input Data

Highway class Class 1
Shoulder width 4.0 ft Peak-hour factor, PHF 0.88
Lane width 12.0 ft % Trucks and buses 10 %
Segment length 5.0 mi % Recreational vehicles 4 %
Terrain type Level % No-passing zones 40 %
Grade: Length mi Access points/mi 3 /mi
Up/down %

Two-way hourly volume, V 90 veh/h
Directional split 60 / 40 %

Average Travel Speed

Grade adjustment factor, fG 1.00
PCE for trucks, ET 1.7
PCE for RVs, ER 1.0
Heavy-vehicle adjustment factor, 0.935
Two-way flow rate,(note-1) vp 109 pc/h
Highest directional split proportion (note-2) 65 pc/h

Free-Flow Speed from Field Measurement:
Field measured speed, SFM - mi/h
Observed volume, Vf - veh/h
Estimated Free-Flow Speed:
Base free-flow speed, BFFS 60.0 mi/h
Adj. for lane and shoulder width, fLS 1.3 mi/h
Adj. for access points, fA 0.8 mi/h

Free-flow speed, FFS 58.0 mi/h

Adjustment for no-passing zones, fnp 0.8 mi/h
Average travel speed, ATS 56.3 mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG 1.00
PCE for trucks, ET 1.1
PCE for RVs, ER 1.0
Heavy-vehicle adjustment factor, fHV 0.990
Two-way flow rate,(note-1) vp 103 pc/h

Highest directional split proportion (note-2)	62	
Base percent time-spent-following, BPTSF	8.7	%
Adj.for directional distribution and no-passing zones, fd/np	11.8	
Percent time-spent-following, PTSF	20.5	%

______________Level of Service and Other Performance Measures______________

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.03	
Peak 15-min vehicle-miles of travel, VMT15	128	veh-mi
Peak-hour vehicle-miles of travel, VMT60	450	veh-mi
Peak 15-min total travel time, TT15	2.3	veh-h

Notes:
1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1b

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Phone: Fax:
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Two-Way Two-Lane Highway Segment Analysis

Analyst DP
Agency/Co. PETERS ENGINEERING
Date Performed 6/30/2002
Analysis Time Period PM PEAK HOUR
Highway EVANS HEWES HIGHWAY
From/To IMPERIAL HIGHWAY / DUNAWAY RD
Jurisdiction IMPERIAL COUNTY
Analysis Year 2002
Description 02-32

Input Data

Highway class Class 1
Shoulder width 4.0 ft Peak-hour factor, PHF 0.88
Lane width 12.0 ft % Trucks and buses 10 %
Segment length 5.0 mi % Recreational vehicles 4 %
Terrain type Level % No-passing zones 40 %
Grade: Length mi Access points/mi 3 /mi
Up/down %

Two-way hourly volume, V 110 veh/h
Directional split 60 / 40 %

Average Travel Speed

Grade adjustment factor, fG 1.00
PCE for trucks, ET 1.7
PCE for RVs, ER 1.0
Heavy-vehicle adjustment factor, 0.935
Two-way flow rate,(note-1) vp 134 pc/h
Highest directional split proportion (note-2) 80 pc/h

Free-Flow Speed from Field Measurement:
Field measured speed, SFM - mi/h
Observed volume, Vf - veh/h
Estimated Free-Flow Speed:
Base free-flow speed, BFFS 60.0 mi/h
Adj. for lane and shoulder width, fLS 1.3 mi/h
Adj. for access points, fA 0.8 mi/h

Free-flow speed, FFS 58.0 mi/h

Adjustment for no-passing zones, fnp 0.9 mi/h
Average travel speed, ATS 56.0 mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG 1.00
PCE for trucks, ET 1.1
PCE for RVs, ER 1.0
Heavy-vehicle adjustment factor, fHV 0.990
Two-way flow rate,(note-1) vp 126 pc/h

Highest directional split proportion (note-2)	76
Base percent time-spent-following, BPTSF	10.5 %
Adj.for directional distribution and no-passing zones, fd/np	11.8
Percent time-spent-following, PTSF	22.3 %

Level of Service and Other Performance Measures

Level of service, LOS	A
Volume to capacity ratio, v/c	0.04
Peak 15-min vehicle-miles of travel, VMT15	156 veh-mi
Peak-hour vehicle-miles of travel, VMT60	550 veh-mi
Peak 15-min total travel time, TT15	2.8 veh-h

Notes:

1. If vp >= 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp >= 1700 pc/h, terminate analysis-the LOS is F.