UNITED STATES GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT

IMPERIAL COUNTY, CALIFORNIA

VOLUME I OF II
DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL IMPACT STATEMENT

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

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APRIL 2006

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Summary

Summary

INTRODUCTION

This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Its purpose is to address the environmental impacts of the Proposed Action and alternatives concerning the existing United States Gypsum Company (USG) gypsum processing and wallboard manufacturing facility and gypsum quarry in Imperial County, California. See Figure 1.0-1, Regional Location.

Purpose and Use

This EIR/EIS contains all information and evaluation required by CEQA and NEPA, and provides for the following:

- Description of the Proposed Action and alternatives
- Description of the environment the Proposed Action will affect, as well as the evaluation of any potentially significant impacts
- Measures for reduction or avoidance of any potentially significant impacts

While this summary chapter is presented for purposes of convenience pursuant to NEPA and CEQA, the reader is encouraged to review the entire document and supporting analysis.

Scoping Process

The scope of this EIS/EIR encompasses evaluations of the environmental resources that could be affected either directly, indirectly, or cumulatively by the Proposed Action. The Proposed Action would involve the expansion of both wallboard facilities and the existing Quarry. The scope of environmental issues addressed has been identified based on: (1) review of the previous environmental documentation; (2) preliminary evaluation by the BLM and County of the applications; (3) public and agency notifications and written comments received; and (4) public scoping meetings.

The process undertaken for determining the scope of environmental issues to be addressed in this EIS/EIR included public involvement, as required by implementing regulations of NEPA and encouraged by CEQA. Scoping was undertaken to identify the range of actions, alternatives, and impacts and mitigation measures associated with the Proposed Action to be analyzed in depth in the EIS/EIR.

The scoping process resulted in the following list of issues to be evaluated for potential environmental impacts from the Proposed Action:

- Hydrology/Water Quality
- Air Quality
- Traffic/Circulation
- Biology
- Geology
- Paleontology
- Public Health and Safety
- Acoustics
- Visual/Scenic
- Cultural Resources
- Hazardous Materials
- Land Use

Areas of Controversy

CEQA Guidelines §15123(b)(2) require a discussion of areas of controversy known to the lead agency, including issues raised by agencies and the public. The following are the primary areas of controversy that have been identified through the scoping process:

- Degradation of groundwater quality
- Depletion of Ocotillo-Coyote Wells Sole Source Aquifer groundwater resources
- Increase in air contaminant emissions
- Potential effects on critical habitat for Peninsular Bighorn Sheep
- Potential effects on Flat-tailed Horned Lizard
- Potential effects on Desert Pupfish

PROPOSED ACTION

Federal policy favors maintaining a viable mining industry for the development of domestic mineral resources. To help assure satisfaction of the nation's industrial and security needs, federal policies encourage private enterprise in the economic development of domestic mineral resources. The Mining Law of 1872 (20 USC 22 et seq.) opened the public lands to exploration and development, granting a person who discovers valuable mineral deposits the right to extract and sell these minerals. This policy was reaffirmed in the Mining and Minerals Policy Act of 1970 and the National Materials and Minerals Policy, Research and Development Act of 1980. The 1970 Legislation stated that an "economically sound" mining industry was important for both economic and national security reasons. The 1980 Act noted the need to encourage mineral exploration. Quarrying of gypsum has been occurring at the Plaster City Quarry since 1921. USG has been quarrying gypsum at the site since 1946.

The Proposed Action will expand employment in a sparsely populated county where industrial jobs are limited. The Proposed Action is expected to result in the creation of 85 additional jobs.

The overall goals of the proposed expansion are to:

- Maximize use of known resources
- Expand production facilities, equipment and personnel
- Maximize the return on capital investments
- Fully develop gypsum ore reserves

Related objectives include:

- Provide for continued employment for people in a sparsely populated county, as well as indirectly supporting regional employment through purchases of goods and services
- Implement a reclamation program designed to minimize erosion, re-establish vegetation and wildlife habitat, and mitigate the aesthetic impacts created by mining

SITE LOCATION AND ACCESS

Regional Location

The 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 the Fish Creek Wash. Imperial County is within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea-level. The western portion of Imperial County is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley.

The components of the Proposed Action are located as shown in Figure 2.0-1 and are further discussed below.

Plant

USG produces wallboard and related gypsum products at the Plaster City Plant located at 3810 West Highway 80, Plaster City, California, approximately 18 miles west of the City of El Centro. Access to the Plant is via Highway 80, immediately north of Interstate 8. Township and Range location is shown in Figure 2.0-2, Plaster City Plant Location.

Water Supply

Water for processing and manufacturing purposes at the Plaster City Plant is currently delivered via an 8-inch diameter pipeline from a well field located approximately 8 miles west of Plaster City in the Ocotillo-Coyote Wells Groundwater Basin. USG proposes the replacement of this existing aging pipeline with a new pipeline. The approximate alignment of the conveyance pipeline and its Township and Range location is shown in Figure 2.0-5, Water Supply Pipeline Alignment.

Quarry

The Quarry and ore crushing facilities supplying the raw material to the Plant are located approximately 26 miles north of Plaster City, at the Plaster City quarry. Existing conditions and public and private land boundaries are shown in Figure 2.0-6, Plaster City Quarry-Existing Conditions.

Lands used for mining by USG encompass approximately 1,640 acres of private lands and 380 acres of claims on federal lands currently administered by the U.S. Bureau of

Land Management (BLM) and 28 acres of mill sites. USG has applied for patenting of these claims.

The Quarry is located at 7801 Split Mountain Road near Ocotillo Wells. Access to the Quarry is via State Highway 78 from San Diego County and Imperial County. The Quarry is approximately 9 miles south of the intersection of Highway 78 and Split Mountain Road.

Transport of ore from the Quarry and crushing operation to the Plant is via a USG-owned narrow-gauge railroad, located as shown in Figure 2.0-1.

PROJECT OBJECTIVES

Applicant's Objectives

The overall goals of the Proposed Action are to:

- Maximize use of known resources;
- Expand production facilities, equipment and personnel; and
- Maximize the return on capital investment.

The Proposed Action consists of three (3) general components: (1) the Plaster City Plant upgrade and expansion; (2) the increased water usage for quarrying and processing purposes; and (3) the expansion of the mining operation at the Plaster City Quarry. The applicant's objectives in these three areas are as follows:

Plant

- Meet current and future residential and commercial building products demand in the southwestern United States.
- Fulfill estimated operational design life of the Plant.
- Replace an 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.

Water Supply

- Obtain an adequate water supply for operations.
- Potentially replace an old and leaky pipeline.

- Increase water usage to up to 767 acre-feet annually.

Quarry

- Secure permits and approvals on the Quarry containing high quality gypsum resources.
- Provide for an annual production level of 1.92 million tons per year (TPY).
- Maximize recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life.
- Develop Quarry operations to limit disturbed areas.
- Implement a reclamation plan designed to minimize erosion, reestablish vegetation, reduce aesthetic impacts, and eliminate public safety concerns.
- Reclaim Quarry for post-mining uses including open space.

ALTERNATIVES TO THE PROPOSED ACTION

CEQA Guidelines Section 15126.6(c) provides for the selection of a range of reasonable alternatives. The range of potential alternatives to the Proposed Action shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scooping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR: (1) failure to meet most of the basic project objectives, (2) infeasibility, or (3) inability to avoid significant environmental impacts.

Similarly, NEPA requires that an EIS identify and objectively evaluate a reasonable range of alternative to a proposed action. Under both CEQA and NEPA, the selection of alternatives for discussion is governed by a "rule of reason."

Several alternatives to various aspects of the Proposed Action were considered during the preliminary project design phase and preparation of this document, including:

1) Drilling of New Production Wells in the Vicinity of the Plaster City Plant

2) Drilling of New Production Wells within the Ocotillo/Coyote Wells Groundwater Basin

3) Alternative Locations for the Plant or Quarry

4) Alternative Methods for Reducing or Eliminating the Material in the Inert Material Storage Area

These four alternatives were determined not feasible and were removed from no further analysis.

No Action Alternative

The No Action Alternative assumes that no element of the Proposed Action would be implemented. Specifically, no expansion/modernization of the Plant or Quarry, and no replacement of the existing water pipeline, would occur.

Imperial Irrigation District Water Supply Alternatives

Following evaluations of the potential significant impacts of the Proposed Action, alternatives were developed for full analysis involving either full use or partial use (at the Plant site) of water supplied from the Imperial Irrigation District. This would require extension of surface water conveyance facilities, as well as additional facilities at the Plaster City Plant. Table S-1 summarizes the changes in environmental impacts, as compared to the Proposed Action, that would result from implementation of either of these alternatives.

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TABLE S-1
SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES*

	Proposed Action			No Action Alternative			Partial IID Water Supply Alternative			Full IID Water Supply Alternative		
Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
GEOLOGY												
Impact 3.2-1: Slope Stability at Quarry												
Reclaimed Quarry slopes may be subject to failures and erosion if not properly cut, developed and stabilized.	S	**Mitigation Measure 3.2-1a** Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet. **Mitigation Measure 3.2-1b** Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet. **Mitigation Measure 3.2-1c** Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.	LS	LS	None required.	LS	S	Same as the Proposed Action (See Mitigation Measure 3.2-1a-c)	LS	S	Same as the Proposed Action (See Mitigation Measures 3.2-1a-c)	LS
Impact 3.2-2: Loss of Paleontological Resources												
Quarrying and construction activities may result in the loss of valuable paleontological resources.	LS	None required.	LS	LS	None required.	LS	S	**Mitigation Measure 3.2-2** Prior to construction of the water line between the Westside Canal and the Plant site, USG shall have a Paleontological Resources survey conducted to determine presence/ absence of resources. Recommendations contained in the survey report shall be adopted and	LS	S	**Mitigation Measure 3.2-2** Prior to construction of the water line between the Westside Canal and the Plant site, USG shall have a Paleontologic Resources survey conducted to determine presence/ absence of resources. Recommendations contained in the survey report shall be adopted	LS

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								implemented as mitigation measures.			and implemented as mitigation measures.	
HYDROLOGY AND WATER QUALITY												
Plant Water Usage												
Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners												
Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater and, causing some wells to go dry.	S	**Mitigation Measure 3.3-1** If the water level in a well in the Ocotillo area decreases at a rate faster than one foot every eight years and the average water levels in the surrounding wells also decrease for more than two years in a row due to the Proposed Action, as measured from the interpolated linear of one foot every eight years with a starting reference point being the date that pumping by USG increases above the baseline rate, and there is a documented reduction in the available water to the affected user, then USG, at its election will: 1. Rehabilitate the well and/or install a new pump to restore the prior pumping rate; or 2. Provide an incremental replacement of water equivalent to the amount of the reduced rate of pumping by the affected party, of a like quantity and quality, and provide reimbursement for the incremental increase for the affected party to pump the remaining available groundwater; or 3. Provide a full replacement water supply to the affected party of a like kind and quality, at a cost that does	LS	LS	None required.	LS	S	Same as Proposed Action (See Mitigation Measure 3.3-1)	LS	S	Same as Proposed Action (See Mitigation Measure 3.3-1)	LS

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		not exceed the cost to the affected party at the time the impact occurred; or 4. Deepen the existing well or provide a new replacement well to the affected party, drilled to a depth that will not be affected by existing or future Project-related declines in the water table, and capable of providing an equivalent quantity and quality of water that existed prior to the impact, and provide reimbursement for incremental increase in cost for the affected party to pump the available water. The extent to which the Proposed Action will be considered as contributing to the decrease in water levels in the Ocotillo area will be determined only after a review of the water level data and a decision by the Imperial County Groundwater Management Committee (ICGMC). The baseline condition in the Basin includes a declining water table, and existing data suggests that water levels recover slowly after significant drawdown occurs. Therefore, if USG elects to provide replacement water or a replacement water supply, arrangements must be made to provide this mitigation until groundwater levels stabilize at a level equal to the projected baseline condition.										

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Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin												
Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.	S	None available.	S	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners												
Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.	S	**Mitigation Measure 3.3-2** USG will provide an alternative or replacement source of water if the water quality significantly deteriorates in any well in the Ocotillo area and such deterioration is caused by the Proposed Action. As discussed above, the secondary drinking water standard for TDS is 500 mg/L and water with a TDS level in excess of 1,000 mg/L is considered non-potable. Therefore, if the TDS level in any well exceeds 500 mg/L, or the concentration of any other measured parameter, as described in the Mitigation Monitoring Program below, exceeds its drinking-water standard that is in force at the time of the measurement, then USG will provide the affected party or parties with an alternative supply of water for drinking and cooking, at no cost to the affected party or parties. This alternative supply could be bottled water or a hookup to a replacement water source. If the TDS level in any well exceeds 1,000 mg/L and is caused by the Proposed Action, then the water quality will be such that use of the	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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		water for any domestic purpose will be significantly affected due to scale buildup, damage to plumbing, corrosion, and other similar impacts. If the TDS level exceeds 1,000 mg/L and is caused by the Proposed Action, USG will provide the affected party or parties with a hookup to a replacement supply of water. This replacement supply may be a hookup to an existing municipal district or other appropriate drinking water supply system. USG will bear the full cost of the hookup. The affected party or parties, however, would only be responsible for the annual cost of the replacement water equivalent to their costs to pump water prior to the occurrence of the impact. If the annual cost of water for the replacement supply exceeds the affected party or parties costs to pump water prior to the occurrence of the impact, USG will pay the incremental difference. The extent to which the Proposed Action will be considered as contributing to the decrease in water quality in the Ocotillo area, will be determined only after a review of the water quality data and a decision by the Imperial County Groundwater Management Committee (ICGMC). The existing data from Ocotillo and Yuha Estates indicates that, once the										

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		water quality decreases, it may take many decades for the water quality to recover once the pumping causing the impact has ceased. Therefore, USG will need to provide the alternative and/or replacement water supply until concentrations of the above-listed constituents in excess of applicable water-quality standards return to levels below such standards or until the water quality parameters, for which there is data that currently exists, return to pre-Proposed Action levels.										
Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin												
Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.	S	None available. As part of the Proposed Project, USG will implement the Groundwater Monitoring Program described below. The data from the groundwater monitoring program will provide an indication of a trend of progressively decreasing water quality in individual wells and throughout the basin, if such a trend occurs and is a result of the increased pumping for the Proposed Project. If such a trend is identified in only a few wells in close proximity to the USG pumping wells, and an impact subsequently occurs in any or all of those few wells, then USG can mitigate the impacts in the individual wells as discussed above for Impact 3.3-2A: Water Quality Degradation at Plant Affecting Individual Well Owners. If, however, such a trend is identified in a	S	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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		larger number of wells, and these wells are located over a broader area of the basin and not just in the area of the USG pumping wells, it would not be possible to restore the Basin-wide water quality once it is degraded to concentrations at which the groundwater is no longer suitable for its current uses. There is insufficient recharge to restore the Basin and dilute the salts in the saline water. Therefore, it is not possible to mitigate the Basin-wide degradation of water quality. If such trends are detected by the Groundwater Monitoring Program, the only way to halt or reverse these trends would be to curtail pumping by reducing production at the Plant, or by implementing one or more Alternatives that reduce or eliminate withdrawals from the basin, prior to the groundwater quality being degraded to the point where it was no longer suitable for its current uses.										
Quarry Water Usage												
Impact 3.3-5: Water Depletion at Quarry												
The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Impact 3.3-6: Water Quality Degradation at Quarry												
The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.3-7: Surface Water Flow at Quarry												
Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.	S	**Mitigation Measure 3.3-7** An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.	LS	LS	None required.	LS	S	Same as Proposed Action (See Mitigation Measure 3.3-3)	LS	S	Same as Proposed Action (See Mitigation Measure 3.3-3)	LS
Impact 3.3-8: Cumulative Reduced Water Levels												
Increased pumping of USG wells and the additional commercial pumping from the Westwind well could reduce water levels, increasing the cost of pumping	S	Same as Mitigation Measure 3.3-1. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-1, as described in Section 3.3.3.	LS/S[1]	--	--	--	--	--	--	--	--	--

[1] Less than Significant as to individual wells; Significant as to Basin-wide impacts.

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groundwater, causing some wells to go dry, and reducing the amount of available water in the Groundwater Basin.												
Impact 3.3-9: Cumulative Water Quality Degradation												
Increased pumping of USG wells and the additional commercial pumping from the Westwind well could degrade water quality due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the Groundwater Basin.	S	Same as Mitigation Measure 3.3-2. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-2, as described in Section 3.3.3.	LS/S[1]	--	--	--	--	--	--	--	--	--
VEGETATION												
Impact 3.4-1: Loss of Vegetation at Quarry												
Increased activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline												
Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Impact 3.4-3: Loss of Vegetation at Plant												
Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline												
Disturbance at the proposed site of the replacement 10" water pipeline to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.	S	**Mitigation Measure 3.4-1** Prior to any new disturbances to ephemeral stream channels on the proposed water line alignment, USG shall contact the CDFG 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, respectively.	LS	LS	None required.	LS	S	Same as Proposed Action (See Mitigation Measures 3.4-1a.)	LS	S	Same as Proposed Action (See Mitigation Measures 3.4-1a.)	LS
WILDLIFE												
Impact 3.5-1: Loss of Wildlife at Quarry												
Increased activity at the Quarry could disturb additional desert upland and wash habitats possibly having a negative impact on wildlife in the area.	S	**Mitigation Measure 3.5-1a** Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.	LS	LS	None required.	LS	S	Same as for the Proposed Action (See Mitigation Measures 3.5-1a-f)	LS	S	Same as Proposed Action (see Mitigation Measures 3.5-1a-f)	LS

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LS = Less than Significant

TABLE S-1
SUMMARY OF POTENTIAL IMPACTS AND MITIGATION MEASURES*

	Proposed Action			No Action Alternative			Partial IID Water Supply Alternative			Full IID Water Supply Alternative		
Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
		Mitigation Measure 3.5-1b Phasing of Quarry development and closure: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas. **Mitigation Measure 3.5-1c** Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat. **Mitigation Measure 3.5-1d** Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the 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)										

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		identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them. **Mitigation Measure 3.5-1e** Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to “take” barefoot banded gecko must be completed prior to land disturbance. **Mitigation Measure 3.5-1f** Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.										

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Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
Impact 3.5-2: Loss of Wildlife at Well Site and Pipeline												
Construction of a new water well and pipeline to the Quarry could disturb additional acres of desert habitat possibly causing a negative impact on wildlife in the area. For example, mammals and birds may be impacted by surface disturbance resulting from construction and the desert pupfish may be impacted by adverse affects of well pumping (drawdown from groundwater supply).	S	**Mitigation Measure 3.5-2** FTHL Rangewide Management Strategy: USG will comply with the FTHL Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.	LS	S	Same as Proposed Action (see Mitigation Measure 3.5-2)	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measure 3.5-2)	LS
Impact 3.5-3: Loss of Wildlife at Plant												
Expansion and modernization of the Plant could disturb additional acreage of desert habitat, possibly causing a negative impact on wildlife at the Plant site.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.5-4: Loss of Wildlife at 10" Replacement Pipeline												
Construction of a replacement waterline for the Plant expansion and modernization could disturb additional habitat in the area thereby having a possible negative effect on local wildlife.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.5-5: Loss of Wildlife Along Railroad Right-of-Way												
Expansion and modernization of the Plant could result in increased annual train trips between the Quarry and the Plant, possibly causing a negative impact on wildlife in the area.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
AIR QUALITY												
Impact 3.6-1: Increased PM_{10} and/or Dust Emissions at Quarry												
Increased quarrying and processing of gypsum at the Quarry could result in increases in PM_{10} or dust emissions, which may exceed standards of significance.	LS	None required (the project's design features, permit conditions and ICAPCD Rules limit emissions)	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.6-2: Increased Exhaust Emissions at Quarry												
Increased production of gypsum at the Quarry could result in increases in exhaust emissions from mobile equipment, which may exceed thresholds of significance.	S	**Mitigation Measure 3.6-1a** USG shall ensure all equipment is maintained and tuned according to manufacturers specifications. **Mitigation Measure 3.6-1b** USG shall schedule production activities to minimize daily equipment operations and idling trucks. **Mitigation Measure 3.6-1c** USG shall comply with all existing and future CARB and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra low sulfur diesel fuel; and (4) use of alternative fuels or equipment.	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measures 3.6-2a-c)	LS	S	Same as Proposed Action (see Mitigation measures 3.6-2a-c)	LS
Impact 3.6-3: Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline												
Construction of the Quarry pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
Impact 3.6-4: Increased Combustion Emissions at Plant												
Increased production of wallboard at the Plant would result in increases in combustion emissions from stationary sources including the potential cogeneration system and mobile equipment, which may exceed standards of significance.	LS	None required. The Plant combustion emissions are determined to be less than significant. However, the following measures are recommended to verify continued compliance: USG must maintain and annually renew existing air quality permits to operate from the ICAPCD and be in compliance with such permits. If a cogeneration unit is installed it shall be permitted through the ICAPCD and shall be in compliance with all applicable ICAPCD rules and regulations.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant												
Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.6-6: Increased PM_{10} and/or Dust Emissions at 10" Replacement Pipeline												
Replacement of the Plant water supply pipeline could result in increased exhaust and PM10 emissions, which may exceed standards of significance.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Potential Impact	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***	***LOS Before Mit***	***Mitigation Measures***	***LOS After Mit***
Impact 3.6-7: Increased Exhaust Emissions Along Railroad Right-of-Way												
Increased number of train trips to and from the Quarry and resulting diesel locomotive exhaust emissions may exceed standards of significance.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Visual Resources												
Impact 3.7-1: Aesthetic Degradation from Lighting and Glare at Quarry												
The Proposed Action could create new sources of lighting and glare at the Quarry site.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.7-2: Temporary and Permanent Aesthetic Degradation												
Expanded Quarry areas and modernized Plant construction and operations could result in both temporary and permanent alteration of the existing aesthetics of the sites.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.7-3: Aesthetic Degradation at Wallboard Storage Pile												
Expansion of the IMSA could alter the aesthetic character of the site, attracting attention of passers by on Interstate 8 and Evan Hewes Highway.	S	**Mitigation Measure 3.7-1** USG shall recycle or remove 100,000 cubic yards per year of the stockpiled material, plus the additional material annually generated from Plant operations (approximately an additional 100,000 cubic yards), until covered or capped. Volumes of material generated and recycled shall be annually reported to the County.	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measures 3.7-1)	LS	S	Same as Proposed Action (see Mitigation Measure 3.7-1)	LS

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Cultural Resources												
Impact 3.8-1: Prehistoric Cultural Resources												
The Proposed Action may affect unique prehistoric sites or artifacts in the potential impact area.	LS	None required.	LS	LS	None required.	LS	S	**Mitigation Measure 3.8-1** Prior to construction of the water line between the Canal and the Plant site, USG shall have a Cultural Resources survey conducted to determine presence/absence of resources. Recommendations contained in the survey report shall be adopted and implemented as mitigation measures. Also, see Mitigation Measure 3.8-3.	LS	S	Mitigation Measures 3.8-1 and 3.8-3	LS
Impact 3.8-2: Ethnic Cultural Resources												
The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.	LS	None required.	LS	LS	None required.	LS	S	Mitigation Measures 3.8-1 and 3.8-3	LS	S	Mitigation Measures 3.8-1 and 3.8-3	LS
Impact 3.8-3: Historic Cultural Resources												
The Proposed Action may affect historic sites or artifacts in the potential impact area.	S	**Mitigation Measure 3.8-3** If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other	LS	LS	None required.	LS	S	See Mitigation Measures 3.8-1 and 3.8-3	LS	S	See Mitigation Measure 3.8-1 and 3.8-3	LS

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		activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. An archaeologist qualified by the Society of Professional Archaeologists (SOPA) shall be deemed "qualified" for purposes of this mitigation measure. The services of a qualified archaeologist may be secured by contacting the Center for Public Archaeology – California State University, Fullerton or a member of SOPA.										
Land Use												
Impact 3.9-1: Compatibility with Existing Land Uses												
The Proposed Action could be incompatible with existing surrounding land uses.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.9-2: Quarry Compatibility with Wilderness Area												
The Proposed Action could be incompatible with Wilderness Area land use plans and policies.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Hazards and Hazardous Materials												
Impact 3.10-1: Groundwater Contamination Hazards at Plant and Quarry												
In the course of using of petroleum products and other solvents and hazardous materials at the Plant and Quarry, some of those substances may be spilled or otherwise released into the environment. This substance may migrate through soil into groundwater supplies.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Impact 3.10-2: Explosive Hazards at Quarry												
Quarrying operations would use Ammonium Nitrate Fuel Oil [ANFO] and high explosives to blast mineral deposits free from the ore body at a similar rate as is currently used.	S	**Mitigation Measure 3.10-1** USG shall conform to the requirements of 27 CFR Part 55, particularly sections 55.204 – 55.217 and 55.220, and any local requirements that are more stringent than the federal regulations, for the storage and use of explosives.	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measure 3.10-1, above)	LS	S	Same as Proposed Action (see Mitigation Measure 3.10-1, above)	LS
Impact 3.10-3: Asbestos Exposure from 8" Pipeline												
The existing water supply pipeline from Ocotillo to the Plaster City Plant contains asbestos materials. The Proposed Action allows for discontinuing the use of this pipeline and installing a new one made with non-asbestos containing materials. However, should the pipeline be removed, the asbestos materials could become friable and could pose a hazard.	S	**Mitigation Measure 3.10-2** USG shall comply with the National Emission Standard for Hazardous Air Pollutants respecting the demolition or renovation of structures containing or covered with asbestos-containing materials, 40 C.F.R. § 61.140 et seq., or a local regulation that is at least as stringent as the federal regulation.	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measure 3.10-2)	LS	S	Same as Proposed Action (see Mitigation Measure 3.10-2)	LS
Traffic and Circulation												
Impact 3.11-1: Truck Traffic Increases												
The Project could result in additional truck traffic on Evan Hewes Highway, Interstate 8, Dunaway Road, and Drew Road.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Acoustics/Noise												
Impact 3.12-1: Noise Pollution at Quarry and Plant Sites												
The Proposed Action could result in increased noise at the Quarry.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.12-2: Noise Pollution at Plant Site												
The Project could result in increased noise at the Plant.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS

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Public Health and Safety												
Impact 3.13-1: Industrial Facility Safety												
The Proposed Action would allow additional facilities at the Quarry, thereby increasing the potential for continued processing and operations hazards.	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS	LS	None required.	LS
Impact 3.13-2: Reclaimed Quarry Site Safety												
The Proposed Action could potentially result in the exposure of people to health and safety hazards associated with quarries left following conclusion of all operations.	S	**Mitigation Measure 3.13-2a** To prevent unauthorized entry into the Quarry, access to the Quarry shall remain gated at the end of Split Mountain Road. No trespassing signs shall be posted in the Fish Creek Wash area adjacent to the north boundary of the Quarry site. Other Quarry boundaries are located in wilderness areas where human access is limited. No trespassing signs shall be posted at locations to be determined in consultation with BLM and Anza Borrego Desert State Park staff to limit unauthorized access to the Quarry site. **Mitigation Measure 3.13-2b** Reclaimed slopes shall be finished to a stable configuration per recommendations of the Slope Stability Report.	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measures 3.13-2a and 3.13-2b)	LS	S	Same as Proposed Action (see Mitigation Measures 3.13-2a and 3.13-2b)	LS
Impact 3.13-3: Health and Safety Impacts to the Public and Plant Employees												
The Proposed Action would create additional facilities at the Plant and increase the number of employees, thereby increasing the potential for continued processing and	S	**Mitigation Measure 3.13-2** USG shall continue to incorporate environmental health and public safety protection measures required by local, state, or Federal regulations into the	LS	LS	None required.	LS	S	Same as Proposed Action (see Mitigation Measure 3.13-3)	LS	S	Same as Proposed Action (see Mitigation Measure 3.13-3)	LS

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operations hazards.		proposed Plant expansion, design and operation. Specifically, appropriate OSHA, and Cal-OSHA worker environmental health and public safety regulations and the continuance of established public safety measures and programs existing at the Plant shall be incorporated.										

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1.0 Introduction

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1.1 EIR/EIS PURPOSE, USE, AND SCOPE

This Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Its purpose is to address the environmental impacts of the Proposed Action concerning expansion of the existing United States Gypsum Company's (USG) gypsum processing and wallboard manufacturing facility (Plant) and gypsum quarry (Quarry) in Imperial County, California. See Figure 1.0-1, Regional Location.

1.1.1 Purpose and Use

CEQA requires agencies within the State of California – other than federal agencies – such as Imperial County, to evaluate the environmental implications of their actions, including but not limited to conditional use permits and mine reclamation plans.

The purpose of an EIR is to inform agency decision-makers and the public of any significant environmental impacts a given proposed action may have, as well as to propose possible ways of minimizing any such negative effects. The purpose of an EIS is to ensure that the goals and policies of NEPA are considered as part of the actions of federal agencies.

This document has been prepared as a joint Environmental Impact Statement (EIS) and Environmental Impact Report (EIR) in accordance with provisions of NEPA (40 CFR Part 1506.2) and CEQA (Section 15526 of the Guidelines for Implementation of CEQA).

The NEPA, which became on January 1, 1970, was adopted as a national policy to maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of Americans. It established the Council on Environmental Quality (CEQ) for coordinating environmental matters at the Federal level and to serve as advisor to the President on such matters. Under the Act, Federal actions and approvals which could have significant impacts on the environment are subject to review by Federal, State, and local environmental authorities. The CEQ regulations (40 CFR 1500-1508) implement NEPA.

NEPA provides an interdisciplinary framework for environmental planning by federal agencies to ensure that decision-makers take environmental factors into account. The primary purpose of an EIS is to ensure that the policies and goals of NEPA are incorporated into and considered during the ongoing programs and actions of federal agencies.

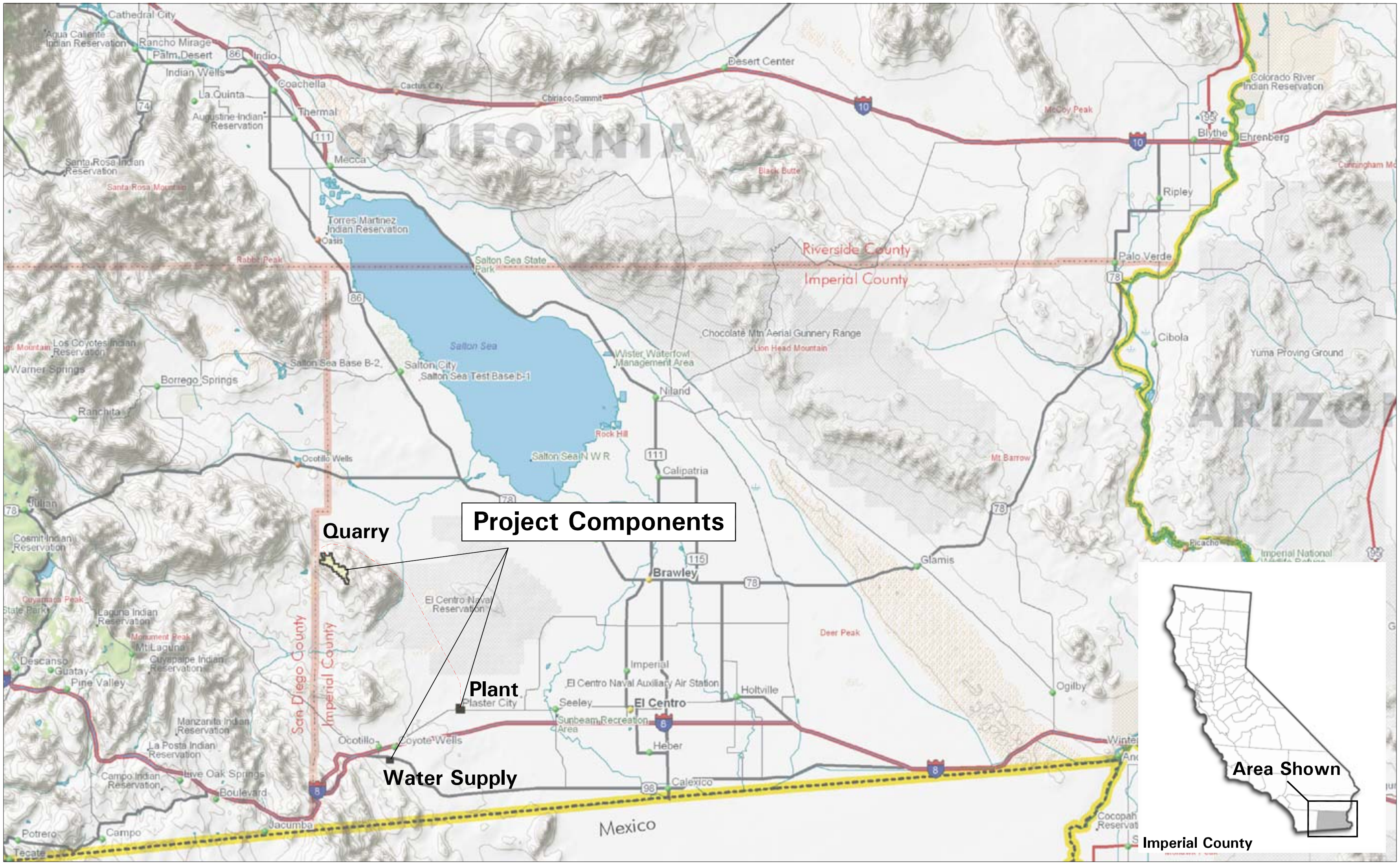
CEQA was developed subsequent to NEPA. CEQA applies to State and local government agencies that regulate activities of private individuals, corporations, and public agencies that have the potential to affect the quality of the environment. Activities are regulated so that major consideration is given to preventing environmental damage, while providing a decent home and satisfying the living environment for every Californian. The State CEQA Guidelines (Section 15000-15387) implement CEQA.

This EIR/EIS contains all information and evaluation required by CEQA and NEPA, and provides the following:

- Description of the Proposed Action and Alternatives;
- Description of the environment the Proposed Action will affect, as well as the evaluation of any potentially significant impacts; and
- Measures for reduction or avoidance of any such significant impacts.

CEQA also requires the analysis of alternatives specifically addressing significant impacts of the Proposed Action, but not at the same level of detail as for the Proposed Action. While such a level of analysis may be included in an EIR, it is not required by CEQA. NEPA, however, requires the degree of analysis devoted to each alternative to be substantially similar to that devoted to the Proposed Action. This document provides analyses of the Proposed Action and each alternative in terms of impact analysis, mitigation measures, and the determination of impact after mitigation.

The Proposed Action involves the expansion and modernization of a wallboard manufacturing plant as well as the expansion of a gypsum quarrying operation. The principal changes involve:



SOURCE: DeLorme Topoquads 2.0

0 15 Miles
SCALE 1" = 15 Miles

Figure 1.0-1
Regional Location
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.

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- Replacement of an old wallboard manufacturing line with a new high-speed boardline, resulting in the doubling of production;
- Increased Plant water usage for manufacturing purposes and the replacement of the existing water pipeline from Ocotillo to the Plant; and
- Expansion of operations and processing facilities at the Quarry.

This document will be used by both Imperial County (County) and the Bureau of Land Management (BLM) in their consideration of land use and other approvals associated with the Proposed Action. These agencies are termed the State Lead Agency and the Federal Lead Agency, respectively, as they have the responsibility of preparing the EIR/EIS. Other agencies may also use this document in consideration of various permits, as needed.

The County is responsible for the implementation of the California Surface Mining and Reclamation Act (SMARA) and the approval of proposed actions in accordance with the County Land Use Ordinance. As lead agency for CEQA, Imperial County will use this document in consideration of the Proposed Action as well as the approval of required permits and the USG Mine Reclamation Plan (Rec. Plan).

The BLM, as lead agency for NEPA, will use this document in considering the Proposed Action and the environmental factors associated with the authorization for such activities on public lands. The authority to apply mitigation to the Project is provided primarily by the Federal Land Policy and Management Act (FLPMA), NEPA and by BLM policies and regulations including the surface management regulations at Title 43 CFR 3809.

Potential approvals and permits that may need to be obtained and/or modified to reflect the Proposed Action are shown in Table 1.0-1, Potential Discretionary Permits, Approvals and Processes for USG Expansion/Modernization Project. This document is intended to serve as the environmental evaluation for the approvals and permits described in Table 1.0-1.

TABLE 1.0-1
POTENTIAL DISCRETIONARY PERMITS, APPROVALS AND PROCESSES FOR US GYPSUM EXPANSION/MODERNIZATION PROJECT

Agency/Department	Permit/Approval/Process	Associated Project Element
FEDERAL AGENCIES		
Bureau of Land Management	**Environmental Review.** (NEPA, 42 USC 4321 *et seq.*)	Evaluation of environmental impacts of Quarry and Plant expansion, and replacement/construction of pipelines.
	Cultural/paleontological resource permit. (16 USC 470).	Survey/excavation activities associated with pipeline and Quarry expansion areas.
	Archeological Resources Protection Act Survey. (16 USC 469 *et seq.*)	Avoidance of archeological resources along pipeline or in Quarry expansion areas.
	Plan of Operations (43 CFR 3809.1-5)	Quarry and reclaimed public and private property.
	Right-of-way grant. (FLPMA, 43 USC 1701 *et seq.*)	Water pipeline easement on BLM-managed lands.
Fish and Wildlife Service	**Biological Assessment, Section 7 Consultation, Biological Opinion.** (Endangered Species Act, 16 USC 1531-1544)	Avoidance of federally listed endangered/threatened species in pipeline and Quarry expansion areas.
Army Corps of Engineers	**CWA section 404 permit.** (Clean Water Act, 33 USC 1344 *et seq.*)	Activities at the Quarry, the Quarry well No. 3 pipeline and replacement of the pipeline from Ocotillo.
STATE AGENCIES		
Regional Water Quality Control Board	**General Construction Activity Stormwater Permit. Notice of Intent.** (40 CFR Part 122)	Stormwater discharges associated with construction activity at the Quarry, the Plant and pipeline.
	General Industrial Activity Stormwater Permit. Notice of Intent. (40 CFR Part 122)	Stormwater discharges associated with industrial activity at the Quarry and Plant, unless covered by individual NPDES Permits.
	National Pollutant Discharge Elimination System Permit. (33 USC 1251 *et seq.*)	Control of sediment from new quarry areas into surface waters of California.
	Waste Discharge Requirements. (Water Code 13000 *et seq.*)	Discharge of waste that might affect groundwater quality.
Department of Fish and Game	**Lake/Streambed Alteration Agreement.** (Fish and Game Code 1603)	Excavation and placement of overburden in drainages near Quarry; construction of pipelines.
Department of Transportation (CALTRANS)	**Encroachment Permit.**	Encroachments on State highway rights-of-way for Ocotillo pipeline.
Department of Industrial Relations	**Pressure vessels.**	Various pressure vessels at the Plant.

Table 1.0-1 (continued)

Agency/Department	Permit/Approval/Process	Associated Project Element
LOCAL AGENCIES		
County Planning/Building Department	**Conditional Use Permit.**	Authorization of conditional use permit for new Quarry well.
	Grading Permit.	Plant expansion.
	Reclamation Plan and Financial Assurance. (PRC Section 2710 *et seq.*) Note: Local agency must consult with the State Department of Conservation.	Quarry operations and expansion.
	Environmental Review (CEQA, PRC 21000-21177).	Evaluating environmental impacts associated with the project as a whole.
Air Pollution Control District	**Authority to Construct.** (Local district rules, per Health and Safety Code 42300 *et seq.*)	Emissions from stationary sources at the Plant and Quarry area.
	Permit to Operate. (Local district rules).	Equipment emitting pollutants from a stationary source at the Plant and Quarry area.
Local Enforcement Agency	**Assess IMSA compliance with applicable requirements.**	Inert Material Storage Area.

1.1.2 Joint EIR/EIS Process

The Proposed Action has the potential to cause significant environmental effects, and as such an EIS must be completed in compliance with NEPA and the BLM NEPA Handbook (BLM, 1988). As the County is acting in compliance with a court mandate to prepare an EIR, and because the EIS and EIR processes are similar, the documents can be completed in a combined format that accommodates the needs of both agencies. CEQA and NEPA encourage such a cooperative effort for joint CEQA and NEPA planning processes, joint environmental research and studies, and joint impact documents to reduce the duplication of efforts. The public and other agencies are also well served by the efficiency of such cooperative efforts.

The process of preparing an EIR/EIS consists of a series of procedural steps to ensure the adequate analysis of environmental impacts and to encourage interagency coordination and public involvement. CEQA/NEPA objectives generally include:

- Disclosing environmental impacts to decision-makers and public (through preparation and use of EIR/EIS);

- Identifying and preventing environmental damage (through identification of mitigation measures, identification and analysis of alternatives, and mitigation monitoring);
- Enhancing public participation (through public notice requirements, public availability of documents, and response to comments);
- Fostering intergovernmental coordination (through use of early consultation, notice of preparation, and scoping meetings); and/or
- Disclosing agency decision-making processes (through preparation of findings and statements of overriding considerations).

An EIR/EIS is prepared in two stages: a draft and a final document. Each of the individual steps in the overall process contributes to the preparation of the draft or final EIR/EIS.

The steps being undertaken for the preparation of this EIR/EIS on the Proposed Action are depicted in Figure 1.0-2, Environmental Review Process.

1.1.3 EIR/EIS Scope

1.1.3.1 Procedural History and Baseline Conditions Directive

USG, in 1998, submitted applications for the Plant expansion to the County. Based on various studies and information including public comments, the County approved a CEQA Negative Declaration for that project, determining that the potential impacts of the project were less than significant and, therefore, no EIR was required. This Negative Declaration determination was subsequently challenged in court. A lawsuit was filed in early 1999 and a few months later the Imperial County Superior Court issued its judgment upholding the County's determination approving that Negative Declaration. USG then proceeded with the Project, after which the petitioner filed an appeal to the California Court of Appeal. In late 2000, the Court of Appeal held that the project may have potential impacts in two areas, groundwater and traffic. The Court then ordered the County to prepare an EIR for the project.

At the time of the Court of Appeal ruling, USG had completed construction of many of the project components. An EIR is meant to evaluate the potential impacts of a proposed action as compared to the existing physical conditions within the vicinity of the Project site at the time the environmental review process has commenced. In this

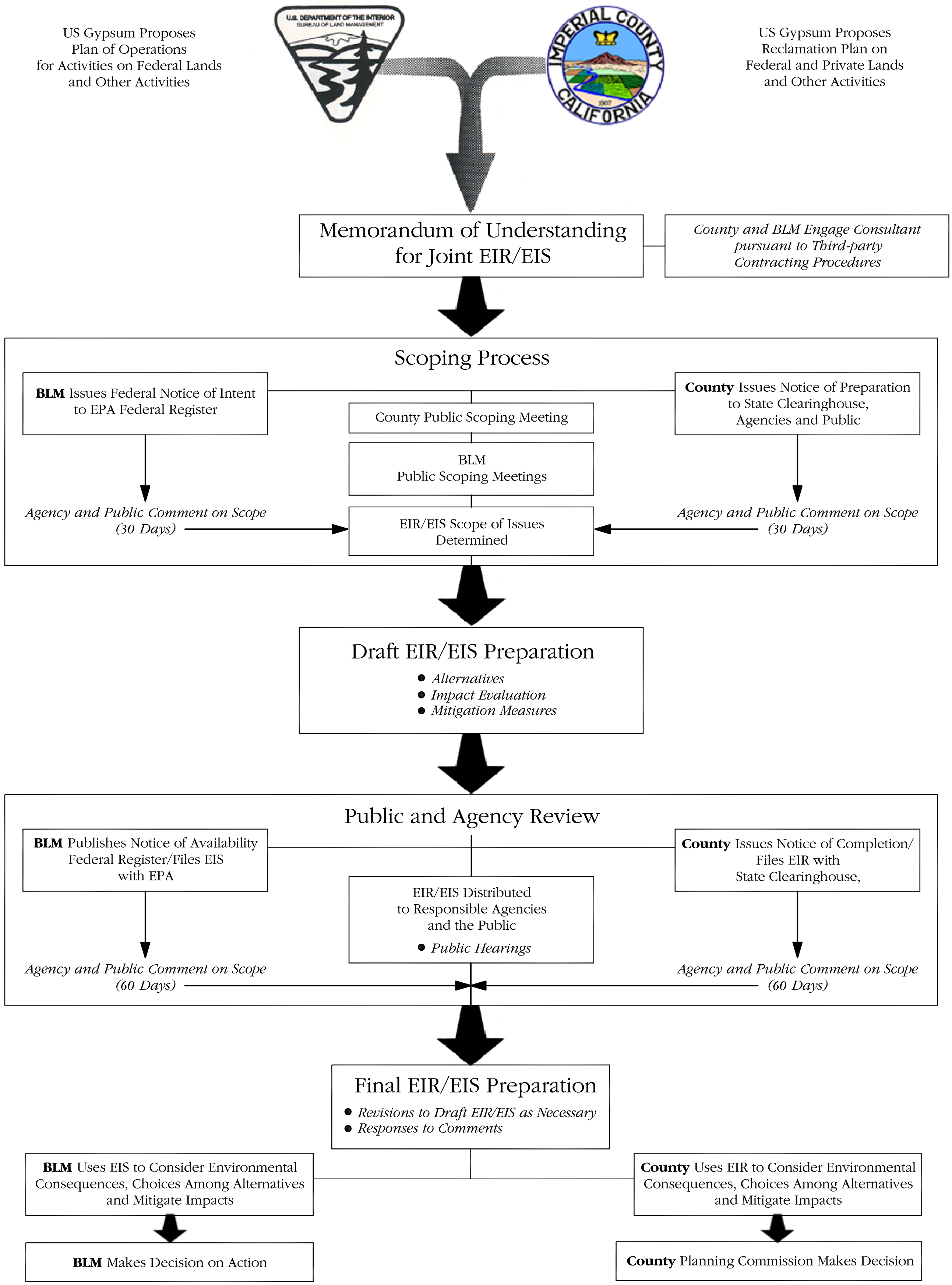

Figure 1.0-2
Environmental Review Process
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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case, because the environmental review process began in 1998, the County, acting as the Lead Agency, determined that the baseline for evaluating the potential impacts of the Proposed Action would be the physical conditions that existed in 1998.

The EIR/EIS process entails developing a document describing the environmental consequences of the Proposed Action. As described, the Proposed Action will potentially require the discretionary approvals and/or permits as described in Table 1.0-1.

Documents Incorporated by Reference

The basic Project application, and many technical documents that were, in part, used in the preparation for this Draft EIR/EIS were submitted by USG to the County. Documents used in the preparation of this EIR/EIS are incorporated by reference and are on file and available for public review for those desiring additional details. Other technical studies and reports used to prepare the EIR/EIS are included in the technical appendices which accompany this EIR/EIS. The documents incorporated by reference include:

- County of Imperial General Plan, 1993.
- Mine Reclamation Plan for the United States Gypsum Company, Lilburn Corporation, March 2003.
- Plan of Operations for the Gypsum Quarrying Operations Located in the Fish Creek Mountains Area of Western Imperial County, California, 2004.
- Spill Prevention Countermeasures and Control Plan, 2003.

These documents are available for public review at the following locations:

County of Imperial
Planning/Building Department
801 Main Street
El Centro, CA 92243

USDI Bureau of Land Management
El Centro Field Office
1661 S. 4th Street
El Centro, CA 92243

1.1.3.2 Scoping Process

The scope of this EIR/EIS encompasses evaluations of the environmental resources that could be affected either directly, indirectly, or cumulatively by the Proposed Action. The Proposed Action would involve the expansion of both the wallboard manufacturing facilities and the existing Quarry. The scope of environmental issues addressed has been identified based on: (1) review of the previous environmental documentation; (2) preliminary evaluation of the applications by the BLM and County; (3) public and agency notifications and received written comments; and (4) public scoping meetings.

As required by NEPA's implementing regulations and as encouraged by CEQA, the process undertaken for determining the scope of environmental issues to be addressed in this EIR/EIS included public involvement. Scoping was undertaken to identify the range of actions, alternatives, and impacts and mitigation measures associated with the Proposed Action to be analyzed in depth in the EIR/EIS. The public scoping process was designed to solicit comments from the general public and from local, state, and federal governmental agencies, and included the following steps:

County Notifications

1. Notice of Preparation (NOP) to prepare an EIR on the Proposed Action, published by the County of Imperial. The NOP was sent to State agencies, surrounding property owners, and other interested individuals, according to the County's mailing list, on December 20, 2001, requesting comments on the issues to be addressed within a 30-day period.

BLM Notifications

1. Notice of Intent (NOI) to complete an EIS on the Proposed Action, published in the Federal Register on May 1, 2002 and published in the Imperial Valley Press on May 17, 2002, requesting comments on the issues to be addressed within a 41-day period.
2. Direct mailing of approximately 518 notices for the public scoping meetings for the expansion Project were sent to interested respondees.

Joint County and BLM Notifications

1. Notices of public scoping meetings were published in newspapers of local and regional distribution (Imperial Valley Press and El Sol del Valle) on December 23, 2001, and December 28, 2001.

2. Two scoping meetings were held, as noticed by the direct mailing letter and the newspaper notices, one on January 9, 2002, and one on May 22, 2002 at the El Centro Board of Supervisors chambers. Approximately 20 members of the public attended the two meetings.

Copies of the above notices and mailings are included in Appendix A, Public Notifications.

1.1.4 Issues of Concern

The scoping process resulted in the following list of issues to be evaluated for potential environmental impacts from the Proposed Action:

Quarry

- Hydrology/Water Quality
  - Surface flows and groundwater
  - Stormwater management and drainage patterns
- Air Quality
  - Emissions of criteria and other pollutants; odors
- Biology
  - Unique, threatened, or endangered species
  - Revegetation in accordance with the Reclamation Plan
  - On-site habitat and species distribution
- Geology
  - Topography and soils
  - Stream configuration and erosion
  - Slope stability
  - Seismic activity (earthquakes)
- Paleontology
  - Unique paleontological resources or sites, or unique geological features
- Public Health and Safety
  - Storage and handling of fuels, oils, and other hazardous materials
- Acoustics
  - Noise exposure and effects
- Recreation/Scenic
  - Site's aesthetic characteristics and the viewshed
  - Light and glare
- Cultural Resources
  - Prehistoric, ethnic and archeological resources

- Land Use, etc.
  - Consistency with applicable land use plans, policies, and regulations

Plant

- Hydrology/Water Quality
  - Surface flows and groundwater
  - Stormwater management
- Air Quality
  - Emissions of criteria and other pollutants
- Transportation/Circulation
  - Traffic levels
- Public Health and Safety
  - Storage and handling of fuels, oils, and other hazardous materials
- Acoustics
  - Noise exposure and effects
- Land Use
  - Consistency with applicable land use plans, policies, and regulations
- Inert Material Storage Area
  - Future disposition

1.1.5 Areas of Controversy

CEQA Guidelines Section 15123(b)(2) requires a discussion of areas of controversy known to the lead agency, including issues raised by agencies and the public. The following are the primary areas of controversy that have been identified through the scoping process:

- Status of the Inert Materials Storage Area (IMSA);
- Impacts to Ocotillo/Coyote Wells Groundwater Basin resources (quality and quantity);
- Impacts to San Felipe Creek and Fish Creek;
- Increase in air emissions;
- Potential effects on critical habitat for Peninsular Bighorn Sheep;
- Potential effects on Flat-tailed Horned Lizard; and
- Potential effects on the Desert Pupfish.

The analysis of water use focuses on the increased water usage for Plant processing purposes. The air analysis addresses expanded surface disturbances at the Quarry and additional production capacity at the Plant as well as changes in hauling between the Quarry and Plant (train trips) producing additional particulate emissions (PM_{10}). The additional surface disturbances and related habitat effects to vegetation and wildlife is also examined.

1.1.6 Issues to be Resolved

CEQA Guidelines Section 15123(b)(3) requires a discussion of issues to be resolved including the choice of alternatives considered to reduce potential environmental effects of the Proposed Action, or the ways in which significant environmental effects would be mitigated. The issues to be resolved include:

- Whether the proposed increased water usage for Plant processing purposes would have an adverse impact on the Ocotillo/Coyote Wells Groundwater Basin;
- Whether there are feasible alternatives to the proposed increase in water usage that could avoid or lessen any potential impacts on the Ocotillo/Coyote Wells Groundwater Basin;
- Whether the Proposed Action will have adverse traffic impacts; and
- Whether the proposed disposition of the Inert Material Storage Area will have adverse aesthetic impacts.

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

1.2.1 Background and Need

Federal policy favors maintaining a viable mining industry for the development of domestic mineral resources. To help assure satisfaction of the nation’s industrial and security needs, federal policies encourage private enterprise in the economic development of domestic mineral resources. The Mining Law of 1872 (20 USC 22 *et seq.*) opened public lands to exploration and development, granting a person who discovers valuable mineral deposits the right to extract and sell these minerals. This policy was reaffirmed in the Mining and Minerals Policy Act of 1970 and the National Materials and Minerals Policy, Research and Development Act of 1980. The 1970 Legislation stated that an “economically sound” mining industry was important for both economic and national security reasons. The 1980 Act noted the need to encourage mineral exploration. Quarrying of gypsum has been occurring at the Plaster City Quarry since 1921. USG has been quarrying gypsum at the site since 1945.

The Proposed Action will expand employment in a sparsely populated county where industrial jobs are limited. The Proposed Action is expected to result in the creation of 140 additional jobs.

1.2.2 Statement of Objectives and Purpose of the Proposed Action

An EIR must include a statement of the objectives sought by a proposed project, which should include the underlying purpose of the Project. (14 C.C.R. 15124.) Similarly, an EIS must include a statement of the underlying purpose and need for the proposed action to which the federal lead agency (BLM) is responding, in proposing the alternatives, including the proposed action (40 CFR 1502.12). The purpose of a Proposed Action is typically the project proponent's objectives in proposing the action. The need for the proposed action could be the elimination of a broader underlying problem (i.e., water source) or to take advantage of an opportunity (i.e., quarry additional resources on-site vs. finding a new quarry site).

The objectives and purposes for the Proposed Action are to:

- Expand quarrying facilities, equipment and personnel;
- Maximize the return on capital investments;
- Fully develop existing gypsum reserves; and
- Continue meeting market demands for gypsum products.

Related objectives include:

- Provide for continued employment in a sparsely populated county, as well as indirectly supporting regional employment through purchases of goods and services; and
- Implement a reclamation program designed to minimize erosion, re-establish vegetation and wildlife habitat, and mitigate the aesthetic impacts created by mining.

1.2.3 Need for the Proposed Action

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 the major metropolitan areas in California and the southwest 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.

The Quarry is located relatively close to major interstate and intrastate highways. 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 State Highway 86 to Interstate 10 and Interstate 8. The Plant, located 26 miles southwest of the Quarry, is also located less than 15 miles from the US/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Quarry activities have been ongoing at the site since the early 1920s. USG proposes to continue to operate the Quarry to recover gypsum resources to supply its Plaster City Plant, to meet current and future residential and commercial building products demand in the southwestern United States. USG would also continue to supply sized raw gypsum products to agricultural customers and cement manufacturers directly from the Quarry.

Gypsum occurs throughout the Quarry site as a contiguous bed striking northwest to southeast and dipping approximately 25^{o}-35^{o} to the west with gypsum deposits overlying granite. There is no overburden associated with current quarrying and no overburden is anticipated to occur in outcrops quarried. Gypsum dipping beneath the wash area of the site is overlain with aggregated material.

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2.0 Proposed Action and Alternatives

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

USG owns and operates an existing wallboard manufacturing Plant and gypsum Quarry in Imperial County, California. This Environmental Impact Statement/Environmental Impact Report (EIR/EIS) has been prepared to evaluate the potential environmental effects associated with the modernization/expansion of USG's manufacturing facilities at its Plaster City Plant (Plant) and gypsum quarrying operations at its Plaster City Quarry (Quarry) that supports the Plant. USG has owned and continuously operated the Plant and Quarry since 1945.

2.2 BACKGROUND

Population growth in the southwestern United States is anticipated to continue at a rapid rate in the first part of the 21st century. In the state of California alone, planners anticipate an increase of 20 million people by 2020. New housing must be constructed, and existing older housing stock needs rehabilitation. Over a 50-year period beginning after the Second World War, California added approximately 500,000 housing units each year. As the southwest region of the United States continues to grow, additional housing and support services in the form of new commercial, office, and industrial development are required. This development is anticipated to utilize additional building materials at an increasing rate. USG has studied these growth trends and 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.

Gypsum or calcium sulfate dihydrate ($CaSO_4 \bullet 2\ (H_2O)$) is a white, naturally occurring mineral. Primary uses of gypsum include the manufacture of construction products, including wallboard and plasters, agricultural gypsum, and the manufacture of Portland cement. It is also an essential mineral for producing a variety of food, beverage and pharmaceutical products. Gypsum typically is used as an economical source of supplemental calcium, as a food binder, and as an inert medium in pharmaceuticals. In agricultural applications, gypsum is used as a soil amendment providing a source of calcium and sulfur, neutralizing alkaline soils, and improving water infiltration.

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 materials. Most other west coast gypsum production plants rely on water borne rock shipments from Mexico. Quarrying of gypsum has been ongoing at the Quarry since the early 1920s.

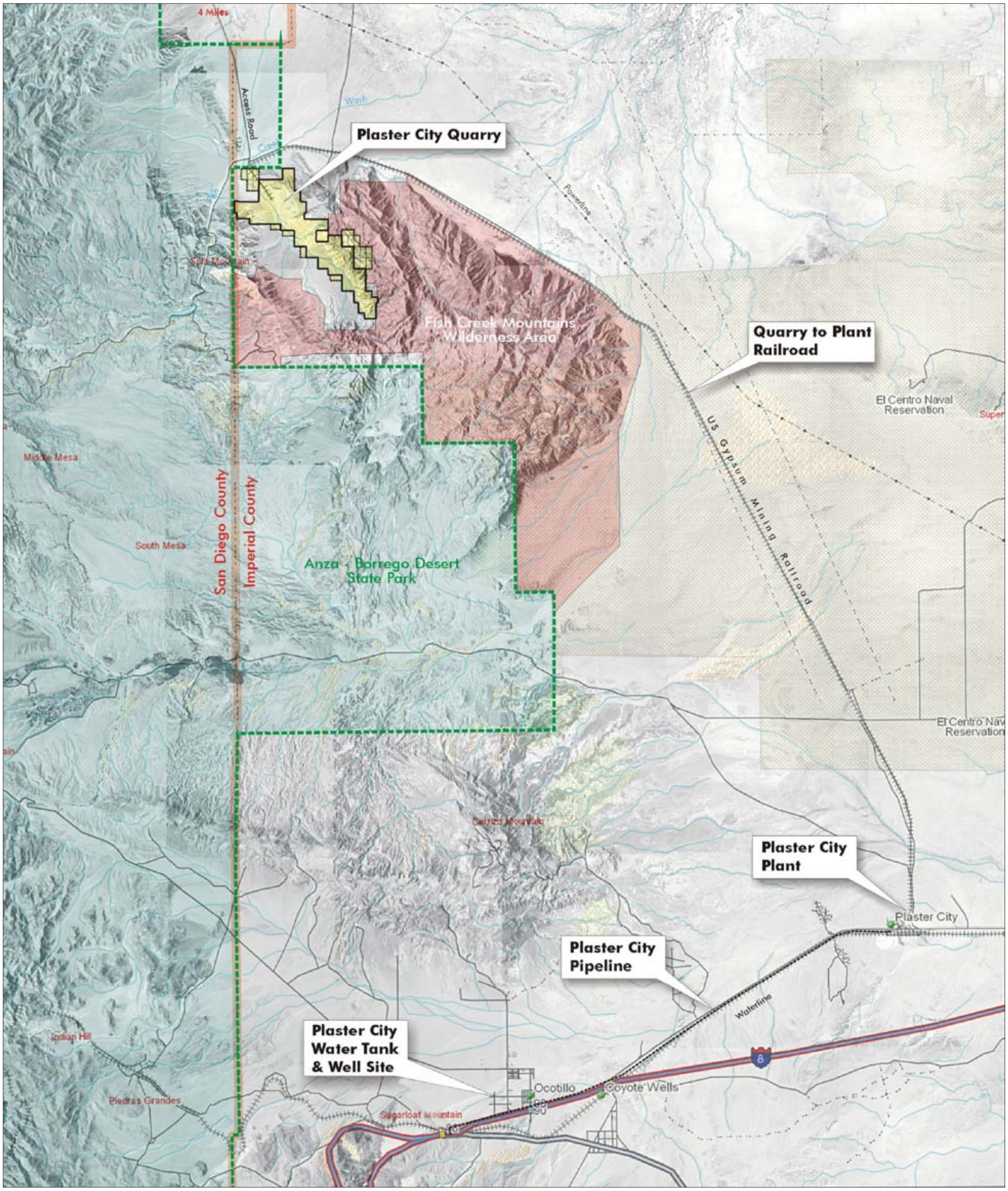
Figure 1.0-1, Regional Location, in Chapter 1.0, Introduction, shows the regional location of the Plant and Quarry within Imperial County. Figure 2.0-1, Location of Project Components, shows the Plant and Quarry in relation to the various components of the USG operations. These other components include the water well field, water pipeline between the field and Plant, and the narrow-gauge rail line between the Plant and Quarry.

2.2.1 Plaster City Plant

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 Highway 80 immediately north of I-8. Figure 2.0-2, Plaster City Plant Location, shows the location of the Plant site. The Plant is also located less than 15 miles from the US/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

At the Plant, gypsum rock is processed into four basic products: wallboard, industrial and building plasters, raw gypsum products, and stucco. Some products are also shipped to other USG facilities. At the Plant, gypsum rock is crushed, screened, and ground into a fine powder. This powder is then heated to eliminate ¾ of the water bound in the rock. The resulting material is known as stucco, or calcium sulfate hemihydrate ($CASO_4 \bullet \frac{1}{2} (H_2O)$). After the stucco is mixed with water and additives, it is deposited between two sheets of paper and formed into wallboard. The wallboard is then taken to the warehouse where it is subsequently loaded onto rail cars or trucks for transport to market. The Plant operates on a semi-continuous 24-hour 7 day per week basis, with associated night lighting.

In 1998, USG submitted an application to Imperial County to expand Quarry operations and modernize the Plant by replacing an older, less efficient production line with a new state of the art high-speed wallboard line. Based on various studies and information, including public comments, the County approved a Negative Declaration determining that the potential impacts of the Proposed Action were less than significant and therefore, no EIR was required. A Notice of Determination was filed on December 15, 1998.



Source: Lilburn Corporation

Figure 2.0-1
Location of Project Components
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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SCALE 1" = 3 Miles

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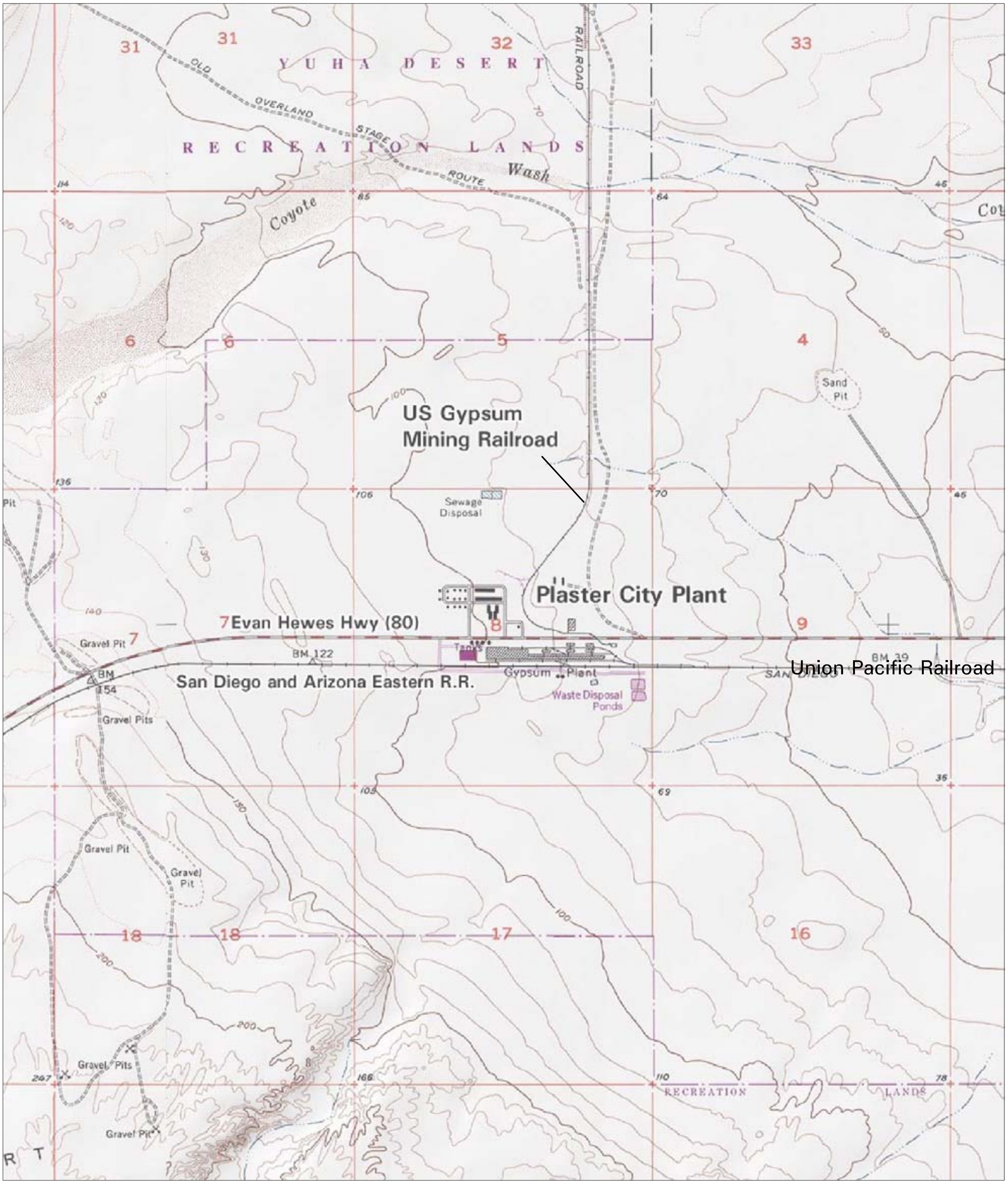

Map Source: USGS 7.5' Series

Section 8, T16S R11E

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SCALE 1" = .5 Miles

Figure 2.0-2
Plaster City Plant Location
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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Subsequently, the Sierra Club filed a lawsuit. The Superior Court of Imperial County issued a judgment upholding the County's determination to adopt the Negative Declaration. The Sierra Club filed an appeal of the Superior Court decision to the Fourth District Court of Appeal in 1999. In late 2000, the Appellate Court held that the Project may have a significant effect on the environment in two areas, groundwater and traffic, and ordered that the County prepare an EIR.

Between the time of the Superior Court's judgment in 1999, and the Appellate Court ruling in 2000, USG moved forward with the Project, replacing an existing wallboard line with the new high-speed line, and making other improvements to the Plant per the approved site plan. In addition, improvements were made at the Quarry processing facility where gypsum rock is hauled from quarry areas and loaded into hopper cars for transport to the Plant by rail.

2.2.1.1 Plaster City Water Supply

Water for operations at the Plant, since the 1920s, has been obtained from the Ocotillo/Coyote Wells Groundwater Basin, 8.5 miles southwest of the Plant site near the community of Ocotillo. This water, which is used for production, potable, and sanitary purposes, is delivered to the Plant via an eight-inch diameter gravity-feed pipeline made of Transite which contains asbestos. The old line experiences surges due to air in the line and water hammer caused by rapid changes in flow such as a sudden closure of a water control valve. This pipeline is nearing the end of its useful life and ruptures and leaks with some frequency. Repairs are often needed.

2.2.1.2 Finished Product Haul to Market

Finished products are hauled from the Plant to destinations throughout the southwestern United States by rail or truck. The Union Pacific (UP) Railroad line runs adjacent to the Plant site and provides rail service for USG. USG also contracts with a trucking company to haul finished products that do not go out on rail.

2.2.1.3 Narrow-Gauge Railroad

USG owns and operates a narrow-gauge rail line between the Plant and the Quarry to transport gypsum rock from the Quarry to the Plant for processing, and to deliver potable water to the Quarry. This allows USG to move materials between the two facilities using the shortest available route, 26 miles.

2.2.2 Plaster City Quarry

The Quarry consists of 2,048 acres, 1,640 acres owned by USG and 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. An additional 20 acres of unpatented mill sites lie outside the Quarry boundary. Both patent applications are under consideration by the U.S. Department of Interior, Bureau of Land Management (BLM). Table 2.0-1, USG - Plaster City Quarry, Existing and Planned Quarry Areas and Ancillary Uses, shows existing and planned Quarry areas and land ownership.

The Quarry is located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. The general location of the Quarry is shown in Figure 2.0-1. 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. It is bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and to the south, and public lands administered by the 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 and portions of Sections 4 and 5, Township 14 South, Range 9 East (San Bernardino Baseline and Meridian), as shown on the US Geological Survey Borrego Mountain South East Quadrangle.

The Quarry is located relatively close to major interstate and intrastate highways. 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 State Highway 86 to Interstate 10 and Interstate 8. The Quarry is located approximately 26 miles northwest of the Plant. Gypsum is transported between the Quarry and the Plant via a narrow-gauge railroad owned and operated by USG.

TABLE 2.0-1
USG - PLASTER CITY QUARRY
EXISTING AND PLANNED QUARRY AREAS AND ANCILLARY USES[1]

Area/Quarry	Existing Disturbed (acres)	Planned Quarry Areas (acres)	Land Ownership	
			USG	BLM[2,6]
Plant	39.2	0	39.2	0
Haul Road[3]	1.4	0	1.4	0
Area 1A[4]	129.6	34.01	163.6[4]	0
Area 1B[4]	151.8	0	151.8[4]	0
Area 2	-	93.2	87.9	5.3
Area 3	-	47.5	36.4	11.1
Area 4	-	46.5	46.5	0
Area 5	-	30.9	30.9	0
Area 6	-	70.9	70.9	0
Area 6B	-	47.2	0	47.2
Area 7	-	91.4	91.4	0
Area 7B	-	32.5	0	32.5
Area 8	-	123.1	116.3	6.8
Area 9	-	54.8	54.8	0
Area 10	-	47.7	13.2	34.5
Shoveler[5]	16.5	125.5	142.0	0
Subtotals	**338.5**	**845.2**	**1,046.3**	**137.4**
Open Space	---	---	593.8	270.5
Totals	**338.5**	**845.2**	**1,640**	**407.9**

1. Areas described here are numbered for reference only and have no bearing on when each area would be quarried.
2. Unpatented placer claims pending review of Patent Application No. CACA 24563 by BLM.
3. Haul Road to Shoveler Annex outside of quarry areas.
4. Approved Mine and Reclamation Plan No. 16-83.
5. Approved CUP 110-73 and Mine and Reclamation Plan No. 13-82 on a total of approximately 221 acres (includes quarry, overburden stockpiles and haul roads).
6. Unpatented mill site claims pending review of Patent Application No. CACA 34637 by BLM.

Gypsum occurs throughout the site as a contiguous bed striking northwest to southeast and dipping approximately 10º-20º to the west with gypsum deposits overlying granite. Gypsum occurs along a north-south trend for about 4.5 miles (Note: Measured from USG topographic/geologic base mapping) along the northern portion of the Fish Creek Mountains. Contiguous gypsum outcrops range in elevation from 920 feet above mean sea level (MSL) at the southernmost limit of the deposit to about 325 feet MSL at the northernmost exposures. Outliers of gypsum to the east of the main deposit occur at an elevation of 700 to 1,000 feet MSL. The elevation of the alluvial wash varies from about 800 feet MSL to the south and gently slopes to about 250 feet MSL near its confluence with Fish Creek Wash. There is no overburden associated with current quarrying activities. Quarries are generally only operated during daylight hours, except for equipment repairs or similar maintenance needs.

2.3 BASELINE CONDITIONS

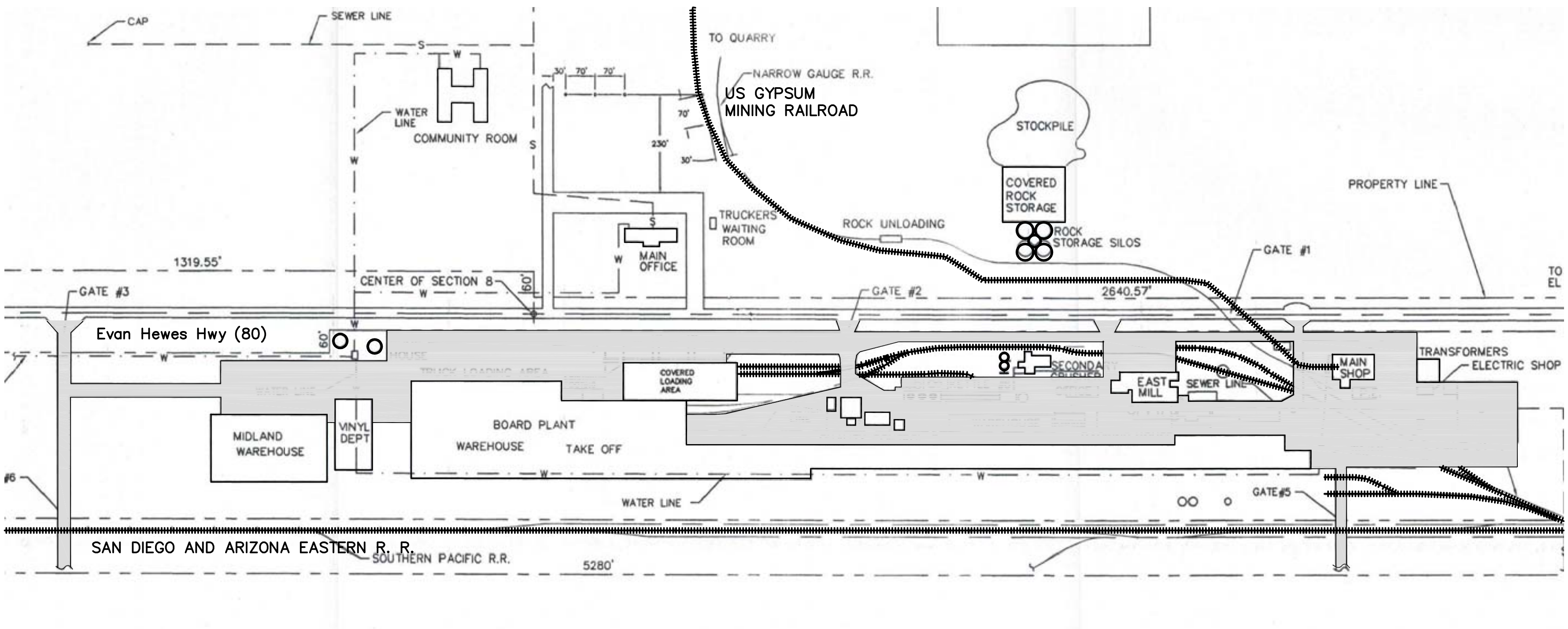
For purposes of this EIR/EIS, the "baseline conditions" upon which the environmental effects of the Proposed Action will be evaluated are the conditions that existed in 1998, the year in which the application was originally submitted to the County and prior to any recent expansion/modernization at the Plant or Quarry.

2.3.1 1998 Baseline Conditions at the Plaster City Plant

The Plant is located on a 473-acre site. In 1998, approximately 309 acres of the Plant site were disturbed by various uses including the mill, shops, boardlines, warehouse, railroad tracks, loading areas, parking lots, the office building, and former employee housing.

Figure 2.0-2 shows the Plant site and vicinity. Figure 2.0-3, Plaster City Site Components, shows a schematic layout of the Plant facilities prior to the expansion/modernization. Figure 2.0-4, Plant Aerial Photograph, shows a 1996 aerial photograph of the Plant showing existing conditions at the facility prior to the expansion/modernization. Figure 2.0-5, Water Supply Pipeline Alignment, shows the existing pipeline route between the Ocotillo well site and the Plant.

Rock from the Quarry is transported to the Plant via an existing company-owned, narrow-gauge railroad. The rail line and equipment were, and continue to be, operated and maintained by the Plant portion of the Plaster City operation. The USG narrow-gauge railroad line enters the Plant from the north and travels through the Plant site to



SOURCE: U.S. Gypsum

Pre-Modernization Layout (circa 1997)

Buildings

Paved Surfaces

N

0 400'

SCALE 1" = 400'

Figure 2.0-3

Plaster City Plant Site Prior to Expansion/Modernization

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Photo Source: USGS Date: June 1996

Pre–Modernization Photograph

Figure 2.0-4
Plant Aerial Photograph (1996)
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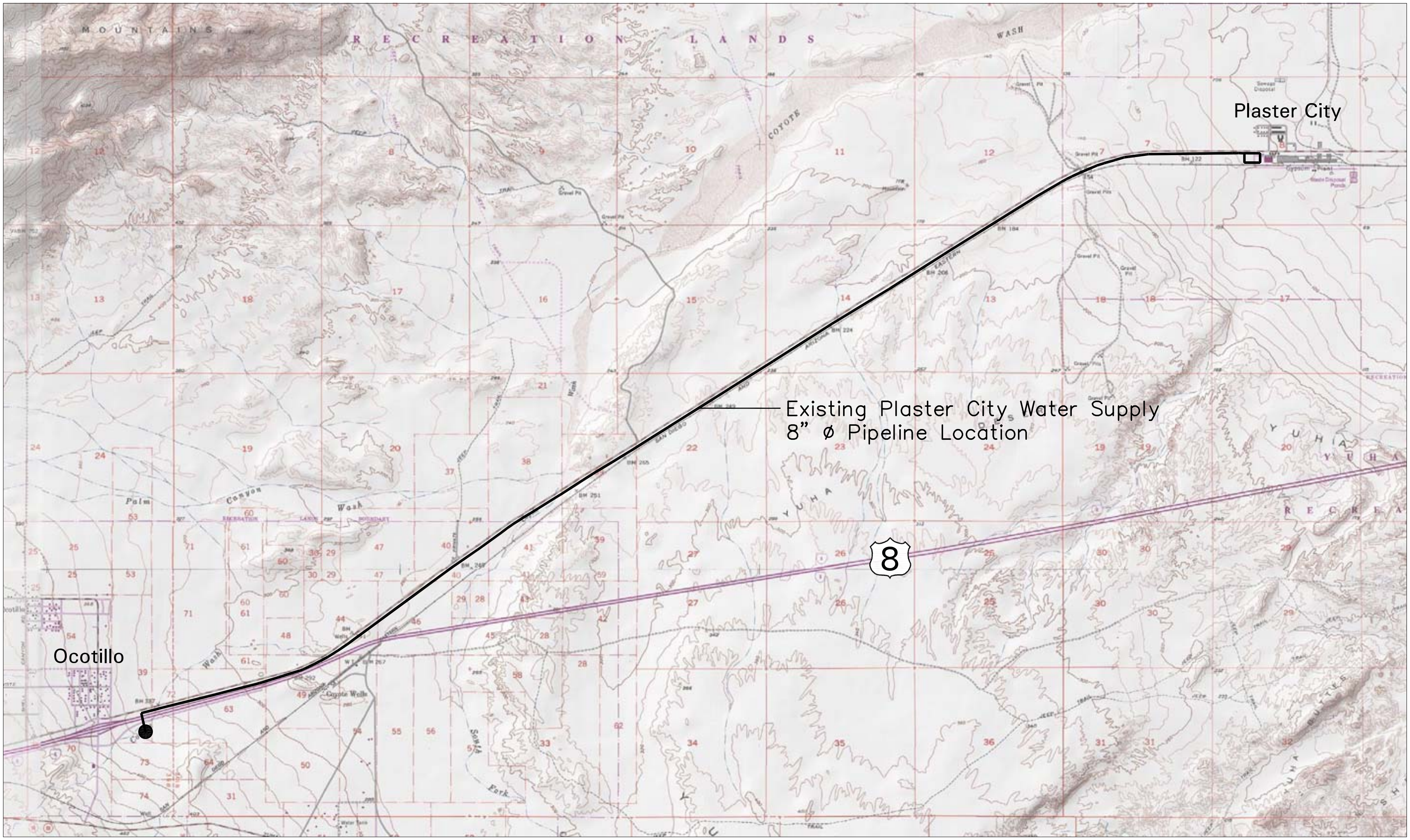

Map Source: USGS 7.5' Series

Section 36, T16S R9E – Sections 12,13,14,15,21,22,28,29,30,31 T16S R10E – Sections 7,8 T16S R11E

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SCALE 1" = 1 Mile

Figure 2.0-5
Water Supply Pipeline Alignment
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the east side of the mill where material is unloaded. The material is received by the mill and processed through sorting, crushing, grinding, and calcining (cooking). Mill equipment consisted of an outdoor rock storage pile, a covered rock storage shed and storage silos, rock crushing and processing equipment, gypsum mills, calcining kettles, and a packing department some of which remain at the Plant.

In 1998, the wallboard operation consisted of two separate production lines. Line No. 1, which was originally installed in 1945 and became operational in 1947 and subsequently modernized in 1995, had a theoretical capacity of 400 million square feet per year. The No. 2 line was installed in 1956 and had a theoretical capacity of 180 million square feet per year. In 1998, both Line No. 1 and Line No. 2 manufactured gypsum wallboard from stucco delivered to them from the mill. The board lines utilized material handling equipment such as dry additives feeders, elevators, and screw conveyors to produce wallboard. Wallboard, once formed, was cut to finished length and dried using natural gas-fired kilns and rotating saws. Wallboard and other products, including some for agricultural uses (soil amendments) were shipped from the Plant.

Dust collection was used throughout the mill to control gypsum particulate emissions during processing. The train unloading facility had a dust collector to control particulates while the rock was dumped from the train onto a belt where it was conveyed to rock silos or the rock storage shed. The rock storage shed covered a portion of the rock pile stored on the north side of the Plant. Dust collectors were used throughout the mill and packing departments on belt conveyors, the crushing system, screens, elevators, screw conveyors, mills, and calcining kettles to minimize emissions. Both board line kilns were permitted by the Imperial County Air Pollution Control District (ICAPCD) under Permit Nos. 2811 and 2812, respectively. Both permits were in place in August 1998.

South of the Plant were the Union Pacific (UP) Railroad and the finished product loading area. Finished product was loaded on rail cars and hauled to market from the Plant. The line ran east and west immediately south of the No. 1 board line and warehouse, and was moved to its present location as part of the Proposed Action.

Water for the Plant including production water, potable water and water for sanitary uses has been supplied by three wells located near Ocotillo, California approximately 8.5 miles west of the Plant site. An eight-inch diameter gravity-feed pipeline transported the water to the Plant. In 1998, water usage at the Plant was approximately 400 acre-feet per year (AF/yr). Historically, water usage had been higher, however, USG was able to reduce its water use to approximately 400 AF/yr by implementing water conservation measures to ensure that 1) there is no process water discharge from the operation and 2) water is no longer discharged for cooling production equipment. These conservation measures, instituted in the 1980s and 1990s, have reduced water usage from the recorded high of 767 acre-feet per year to the 1998 value.

For more than 50 years, the Plaster City Plant has placed out-of-specification wallboard in a storage area (Inert Material Storage Area or "IMSA") located south of the Plant. USG currently recycles off-specification material from the IMSA. In addition, household trash was placed in the area until the late 1980's when the Plaster City Village was closed and structures removed. The quantity of material in the IMSA prior to startup of the new production line in July 2000 was estimated at about 2,200,000 cubic yards. The pile contained an estimated 2,600,000 cubic yards of material as of January 2004.

The IMSA has been and is subject to regulation by the California Regional Water Quality Control Board, Board Order 96-001 for Waste Management for Inert Wastes. That Order states the total capacity of the area is 4,694,000 cubic yards and requires that USG submit semi-annual reports to the Water Board identifying the quantity of material placed in the IMSA.

2.3.2 1998 Baseline Conditions at the Plaster City Quarry

Figure 2.0-6, Plaster City Quarry- Baseline Conditions, shows an aerial photograph of the Quarry prior to modernization/expansion. Under pre-construction or pre Proposed Action baseline conditions, the facility consisted of two quarries (1A and 1B) and a processing area. The Quarry operated under an approved mine reclamation plan. In addition, Shoveler Annex located on the west side of the site had also been disturbed by quarrying gypsum. USG also had an approved mine reclamation plan for the Shoveler Annex.

In 1998, gypsum rock was quarried by the removal of outcrops, creating a series of benches. Rock was transported from the outcrops by haul trucks to a processing area. For gypsum transported to the Plant, rock was hauled to a partially enclosed crushing and processing operation. After crushing, the rock was conveyed to an enclosed rock

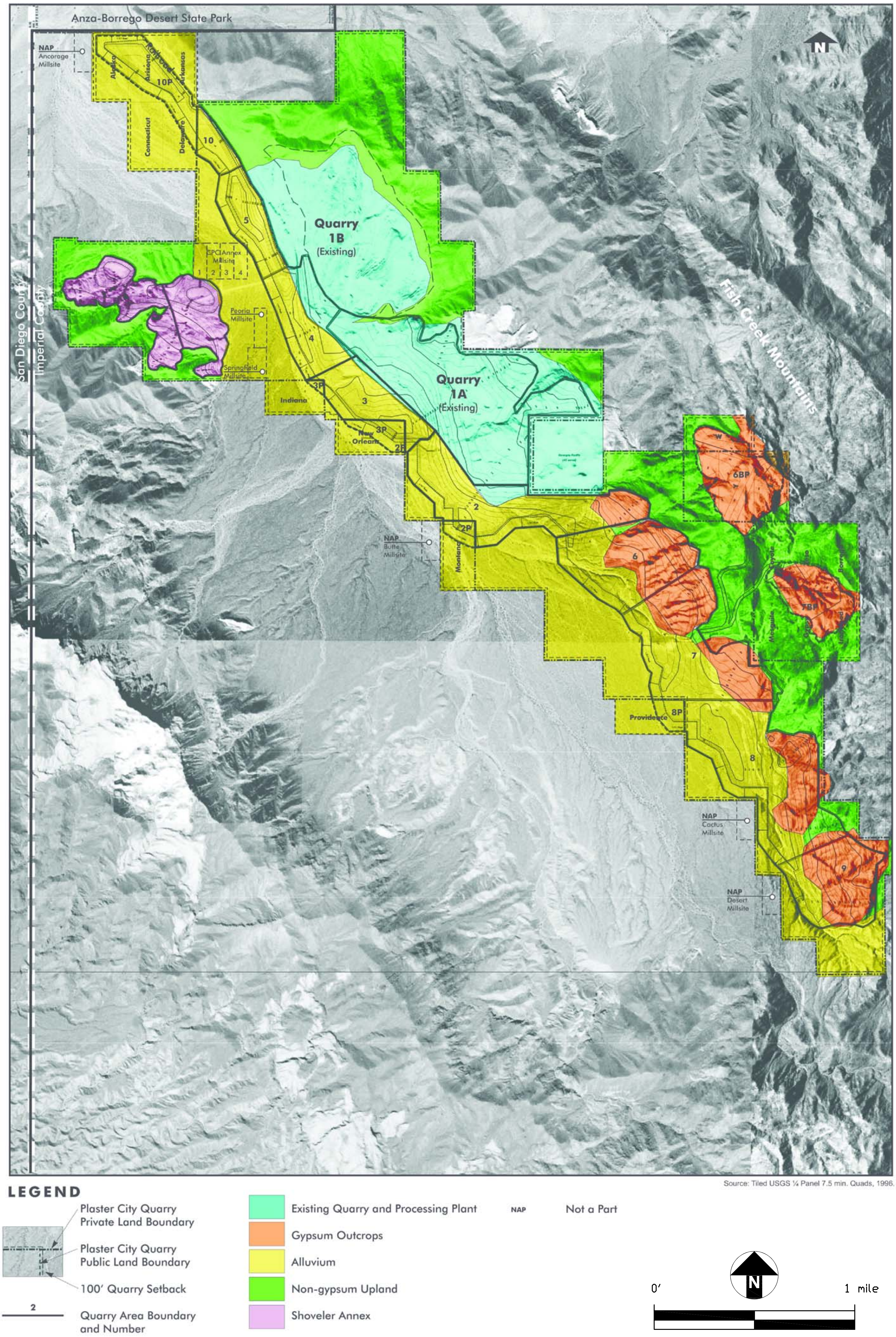

Figure 2.0-6
Plaster City Quarry - Baseline Conditions

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storage building. From storage, rock was gravity loaded into rail hopper cars (up to six at a time) in a tunnel underneath the storage building. The operation utilized 20 hopper cars with a nominal capacity of 45 tons each. When the transfer was completed, the gypsum was transported to the Plant via USG's narrow-gauge railroad. Gypsum was also transported by trucks utilizing Split Mountain Road to State Highway 78.

The train was also used to transport potable water to the Quarry for drinking, sanitary and other purposes. A 6,500-gallon tank car was used for this purpose and delivered water to the Quarry six to eight times per month. In addition, there was a well located at the Quarry that provided a limited amount of non-potable water, for dust suppression. That well was permitted at an average of 7,000 gallons per day, but produced less than that amount of water.

USG operated mobile equipment, fuel tanks, a crusher, and rock handling equipment to remove gypsum from the ground, crush it for customers who picked up product directly from the Quarry, or USG transported it to the Plant for additional processing. USG operated the Quarry under two permits from the Imperial County Air Pollution Control District (APCD), Permit Nos. 1168 and 1992.

APCD Permit No. 1168 regulated air emissions from the crusher, fugitive emissions from haul trucks and rock handling equipment, and the train loading facility. Equipment included a primary crusher, rock elevator, screen, blower, and two dust collectors. One dust collector provided dust control for the primary and secondary crushers and the second dust collector provided dust control for the rock storage shed. In 1998, the train loading facility did not have a dust collector.

APCD Permit No. 1992 regulated air emissions from equipment that produced gypsum for the agriculture industry. This equipment included a Stamler feeder-breaker, hammermill, and screens to grind and sort raw gypsum into various products for agricultural and cement industries. Dust collectors were provided for all of this equipment. This facility included truck-loading equipment to load commercial trucks for distribution to the customer. In addition, there was some unenclosed storage of raw gypsum products.

2.4 POST 1998 CONDITIONS

Section 2.3 described conditions as they existed at the Plant and Quarry as of 1998. Components of the expansion/modernization completed since the County approved the

Project in December 1998 are described next. With the exception of these improvements and other changes described below, the conditions discussed in Section 2.3 also apply today.

2.4.1 Post 1998 Conditions at the Plaster City Plant

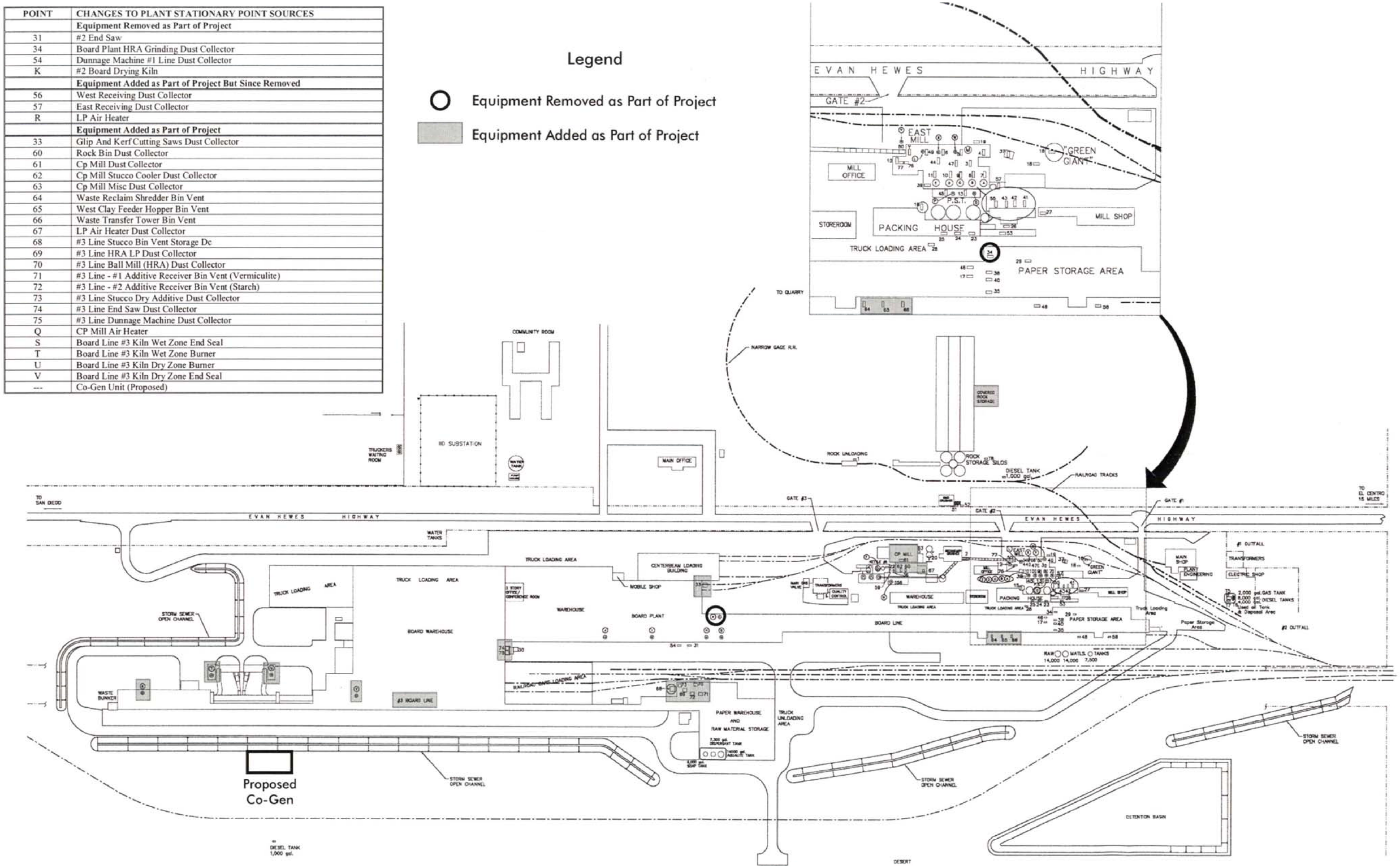
Expansion and modernization of the Plant resulted in an increase in developed area on the 473-acre site. USG increased its developed area from approximately 309 acres by 66 acres in conjunction with the Project, for a total of 375 developed acres.

Expansion/modernization since the baseline conditions in 1998 have resulted in a number of changes including:

- Replacement of the rock shed with new larger rock shed capable of holding all Plant rock supply;
- Addition of a new substation, along with Imperial Irrigation District (IID) power supply, to power new board line and mill;
- Addition of a new paper storage warehouse, train loading area, truck tarping area, and finished product warehouse;
- Addition of a new No. 3 board production line including stucco storage silo, and decommission of the old No. 2 production line;
- Addition of recycling equipment in conjunction with No. 3 board production line to reclaim gypsum and feed it back into the Plant rock supply;
- Increase in the number of employees by approximately 140;
- Addition of a new Claudius Peters Mill/Calciner to produce stucco for new No. 3 board line;
- Realignment of the Union Pacific rail line through the site;
- Installation of a new 500,000 gallon water tank; and
- Addition of five rock cars to the train that hauls rock from the Quarry to the Plant bringing the number of cars per train up from 20 to 25.

The difference between 1998 conditions and post 1998 conditions at the Plaster City Plant are identified in Table 2.0-2, 1998 Conditions and Proposed Changes at the Plaster City Plant. Figures 2.0-7, Post-1998 Plaster City Plant.

POINT	CHANGES TO PLANT STATIONARY POINT SOURCES
	Equipment Removed as Part of Project
31	#2 End Saw
34	Board Plant HRA Grinding Dust Collector
54	Dunnage Machine #1 Line Dust Collector
K	#2 Board Drying Kiln
	Equipment Added as Part of Project But Since Removed
56	West Receiving Dust Collector
57	East Receiving Dust Collector
R	LP Air Heater
	Equipment Added as Part of Project
33	Glip And Kerf Cutting Saws Dust Collector
60	Rock Bin Dust Collector
61	Cp Mill Dust Collector
62	Cp Mill Stucco Cooler Dust Collector
63	Cp Mill Misc Dust Collector
64	Waste Reclaim Shredder Bin Vent
65	West Clay Feeder Hopper Bin Vent
66	Waste Transfer Tower Bin Vent
67	LP Air Heater Dust Collector
68	#3 Line Stucco Bin Vent Storage Dc
69	#3 Line HRA LP Dust Collector
70	#3 Line Ball Mill (HRA) Dust Collector
71	#3 Line - #1 Additive Receiver Bin Vent (Vermiculite)
72	#3 Line - #2 Additive Receiver Bin Vent (Starch)
73	#3 Line Stucco Dry Additive Dust Collector
74	#3 Line End Saw Dust Collector
75	#3 Line Dunnage Machine Dust Collector
Q	CP Mill Air Heater
S	Board Line #3 Kiln Wet Zone End Seal
T	Board Line #3 Kiln Wet Zone Burner
U	Board Line #3 Kiln Dry Zone Burner
V	Board Line #3 Kiln Dry Zone End Seal
---	Co-Gen Unit (Proposed)



Source: U.S. Gypsum Company

Figure 2.0-7
Post - 1998 Plaster City Plant
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IMPERIAL COUNTY, CALIFORNIA

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TABLE 2.0-2
1998 CONDITIONS AND PROPOSED CHANGES AT THE PLASTER CITY PLANT

Project Component	Condition in 1998	Expansion/ Modernization	Condition After Expansion/ Modernization
Production			
Maximum Quarry Production	750,000 cu yds/yr (1.13 million tons/yr)	Increase up to 550,000 cu yds/yr	Up to 1.3 million cu yds/yr (1.9 million tons/yr)
Utilities			
Water	Using 400 AF/yr	Increase up to 367 AF/yr	Up to 767 AF/yr
Electricity	9,375 kVA transmission line	17,296 kVA increase	26,671 kVA transmission line
Narrow-Gauge Train	20 cars per trip between Quarry and Plant	Addition of five cars per trip	25 cars per trip
Exterior Improvements			
Rock Shed	19,500 sq ft	26,722 sq ft	46,222 sq ft
Paper Warehouse	11,620 sq ft	50,250 sq ft	61,870 sq ft
Train Loading Area	14,688 sq ft	22,464 sq ft	37,152 sq ft
Truck Loading Area	--	70,680 sq ft	70,680 sq ft
Truck Tarping Area	--	23,760 sq ft	23,760 sq ft
Finished Product Warehouse	139,354 sq ft	108,325 sq ft	247,679 sq ft
Board Stucco Silo	30,830 cubic feet (cf)	44,870 cf	75,700 cf
Interior Improvements			
Production Line (million square feet)	Two lines with capacity of 580 Msf per year	Increase in capacity of 640 Msf per year	Two lines with capacity of 1,220 Msf per year
Employment			
Employees	290 employees	Additional 140 employees	430 employees

2.4.2 Post 1998 Conditions at the Plaster City Quarry

Since baseline conditions in 1998, a new crushing system, along with rock handling equipment, was installed to replace the old crusher. Figure 2.0-8, Plaster City Quarry Processing Plant Modernization, shows a schematic of the Quarry processing plant modernization consisting of a new crusher building and an extension to the existing rock storage building to allow additional hopper cars to be loaded. The new crusher system is capable of running at 700 tons per hour (tph) and provides rock to the Plant.

The rock storage shed/train-loading shed was increased in size from six to eight bays to provide more efficient train loading (details provided in Table 2.0-3, 1998 Conditions and Proposed Changes at the Plaster City Quarry). The 35-ton haul trucks used to bring gypsum from the quarrying areas to the process area on-site were replaced with 60-ton haul trucks to provide efficient rock hauling while minimizing the number of trips required to supply the new crusher with sufficient rock to meet the increased demand at the Plant.

TABLE 2.0-3
1998 CONDITIONS AND PROPOSED CHANGES AT THE PLASTER CITY QUARRY

Project Component	Condition in 1998	Post 1998 Expansion/ Modernization	Condition After Expansion/ Modernization
Quarry Area[1]	1640 acres	NA	1640 acres
Reclamation[2]	187 acres	NA	187 acres
Rock Storage	16,200 sq ft	6,800 sq ft addition	23,000 sq ft
Crushing Facilities	450 tph	250 tph increase	700 tph
Rock Loading Facilities	Load up to six cars at once	Load an additional two cars	Load up to eight cars at once

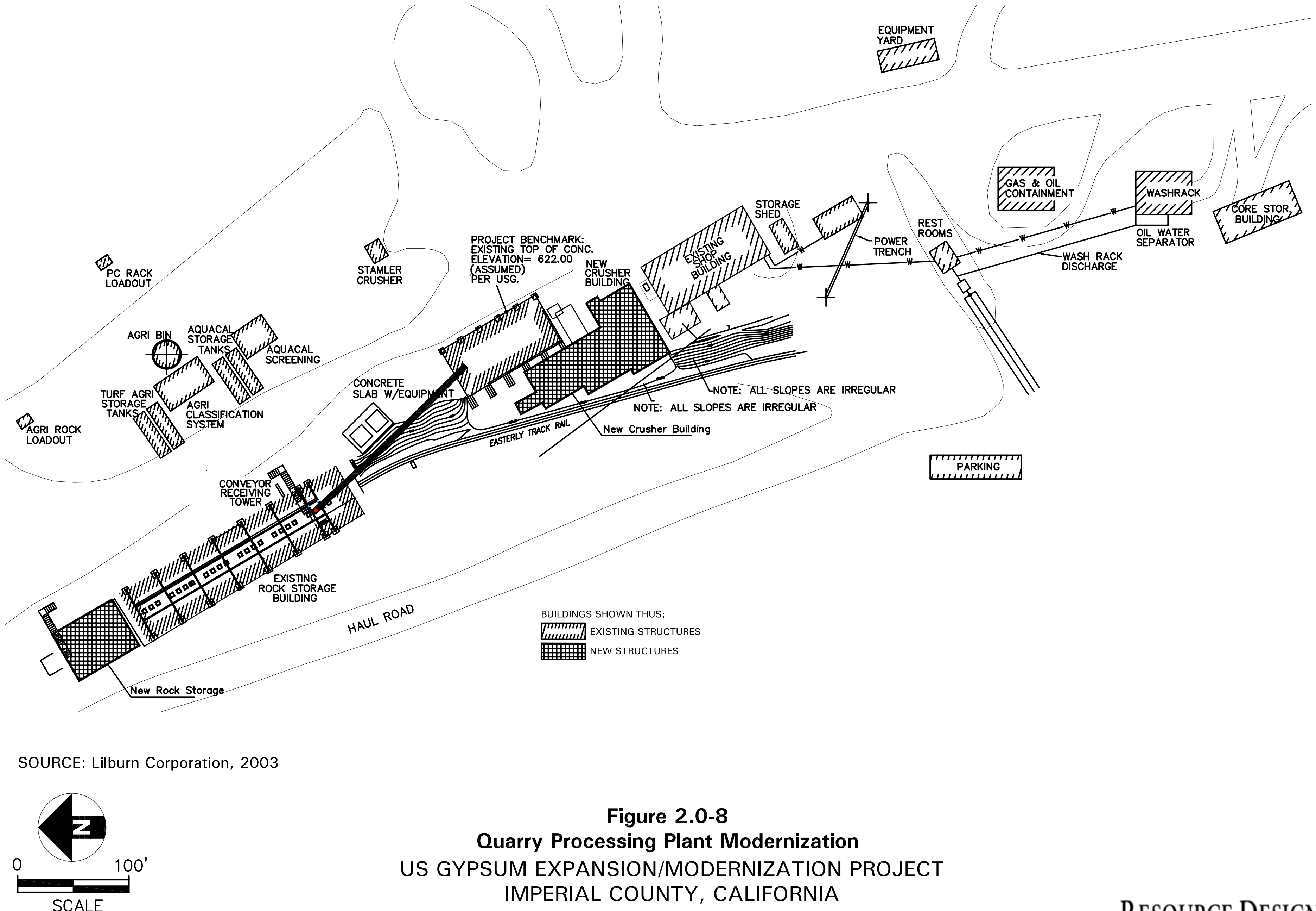
Notes:
1. Quarry area represents the acres privately held.
2. Reclamation areas did not change between 1998 and post 1998.

2.4.3 Summary of Current Activities at the Plaster City Plant

This section describes the activities and components of the Plant that take raw material at one end and ship finished products at the other. The purpose of this section is to acquaint the reader with the production process in order to understand the environmental evaluation of the Proposed Action in Chapter 3.0, Affected Environment and Consequences.

2.4.3.1 Plant Production Process

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. Figure 2.0-9, Plaster City Plant Expansion Layout, shows the location of the rock storage area on the north side of Evan



SOURCE: Lilburn Corporation, 2003

Figure 2.0-8
Quarry Processing Plant Modernization
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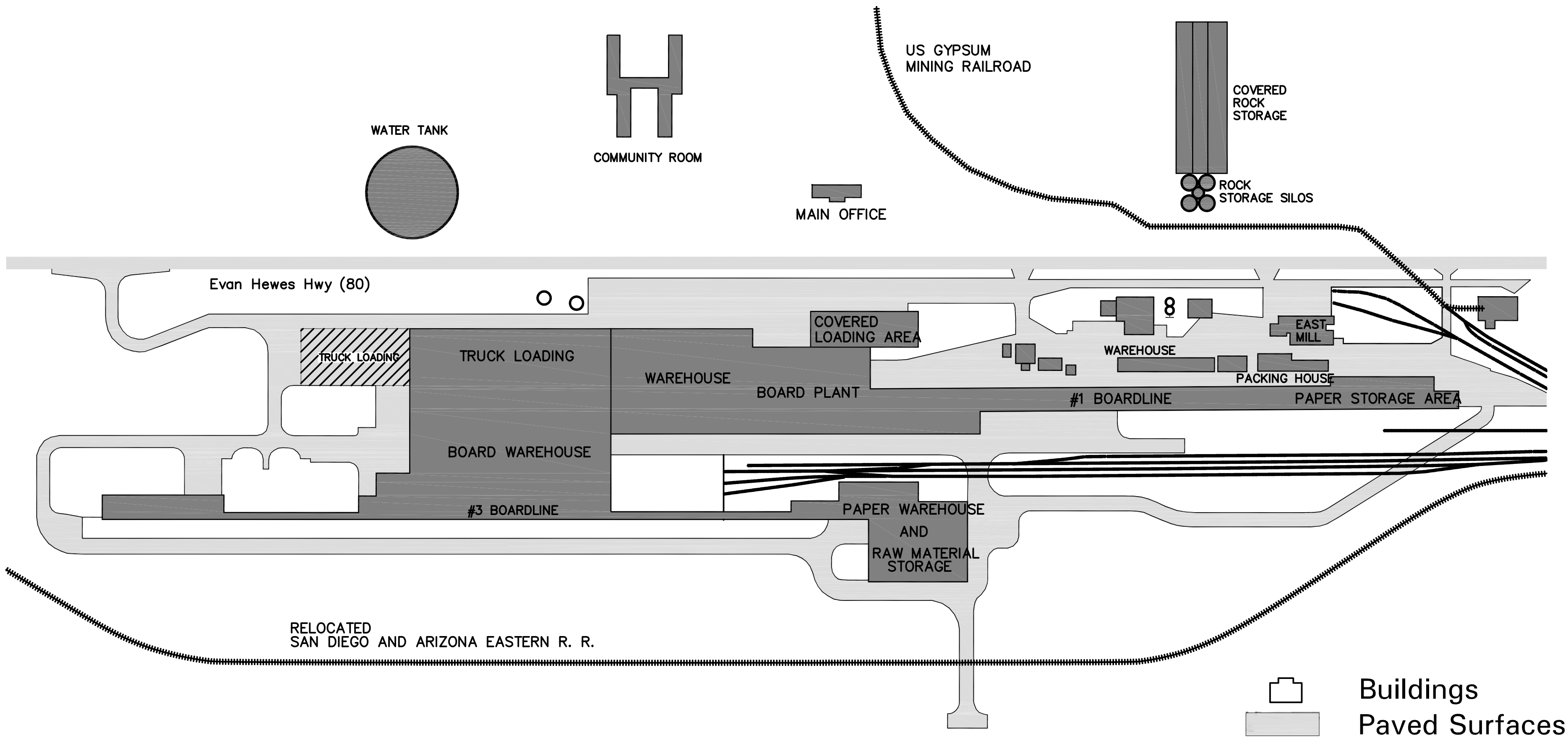

Source: US Gypsum

Figure 2.0-9
Plaster City Plant Expansion Layout
US GYPSUM EXPANSION/MODERNIZATION PROJECT
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Hewes Highway. 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. In the Plaster City Mill Department, the gypsum rock is crushed and screened in a secondary process circuit to minus two inches in diameter. This sized rock can be used for Portland cement additive. The rock that is not sold to cement producers is then dried in a heated roller mill and further milled. This material is commonly called "landplaster" and can be sold as a soil conditioner. The majority of landplaster is used as feed for further production. To produce plasters or wallboard, the landplaster must first be partially dehydrated or calcined in a "kettle" to remove ¾ of the water bound in the rock, this chemical alteration yields calcium sulfate hemihydrate ($CaSO_4 \bullet \frac{1}{2} (H_20)$), commonly called "stucco". The majority of the stucco is processed into wallboard by mixing it with water and other additives. The mill components consist of rock storage, rock crushing and processing equipment, gypsum mills, calcining kettles, and a packaging department.

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.

In addition to the mill, storage sheds, production line and loading areas, the Plant includes the railroad line to the Quarry, the UP rail line and main road (Evan Hewes Road), USG offices and parking areas for employees.

As part of the Plant modernization/expansion, USG replaced the old No. 2 wallboard production line with a new high-speed state-of-art No. 3 board line. Part of the modernization/expansion project included an off-specification material recycling system. This system is designed to chop up out-of-specification wallboard from the IMSA and feed it back into the Plant production process with the raw gypsum rock fed into the mill. The system was designed to recycle all non-saleable wallboard generated by the Plant as well as to allow the Plant to process material placed into the IMSA during earlier Plant operations.

The gypsum recycling system installed during the modernization/expansion is currently operating, though it has experienced some down time due to damaged equipment and startup issues. The system is recycling non-saleable gypsum material generated during wallboard manufacturing operations and is capable of recycling additional material from the IMSA. Since the startup of the new line, USG has improved efficiencies on the new line, reducing off-specification material generated, and allowing for increased usage from the IMSA.

2.4.3.2 Plant Water Supply

An aerial photograph of the alignment of the Plaster City water pipeline is shown in Figure 2.0-10, Water Supply Pipeline Alignment Aerial Photograph. Consistent with the pre-Project baseline, water for the Plant is delivered via an eight-inch gravity fed pipeline from the Ocotillo/Coyote Wells Groundwater Basin and used for production, fire protection, potable, and sanitary purposes. This water has and continues to be produced by three wells since the 1920's. The wells are located near Ocotillo, California approximately 8.5 miles west of the Plant. Water is stored on site in a 500,000 gallon above ground tank installed in 2000.

Prior to 2000, the water usage at the Plant was approximately 400 AF/yr. Historically, water use was higher. However, USG was able to reduce its water use to approximately 400 AF/yr by implementing water conservation measures to ensure that there are no process water discharges from the operation, closing the former residential facilities at the Plant, and no longer using water for cooling production equipment. These conservation measures, instituted in the 1980's and 1990's, reduced water usage from its recorded high of 767 AF/yr.

2.4.3.3 Inert Material Storage Area (IMSA)

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).

USG is committed to recycle the material contained in the IMSA, including the material generated in conjunction with the July 2000 startup of the new production line at the Plant. USG is recycling material from the IMSA and intends to continue doing so.

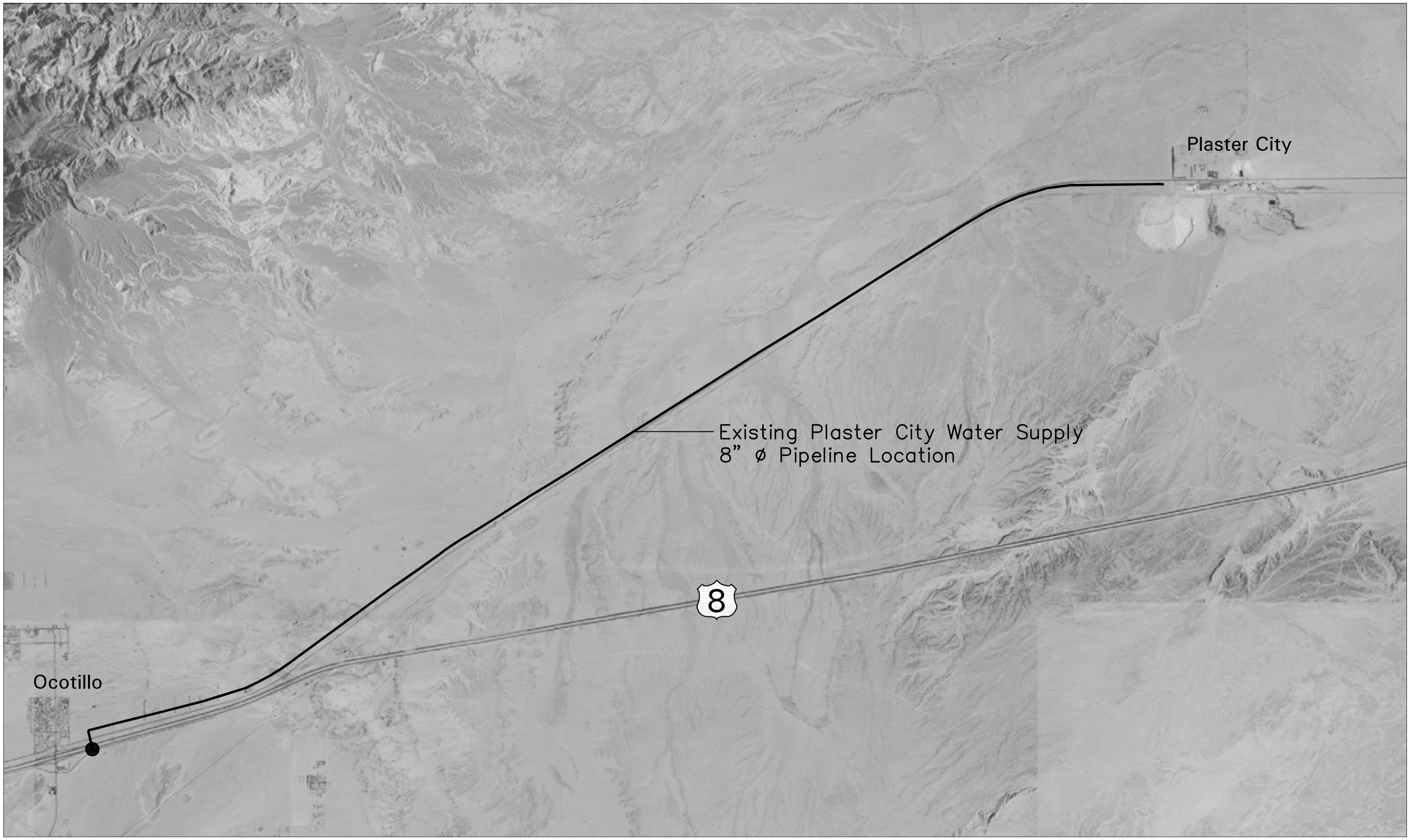

Photo Source: USGS Date: June 1996

Section 36, T16S R9E – Sections 12,13,14,15,21,22,28,29,30,31 T16S R10E – Sections 7,8 T16S R11E

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0 1 Mile

SCALE 1" = 1 Mile

Figure 2.0-10
Water Supply Pipeline Alignment Aerial Photograph

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As part of the modernization/expansion, USG installed additional equipment to recycle the 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.

The quantity of material in the IMSA prior to startup of the new production line in 1998 was estimated at about 2,200,000 cubic yards. During construction of the expanded/modernized facility, 200,000 cubic yards of material was relocated 500 feet further south to accommodate the realignment of the interstate railroad line. This relocated material was placed on top of the existing pile. During the new board line startup, approximately 400,000 cubic yards of material were added to the area.

Potential Recycling Obstacles

Historically, household trash from the former employee housing on-site was placed in this area. To the extent that the Plant uncovers such material as it recycles the useable gypsum material from the area, it will be disposed of properly (at a permitted Class III landfill) in accordance with applicable laws. The Plant cannot estimate the quantity of non-wallboard material that may be present.

The actual quantity of material annually recycled will vary based on the facility's manufacturing rate and market demand for gypsum products, which vary over time. The less product the facility produces, the less material that can be recycled annually. In the event of rain, which can plug the equipment with wet material, or equipment failure, off-specification material would be stored on-site until the equipment is repaired and/or weather conditions improve, and then the material will continue to be recycled.

USG has incorporated new recycling technology into the design of the modified/expanded facility to ensure that the materials stored on site are reused or recycled as feasible. There are manufacturing requirements which serve to limit the percentage of raw material that go into the production process which may be comprised of the off-specification material. Finally, USG is required to monitor the site and maintain records of the volume of materials placed in the recycling area and to provide semi-annual monitoring reports to the RWQCB. Once recycling becomes uneconomical, the pile will be covered and capped per Health Department requirements.

2.4.3.4 Existing Plant Permits

USG operates the Plant under the following permits:

- Imperial County Public Health Department Permit No. 46S-8517-03 for the Plant water system;
- Air emission permits, combustion and PM10 emissions for gypsum handling and calcining equipment in the Mill, including 6 natural gas fired kettles and dozens of dust collectors;
- Air emission permits, combustion and PM10 emissions for wallboard manufacturing, including 2 natural gas fired kilns and dust collectors;
- Air emission permits, miscellaneous, for fuel tanks, gasoline fired air compressors, gasoline powered emergency fire pumps;
- RWQCB, Colorado River Region
  - Waste Discharge Requirements (Order No. 96-001) for the IMSA
  - Waste Discharge Requirements (Order No. 93-017) replaced by 97-10 for wastewater disposal;
- General SPCC Plan; and
- General Stormwater Permit (this permit also covers the Quarry).

2.4.4 Summary of Current Activities at the Plaster City Quarry

2.4.4.1 Quarrying

The Quarry property holdings consist of 2,048 acres, but the total anticipated area of disturbance is 1,184 acres (see Table 2.0-1). The area of disturbance required to be reclaimed is 1,032 acres. The remaining 152 acres are in Quarry 1B which predates SMARA and is therefore not subject to reclamation. The 2,048 acres consists of 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 claims are currently under consideration by the US Department of Interior, Bureau of Land Management (BLM).

Gypsum occurs throughout the site as a contiguous bed striking northwest to southeast and dipping approximately 25-35º 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 activities are located on the western slope of the Fish Creek Mountains and the eastern slope of Split Mountain. Areas of 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 across from the processing Plant facilities. Roads account for approximately 1.4 acres.

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 using a large rotary drill to facilitate blasting. Patterns of holes are drilled into the gypsum to optimize fragmentation in the blasting. Each blasthole is primed with a booster, delay cap, and a mixture of ammonium nitrate and fuel oil, used as an explosive (ANFO). 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.

Figure 2.0-6 also provides the locations where photographs of conditions at the Quarry were taken in 2002 and 2003, including undisturbed areas proposed for quarrying. Figures 2.0-11 and 2.0-12, Existing Site Photographs, show other aspects of the Quarry in 2003. Photograph 1 shows the operations in Quarry 1A. Photograph 2 shows Quarry 1B, the processing area, and the road between the processing area and Shoveler Annex. Photograph 3 shows some of the gypsum outcrops in areas proposed for quarrying southeast of Quarry 1B. Photograph 4 shows the Shoveler Annex across the wash and to the west of Quarry 1B. Photograph 5 shows the processing Plant located in Area 1B as of 2003.

2.4.4.2 Processing

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. Figure 2.0-8 shows the layout of the Quarry processing area and Photograph 5 on Figure 2.0-12 shows the facility.

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. 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.

In a separate process, gypsum is 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 site 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 the bill of lading before leaving the site. Approximately 30 trucks per weekday travel to and from the site.

Photograph 1: Current mining operations in quarry 1A.

Photograph 2: Mining operations in quarry 1B.

Photograph 3: Quarry reserves.

SOURCE: Lilburn March, 2004

Figure 2.0-11
Existing Site Photographs

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Photograph 4: Shoveler Annex looking west from plant.

Photograph 5: Plaster City Quarry Plant looking east with Quarry 1B in background.

SOURCE: Lilburn March, 2004

Figure 2.0-12
Existing Site Photographs

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Figure 2.0-8 also shows other Quarry related uses and buildings including restrooms, 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.

2.4.4.3 Existing Quarry Permits

USG operates the Quarry and on-site processing facility under the following use permits and Conditions of Approval (note: currently the Quarry is under two reclamation plans, one for the Plaster City Quarry and one for the Shoveler Annex. The proposed reclamation plan combines the two):

- <u>Plaster City Quarry</u>
  - Mining and Reclamation Plan Permit No. 16-83 approved by Imperial County in 1984
  - Streambed Alteration Agreement No. 5-393-94 issued by the California Department of Fish and Game (CDFG)
  - Imperial County Conditional Use Permit No. 807-88 for the production of agricultural gypsum for sale at the Quarry
  - Imperial County Conditional Use Permit No. 956-90 extending the life of CUP 807-88 for the continued production of agricultural gypsum for sale at the Quarry
  - Imperial County Conditional Use Permit No. 635-83 for the non-potable water well onsite
  - Imperial County Air Pollution Control District Permits to Operate Nos. 3059, 1992A, and 2834C to operate the crushing and screening plants; and No. 2456 for petroleum storage
- <u>Shoveler Annex (which is within the Plaster City Quarry)</u>
  - Conditional Use Permit No. 110-73 from Imperial County to conduct gypsum mining Operations issued in 1973
  - Mining and Reclamation Plan Permit No. 13-82 approval on 142 acres of 221-acre site from Imperial County issued in 1982
  - Interim Management Plan approved by Imperial County in 1993

2.4.4.4 Quarry Equipment

Types of vehicles and equipment used in quarrying and processing activities at the Quarry typically include the following:

- Drilling and blasting contractors are used to drill and blast the rock. The contractor has a Drill Tech DK40 drill, a rough terrain drill, and 3-Bulk Explosives trucks on site;
- Two loaders are used to load the rock into the haul trucks;
- The rock is hauled using 60-ton haul trucks. The truck fleet hauls an average of 88 loads total per day;
- A water truck is used to water the roads for dust control;
- A dozer is used in the Quarry for reclamation and development work;
- A track excavator with a rockbreaker is used to break up large boulders in the quarry;
- A grader is used for Quarry road maintenance;
- A boom truck is used for maintenance work;
- A manlift is on site for doing work in high areas;
- A lube truck is used for fueling, greasing, and watering equipment in the Quarry;
- A vacuum truck is used for clean up purposes;
- Three pick up trucks are used by employees to get around the Quarry;
- The Quarry manager's vehicle;
- Two loaders are used to load rock into the hopper for the Stamler feeder-breaker crusher at the Agri plant;
- Approximately thirty 26-ton over-the-road trucks pick up product at the Quarry 250 days per year. These trucks are customer owned and operated; and
- There are typically 37 employees at the Quarry with an average of six employee cars on site per shift. Employees carpool from different areas. Currently the Quarry is running two eight-hour shifts, five days a week and one eight-hour shift each Saturday and Sunday. The schedule is subject to change depending on business levels (operations in the past have run seven days per week, 24 hours per day).

2.4.4.5 Quarry Water Supply/Wastewater System/Hazwoper Model Program

Water Supply

The Quarry has historically received potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant. In addition, bottled water may also be delivered to the Quarry.

For dust suppression at the Quarry, a water well was drilled in 1983 and permitted under CUP No. 635-83 for a maximum withdrawal of 7,000 gallons per day. The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Production from the well declined due to incrustation and became unusable. A second well was drilled in 1993 to replace the original well. CUP No. 635-83 was re-issued to the new well. The second well is located in an arroyo northeast of the crushing facility and was drilled in granitic fanglomerate underlying the gypsum interval. Water production from the newer well has also declined over time from about 20 gallons per minute (gpm) to about eight gpm (or about 11,500 gpd). In 2000, the well was rehabilitated without a significant improvement in water production.

Wastewater System

Wastewater at the Quarry is collected in an onsite septic system with a leach field.

Spill Contingency Plan/Hazwoper Model Program

A spill contingency procedure has been adopted by USG for emergency response in the event of a spill or release of a hazardous or controlled substance. The plan is referred to as the "Hazwoper Model Program." This plan applies to all activities at the Plant and Quarry.

2.5 PROPOSED ACTION

The Proposed Action consists of improvements already made to the Plant and Quarry between 1999 and 2002, and certain planned improvements that have not been undertaken to date. As such, this section may address post 1998 actions, whether already executed or not, in the future tense. The Proposed Action includes the following elements:

2.5.1 Objectives

The objectives and purposes of the Proposed Action are to:

- Expand quarrying facilities, equipment and personnel;
- Maximize the return on capital investments;
- Fully develop existing gypsum reserves; and
- Continue meeting market demands for gypsum products.

USG's specific objectives with respect to the Plant and the Quarry are as follows:

2.5.1.1 Plant

- 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 an existing deteriorating water pipeline with a new pipeline.

2.5.1.2 Quarry

- Secure permits and approvals to continue to quarry gypsum resources;
- Maximize recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
- Concurrently reclaim Quarry site for post-mining uses as Open Space; and

- Develop a Quarry water supply designed to meet dust suppression requirements.

2.5.2 Plaster City Plant

The Proposed Action at the Plant site consists of all improvements made to the property since 1998 as discussed in Section 2.4 plus the additional improvements discussed below.

2.5.2.1 Water Line Replacement

A new ten-inch diameter water pipeline 8.5 miles long would replace the worn eight-inch water pipeline from the wells at Ocotillo to the Plant. The old waterline is nearing the end of its useful life, and experiences line surges due to air in the line and water hammer caused by rapid changes in flow such as a sudden closure of a water control valve. A new ten-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.

If replaced, the new pipeline will be placed in a trench excavated adjacent to the existing pipeline alignment. The trench would 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. The first twelve inches or so will have to be selected from the pile to exclude larger rocks. This soil would be compacted around the pipe. Afterwards, the rest of the material can be backfilled into the trench, compacting the layers at intervals. The trench will be finished off so that it is slightly higher than the surrounding ground to allow for settlement to occur. Compacting the layers will allow the contractor to get all the material back into the trench without having to haul it away.

Following installation and operation of the new pipeline, the old pipeline would be removed and disposed at an EPA-approved landfill by a contractor according to stringent procedures and requirements set by federal, state and local authorities regarding methods for asbestos removal and disposal.

Maintenance strategies for the proposed pipeline would not differ from existing maintenance. The pipeline alignment is periodically inspected by USG. Also, routine maintenance is performed at the wellhead and connection at the Plant.

2.5.2.2 Cogeneration Unit

Installation of an approximate 14.4 megawatt (MW) cogeneration unit is proposed to provide heat to the board Plant to dry wallboard as well as provide electrical power for the Plant. The new facility is shown on Figure 2.0-7. 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 #3 kiln to assist in drying board, reducing the amount of heat needed by the kiln. The natural gas would be delivered through the existing pipeline. Daily commercial electrical power consumption would be eliminated. Backup power would be provided by IID. Installation of the cogeneration unit may not be necessary if USG can negotiate power supply rates with IID that would make it economically attractive to forego installing and operating the cogeneration unit.

2.5.2.3 Management of Off-Specification Wall Board

The quantity of off-specification wallboard material in the IMSA in 1998 is estimated at about 2,200,000 cubic yards. During the new board line startup, approximately 400,000 cubic yards of material was added to the area. The area now contains approximately 2,600,000 cubic yards of wallboard material. Part of the modernization/expansion Project includes an off-specification material recycling system.

This system is designed to chop up out-of-specification wallboard from the IMSA and feed it back into the Plant production process with raw gypsum rock. The system design allows USG to recycle all non-saleable wallboard generated by the Plant as well as to allow the Plant to process material placed into the IMSA during earlier Plant operations. USG will continue to recycle all non-saleable wallboard generated by current operations as well as recycling material added to the IMSA since startup of the No. 3 line. Furthermore, the Plant will continue to use material from the IMSA to supplement rock supplies brought to the facility.

USG will continue current recycling efforts and install an additional waste handling area to increase recycling to twice the volume of material generated annually. This would include continuing to recycle non-saleable wallboard generated by current operations as well as recycling the estimated 400,000 cubic yards of material added to the IMSA since startup of the No. 3 boardline. Furthermore, USG will continue to use material from the IMSA to supplement rock supplies brought to the facility. USG will continue to abide by California Regional Water Quality Control Board regulations and any other applicable requirements.

USG has committed to recycling 100,000 cubic yards of material off of the pile each year in addition to recycling off-specification material generated during the year. It is estimated that only one-half of the pile is recyclable. Once non-gypsum waste or other factors make recycling efforts uneconomical, USG will cover and cap the balance of the pile in accordance with local Health Department input, as well as other regulatory agencies as applicable. USG will consult the Imperial County Health Department to develop closure procedures and protocol for the area once recycling efforts cease.

Annual reporting would be submitted to the County showing the estimated volume of material generated and recycled based on loads of material removed from the IMSA.

2.5.3 Quarry Site

Figure 2.0-8 shows a schematic of the Quarry processing Plant modernization consisting 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. Continued quarrying activities require that additional areas be developed to allow continuous supplies of gypsum rock to be shipped 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.

2.5.3.1 Quarry Well No. 3

A reliable water supply must be developed that would be capable of producing approximately 23,000 gallons per day (or 26 AF/yr) 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. Figure 2.0-1 shows the proposed location of these Project components.

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 site to be developed is along the existing right-of-way and is already disturbed. 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 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.

2.5.3.2 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 quarrying has occurred in Area 1A, the Shoveler Annex, and Area 1B on a total of approximately 338.5 acres including 40.6 acres used for the processing facilities and access roads. The proposed reclamation plan is designed to allow recovery of gypsum on 845.2 acres. The cumulative area to be disturbed and reclaimed totals approximately 1,184 acres (planned quarry areas plus existing disturbed areas including 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 regrade and contour the pre-SMARA Quarry 1B hillside consistent with the planned final reclamation contours.

The quarry operations are designed to quarry, crush, screen, and ship material via narrow-gauge rail to the Plant for finish processing and via truck for agricultural and

Portland cement manufacturing uses. The existing Quarry processing facility is not to be expanded as a part of the Proposed Action beyond the post-1998 modernization. Haul road alignments would be changed to accommodate individual quarrying in various areas, and the rail facility and access road would be maintained. Quarry access will regularly change as the individual quarries expand. All service and haul roads will be retained within the Quarry footprint. Equipment parking and storage areas at the Quarry will be on absorbent pads over a plastic membrane to keep fluids from passing through it to the soil below. Access roads outside the Quarry footprint, but within the Project boundary, would be maintained in place once established as identified in the Reclamation Plan.

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

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.

Stabilization of Overburden: There would be overburden stockpiles on the site that would be used in reclamation. Most of the overburden will be transported to the bottom of the previously quarried area. These materials become part of the reclamation media. The surface material from the wash quarries would be pushed to the east bank of the wash where it would form temporary and permanent berms. The permanent berm would be used to divert sheet flow from the quarries in the rare occurrence of rain. The temporary berm is the overburden stockpile to be used in reclaiming the western Quarry wall.

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.

Outcrop Quarrying

These areas consist of outcrops of gypsum above the level of the alluvial wash. Production would continue with the extension and development of benches with a height of 25 feet. The final configuration of the benches would be based upon: (1) the contact with underlying low-purity gypsum and basement materials and (2) the updip limit of the outcrops. This would progress to each of the additional subsequent areas. As previously indicated overburden on these outcrops is almost nonexistent. When surface clays are encountered they would be removed for use in reclaiming previously mined outcrops.

Alluvial Wash Quarrying

As quarrying of gypsum outcrops extends westward from the current active quarry area, the gypsum underlying alluvial overburden would be developed and extracted. Quarrying of the alluvial wash deposits would progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the gypsum would progress downward from the toe of the overburden strip slope in 25 foot vertical benches at a maximum stable slope of 1H:1V until the bottom of the quarryable zone is reached.

Bench face slopes would be recontoured 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 recontouring 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. This 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 quarried out areas for reclamation of the slopes.

2.5.3.3 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. Figure 2.0-13, Proposed Volumes, displays the various areas by number that correspond to Table 2.0-1. Figure 2.0-14, Quarry Development Typical Cross-Section, shows typical Quarry cross-sections. Figure 2.0-15, Plaster City Phasing Plan, shows areas to be developed.

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. Note that almost 150 acres of the planned excavation areas are within existing Quarry areas with approved mine and 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 Area 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 would limit 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 recontoured by blasting or dozing the benches to soften the topography. Figure 2.0-16, Quarry Reclamation Plan Typical Cross-Section, shows proposed reclaimed slopes.

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 onsite 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.

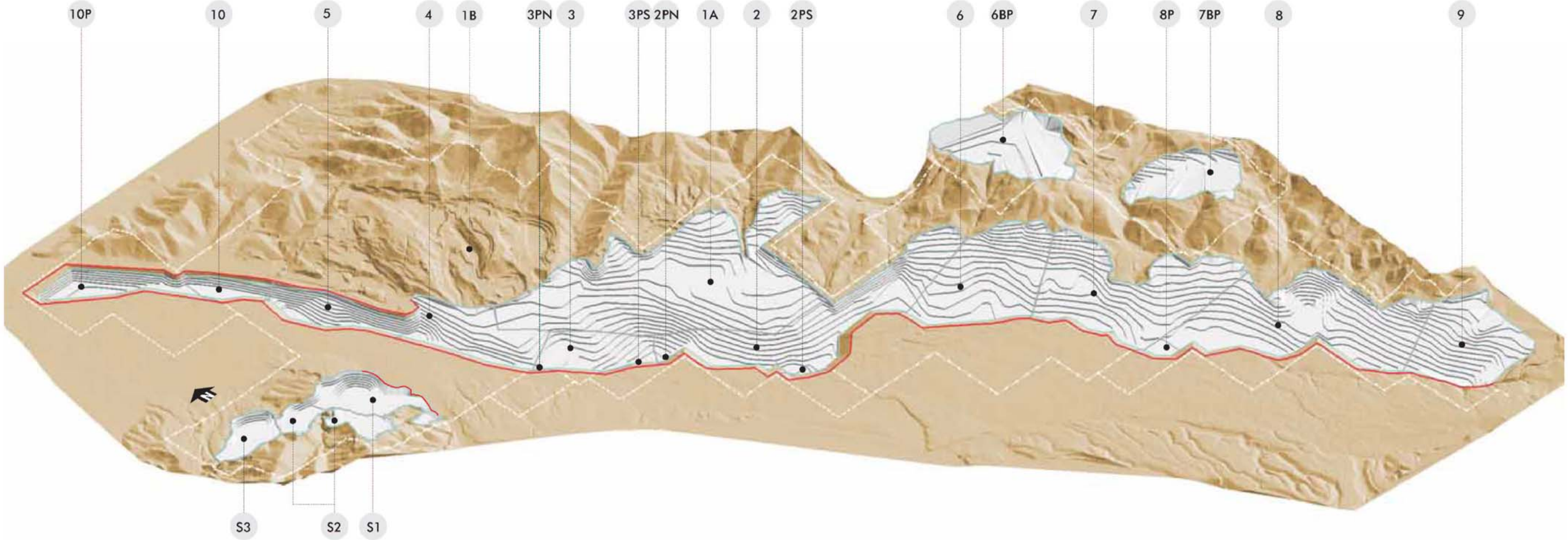
The following activities would be undertaken to reclaim the Quarry to its end state:

Backfilling and Grading: The site would be quarried and reclaimed in a series of areas designed to facilitate extraction methods and reclamation of existing and proposed disturbed areas. The areas are identified in Figure 2.0-15.

Stabilization of Slopes: Gypsum outcrop operating slopes would be excavated at a maximum angle of 1H:1V to 1.5H:1V. Finished quarry faces would be a series of 25 to 50-foot horizontal and 25-foot vertical benches. One foot vertical to one foot horizontal is considered stable in the gypsum outcrops. Quarry walls would be angle blasted and recontoured to eliminate benches and smooth the topography to an overall natural slope from 1.0H:1V to 2H:1V. The lower slopes cut into the alluvium overburden would be reclaimed by blasting or pushing overburden down the vertical cut to form 1.75H:1V slopes as recommended by the Slope Stability Report included in the Application Reclamation Plan.

Rehabilitation of Pre-mining Drainage: On-site hillsides and outcrops are erosional features of the landscape and are expected to continue to erode throughout mining and reclamation. This process would continue to sculpt the Quarry benches, eroding the manmade lines of the bench faces. Pre-mining drainage would be maintained where possible. Disturbance would be limited in these drainages. If necessary, standard erosion control measure such as rip-rap would be placed in the drainages to reduce flow and erosion. Drainage within the main wash may be retained using overburden materials.

Removal, Disposal, or Utilization of Residual Equipment, Structures, and Refuse: Upon cessation of mining, the surface facilities excluding an office or trailer with utilities, would be disassembled and removed or razed. Foundations would be reduced below grade and covered in-place. Mobile equipment would be removed from the site. Pads and unpaved roads would be scarified and appropriate stormwater runoff measures would be implemented. The rail would be removed where it runs below



	Area (acres)	Overburden Volume (mcy)	Gypsum Volume (mcy)	Recoverable Volume (Gyp. Volume mcy * 85%)	Recoverable Tons (1.89 * recoverable	Maximum Depth
S1	31.89	0	4.66	3.96	7.49	200
S2	24.49	0	2.58	2.19	4.14	200
S3	18.95	0	2.53	2.15	4.06	205
1A	163.63	0.86	14.63	12.44	23.5	250
1B	151.8					
2	87.86	4.8	10.81	9.18	17.35	245
2P South	5.31	0.5	0.15	0.13	0.24	245
3	36.4	2.3	7.72	6.56	12.4	315
3P North	1.23	0.08	0	0	0	150
3P South	9.88	0.93	1.3	1.11	2.09	315
4	46.45	2.5	2.42	2.06	3.89	210
5	30.94	2.67	3.04	2.58	4.88	260
6	70.88	2.46	10.47	8.9	16.82	190
6BP	47.23	0	3.84	3.26	6.17	125
7	91.37	2.91	10.27	8.73	16.5	205
7BP	32.51	0	1.93	1.64	3.1	125
8	116.29	5.19	14.33	12.18	23.02	245
8P	6.81	0.59	0.27	0.23	0.43	165
9	54.83	0.42	6.51	5.53	10.46	205
10	13.2	1.23	0.72	0.61	1.16	167
10P	34.47	3.09	2.64	2.24	4.24	250
Totals	**1076.42**	**30.53**	**100.82**	**85.68**	**161.94**	

LEGEND

- U.S. Gypsum Fee Boundary
- Unpatented Placer Claims
- Gypsum Daylight Area
- Top of Overburden Slope
- 8P Quarry Number (P=Public Lands)
- Existing Terrain
- Proposed Quarry Terrain

SOURCE: Lilburn Corporation March, 2004

Figure 2.0-13
Proposed Volumes

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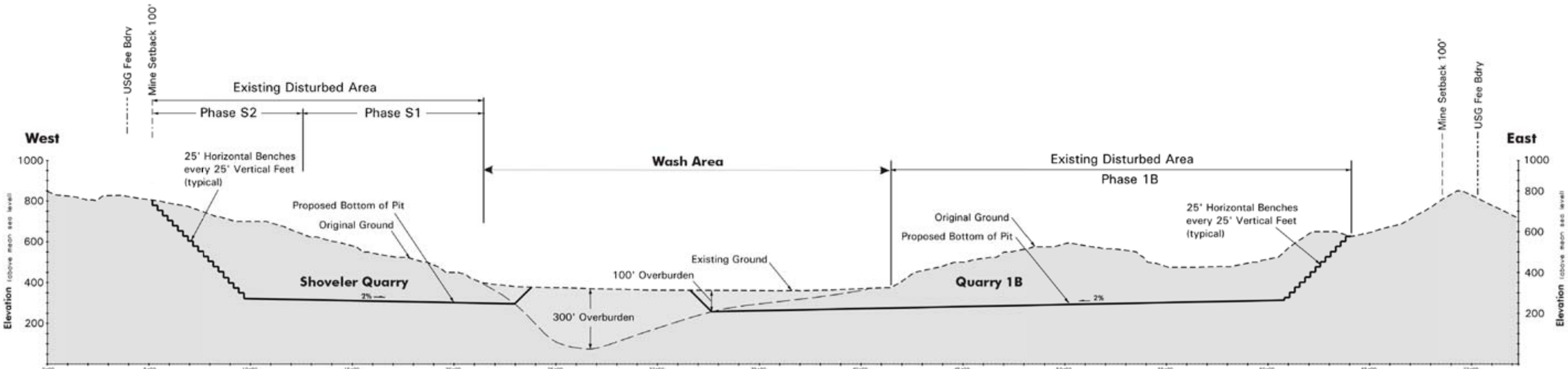

Source: Lilburn Corporation

SOURCE: Lilburn Corporation March, 2004

Figure 2.0-14
Quarry Development Typical Cross-Section
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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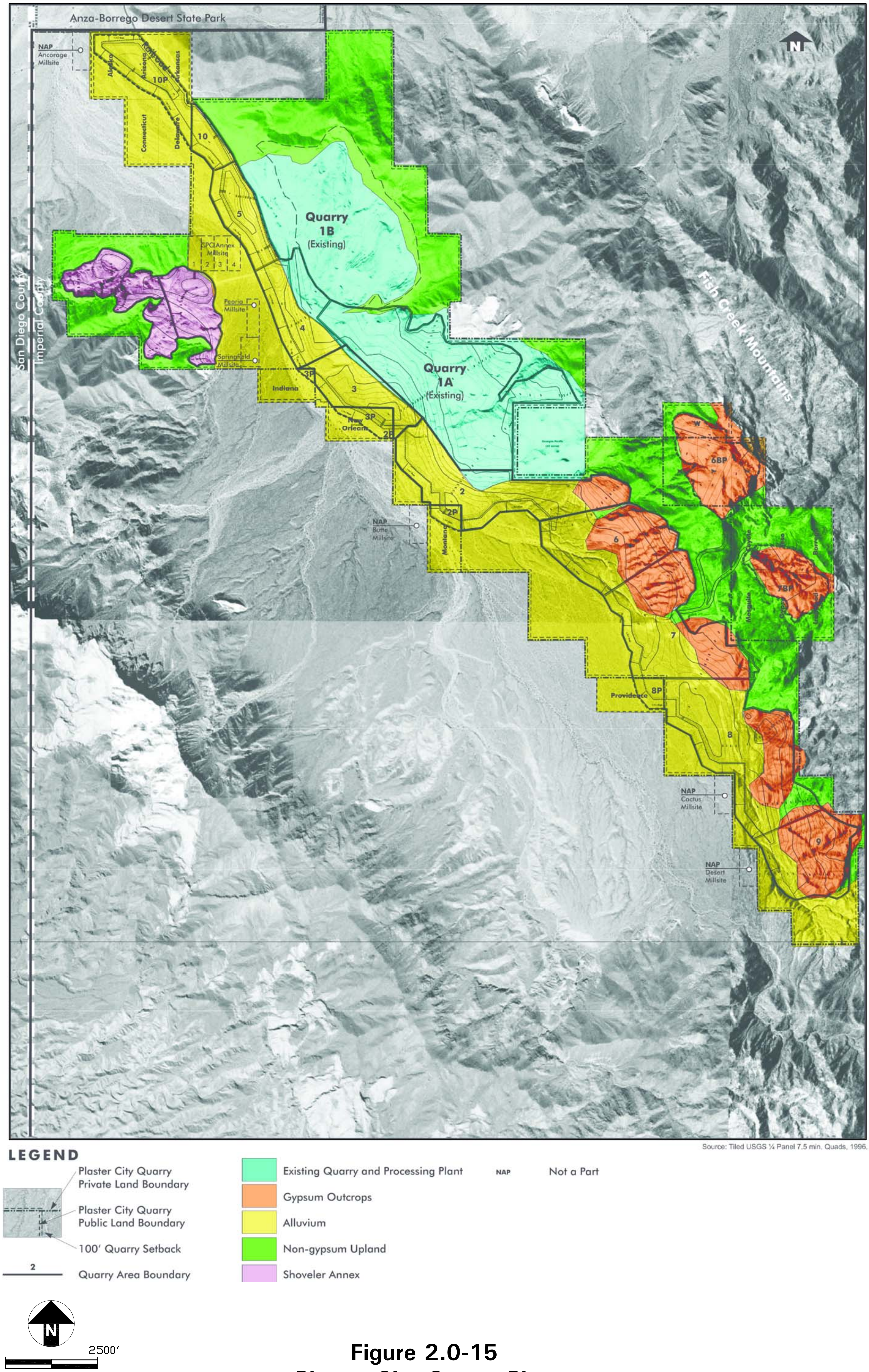

Figure 2.0-15
Plaster City Quarry Plan

US GYPSUM EXPANSION/MODERNIZATION PROJECT
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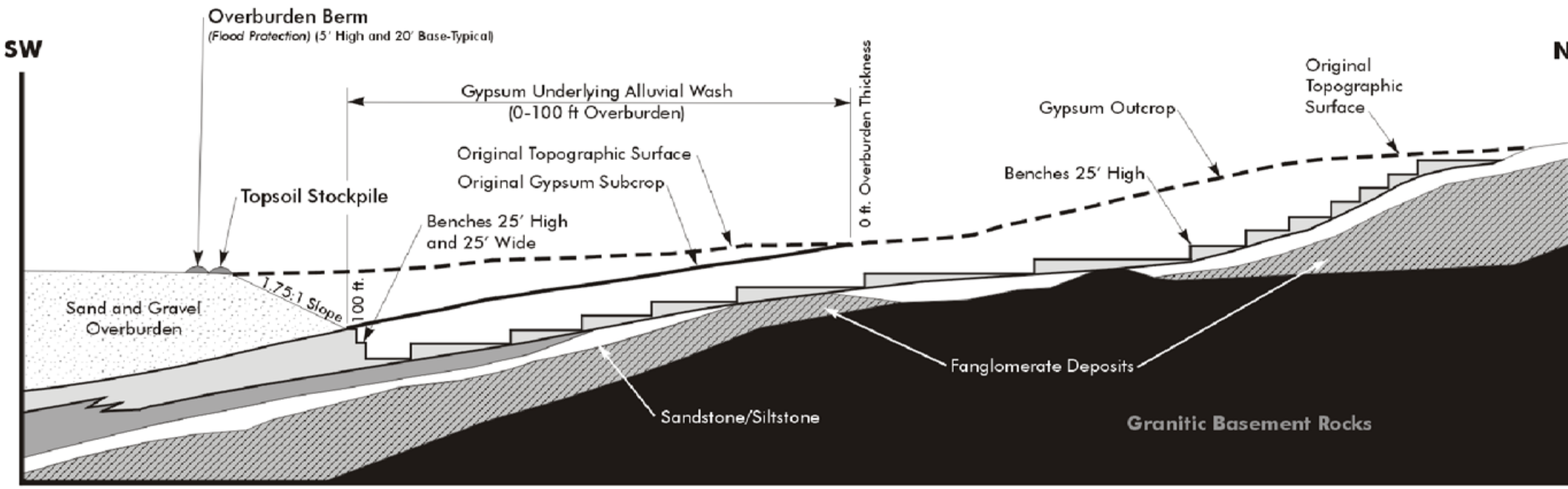

Not to Scale

Source: Lilburn Corporation

Figure 2.0-16
Quarry Reclamation Plan Typical Cross-Section
US GYPSUM EXPANSION/MODERNIZATION PROJECT
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grade (tunnel beneath the rock loading area). Structures would be razed and the tunnel would be backfilled to existing surface grade. Any debris or refuse would be removed at the end of this period. The primary access to the site would be gated and signed.

Control and Disposal of Contaminants: Potential contaminants are limited to lubricants and fuels for stationary and mobile equipment, which would be removed upon closure. Handling and storage of fuels, lubricants and explosives are conducted in compliance with MSHA and County regulations. The storage facilities for lubricant and fuel as well as blasting materials are isolated from drainage systems and accidental ground contamination. This is done by not placing the materials storage within drainages and properly constructing footings to avoid inundation.

Treatment of Streambeds To Control Erosion and Sedimentation: Average rainfall in the vicinity is 4.5 inches annually. However, the streambed erosion can occur over the width of the wash because precipitation can occur in intense, short-duration thunderstorms, resulting in flash flooding. Typical erosion control measures such as waterbars and rip-rap would be constructed or placed based on actual conditions as described under Rehabilitation of Pre-mining Drainage above.

2.5.3.4 Revegetation

The gypsum outcrops are a hostile environment for vegetation due to their sulfate content. Hills that have high clay content are more conducive to the establishment of a root system. Vegetation on the site consists 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 recontoured portions of mined areas within Quarry 1A and allowed the area to remain undisturbed as a test of natural revegetation. Figures 2.0-17 and 2.0-18, Existing Vegetation, include photographs showing the reduced quarry slopes and the natural revegetation that has become established over approximately five years. The natural revegetation is consistent with pre-existing plant densities.

Figure 2.0-17, Photograph 1, 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 2 shows a close-up of the reclaimed slope dominated by pygmy cedar (*Peucephyllum schotti*). Figure 2.0-18 shows photographs of existing vegetation on undisturbed areas of the site for comparison. The revegetation effort is dependent on the infrequent precipitation that occurs in 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 (*Hymenoclea salsola var. salsola*), 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.

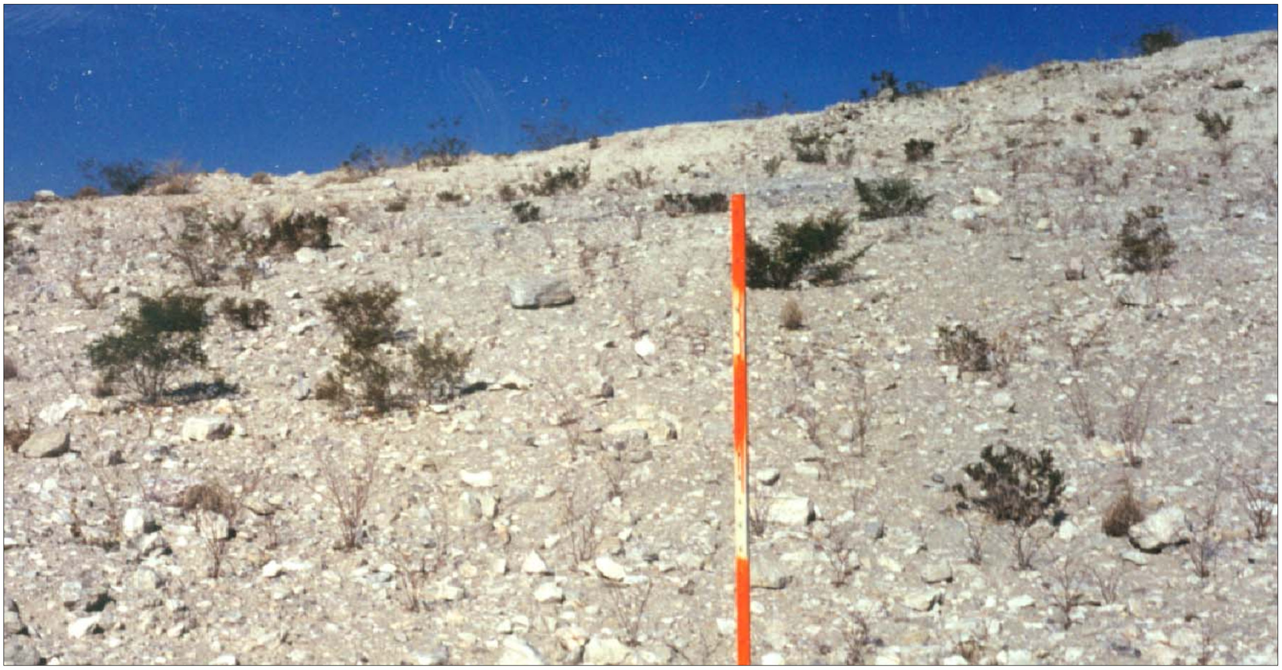
Revegetation efforts would follow a series of steps that can be varied over the life of the operation. They are proposed as guidelines that would be followed until new information or techniques become available which could improve the results of the revegetation activities. Revegetation efforts would 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 possible that on-site collection alone would not provide an adequate supply of seeds when needed. Therefore, if necessary, 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.

2.6 ALTERNATIVES TO THE PROPOSED ACTION

2.6.1 Introduction

CEQA requires that an EIR describe a range of reasonable alternative to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. State CEQA Guidelines, Section 15026.6. Similarly, NEPA requires that an EIS identify and objectively evaluate a reasonable range of alternatives to a proposed action. 40 C.F.R. Section 1502.14. Under both CEQA and NEPA, the selection of the alternatives for discussion is governed by the "rule of reason."



Photograph 1: Reclaimed slope with naturally occuring revegetation growth of approximately 5 years.

Photograph 2: Close up of naturally revegetated slope with pygmy ceder dominate.

SOURCE: Lilburn Corporation, 2004

Figure 2.0-17
Existing Vegetation
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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Photograph 3: Desert wash vegetation in foreground with barren gypsum outcrops in background.

Photograph 4: Hillside around gypsum outcrops with Creosote brush scrub.

SOURCE: Lilburn Corporation, 2004

Figure 2.0-18
Existing Vegetation
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An EIR/EIS need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. The discussion of alternatives in an EIR/EIS must focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project.

Comments received by the lead agencies during the scoping sessions for this EIR/EIS indicate that concerns about the potential effects of the Proposed Action on groundwater are of paramount concern. Moreover, because the Plant and the Quarry were already operating at their current locations prior to commencement of environmental review of the Proposed Action, the range of alternatives that have the potential for avoiding or substantially lessening any significant effect of the project other than on groundwater is very limited. For these reasons, each of the alternatives selected for evaluation in this EIR/EIS are alternatives that are potentially capable of avoiding or substantially lessening the potential effects of the Proposed Action on groundwater.

2.6.2 No Action Alternative

Because certain components of the Proposed Action were implemented prior to the preparation of this EIR/EIS, adoption of a No Action Alternative could have various permutations such as:

1. No Construction of Additional Facilities
   Plant – No further expansion of facilities
   Water Supply – No replacement of existing pipeline with water usage in the range of 350 to 767 acre feet per year
   Quarry – No further expansion of processing facilities
   Existing construction components would remain and production would continue at current levels
2. Reversion to 1998 Operational Levels
   Plant – Revert to permitted production level prior to expansion
   Water Supply – Approximately 350 acre feet per year
   Quarry – Revert to allowed production level prior to expansion
   Existing construction components would remain
3. Deconstruction of Built Facilities
   Plant – Removal of constructed board, line and related facilities
   Quarry – Removal of expanded existing and related facilities

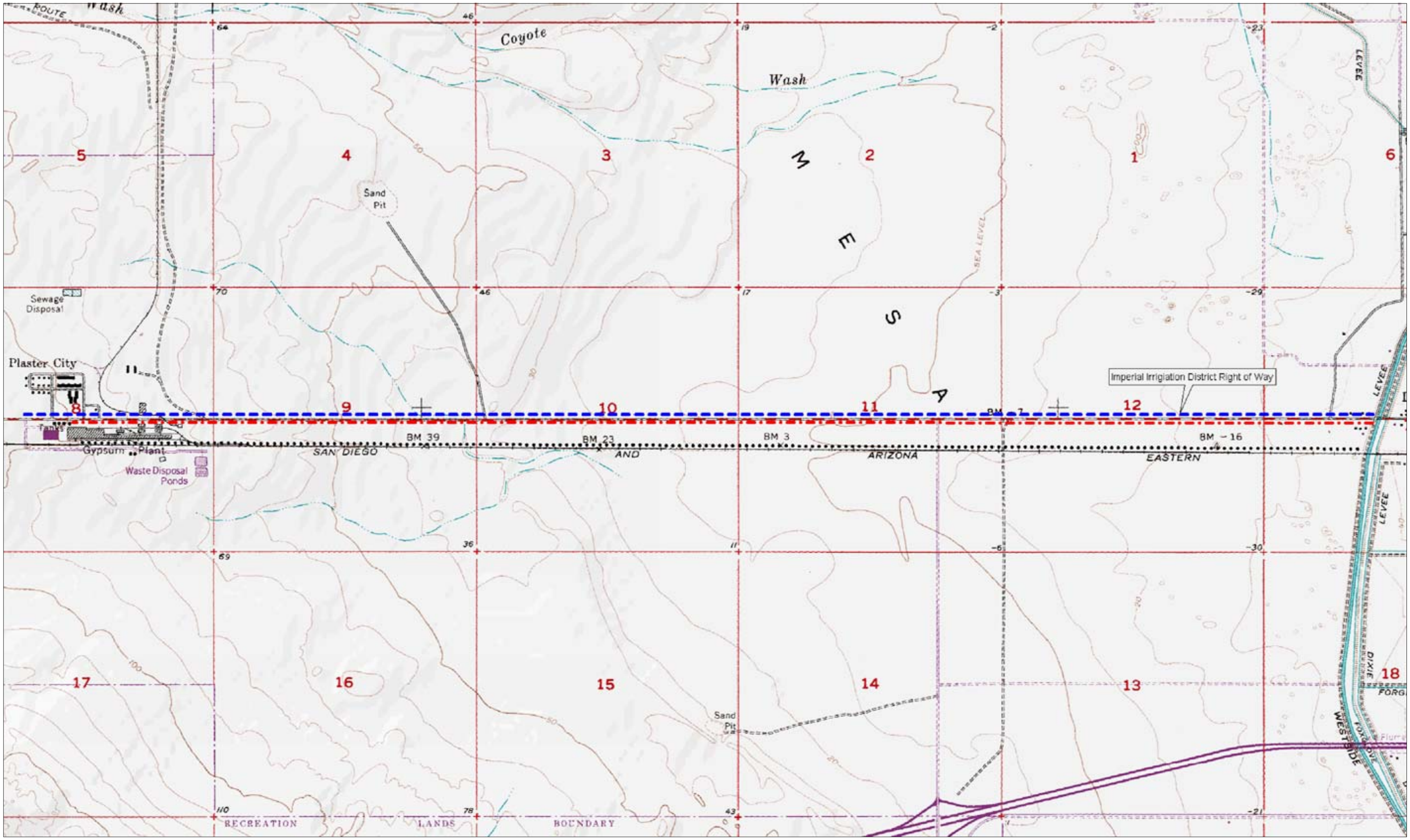
Evaluation of all the potential permutations of the No Action Alternative would be impractical. Moreover, the primary purpose of evaluations of the No Action Alternative is to allow decision-makers to compare the impacts of approving the Proposed Action with the impacts of not approving the Proposed Action (CEQA Guidelines Section 15126.6(e)). For these reasons, this EIR/EIS will address the environmental impacts of the No Action Alternative in accordance with CEQA and NEPA guidelines by simply assuming that no elements of the Proposed Action would have been implemented.

2.6.3 Partial Use of Water from Imperial Irrigation District

This alternative would supply the Plant with a portion of the water needed for operations from USG's existing wells in Ocotillo. The balance of the water needed for operations would be supplied by the Imperial Irrigation District (IID).

Under this alternative, water from IID would be blended with water from Ocotillo as needed to achieve the level of water quality and consistency necessary for use in manufacturing wallboard without the need for further treatment of the process water. As stated below, the quality of Colorado River water varies over time. Thus, the amount of water that USG would need to extract from the well at Ocotillo would vary over time. However, this alternative assumes that over the life of the Project, the amount of water extracted from the existing wells at Ocotillo would average 400 AF/yr. Water in excess of 400 acre feet per year would be provided by IID under a water service agreement with USG (assuming such a water service agreement can be obtained).

This alternative would entail the construction and operation of a new water pipeline extending from the Westside Main Canal to the Plaster City Plant - a distance of approximately 5.5 miles. The likely routes for the pipeline include: 1) along the north or south side of Evan Hewes Highway (S-80), or 2) the north side of the commercial railroad tracks that parallel Evan Hewes Highway. The potential pipeline routes are depicted in Figure 2.0-19, Proposed West Side Main Pipeline Routes.



SOURCE: Lilburn Corporation, 2004

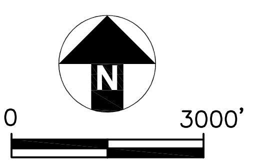


Figure 2.0-19
Potential West Side Main Pipeline Routes
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The pipeline would likely be an underground twelve-inch diameter PVC (plastic) pipeline running from the Westside Canal to the Plaster City Plant.

In addition to the pipeline itself, this alternative would require the construction of a pumping station near the canal, access roads for the pipeline, and water storage facilities at the Plant. Storage and treatment facilities at the Plant would include two settling/storage basins such as 150′ by 150′ reservoirs on USG property to settle out silt and solids from the water prior to use. These settling/storage basins with a total capacity of about 1,000,000 gallons would be located adjacent to the USG manufacturing facility on Plant property, most likely south of the Plant. From the settling ponds the water would be pumped to the manufacturing facility, blended with Ocotillo well water to further dilute impurities and used in the manufacturing process. A conceptual site plan depicting the improvements necessary at the Plant to implement this alternative is presented in Figure 2.0-20, Site Plan for Canal Water Supply.

The quality of Colorado River water varies significantly over time. At times when the salinity levels are relatively low, it may be possible to use more Colorado River water to manufacture wallboard in both the existing No. 1 board line and the new high speed No. 3 board line. However, when salinity levels are relatively high, less river water would be blended with well water to make it suitable for use in the manufacture of wallboard.

Under this alternative, once all of the approvals and improvements necessary to convey IID water to the Plant are completed, USG would continue to use water from the existing wells at Ocotillo at pre-project levels. Assuming that all necessary approvals can be obtained to implement this alternative (including a service agreement with the IID), the process of obtaining these approvals would likely require a minimum of one to three years. Additionally, the construction of the pipeline and related improvements would require a minimum of two additional years. Thus, for purposes of evaluating the potential environmental effects of this alternative, it is assumed that IID water would not be available for use at the Plant until at least 2008 or 2010.

This alternative would potentially require USG to obtain an encroachment permit from Imperial County and potentially a right-of-way approval from either the BLM (to run the pipeline along Evan Hewes Highway) or the Union Pacific Railroad (to run the pipeline along the railroad). Additionally, as noted above, this alternative would require USG to enter into a water service agreement with IID. Recently, the IID, the San Diego County Water Authority, the Coachella Valley Water District, and the

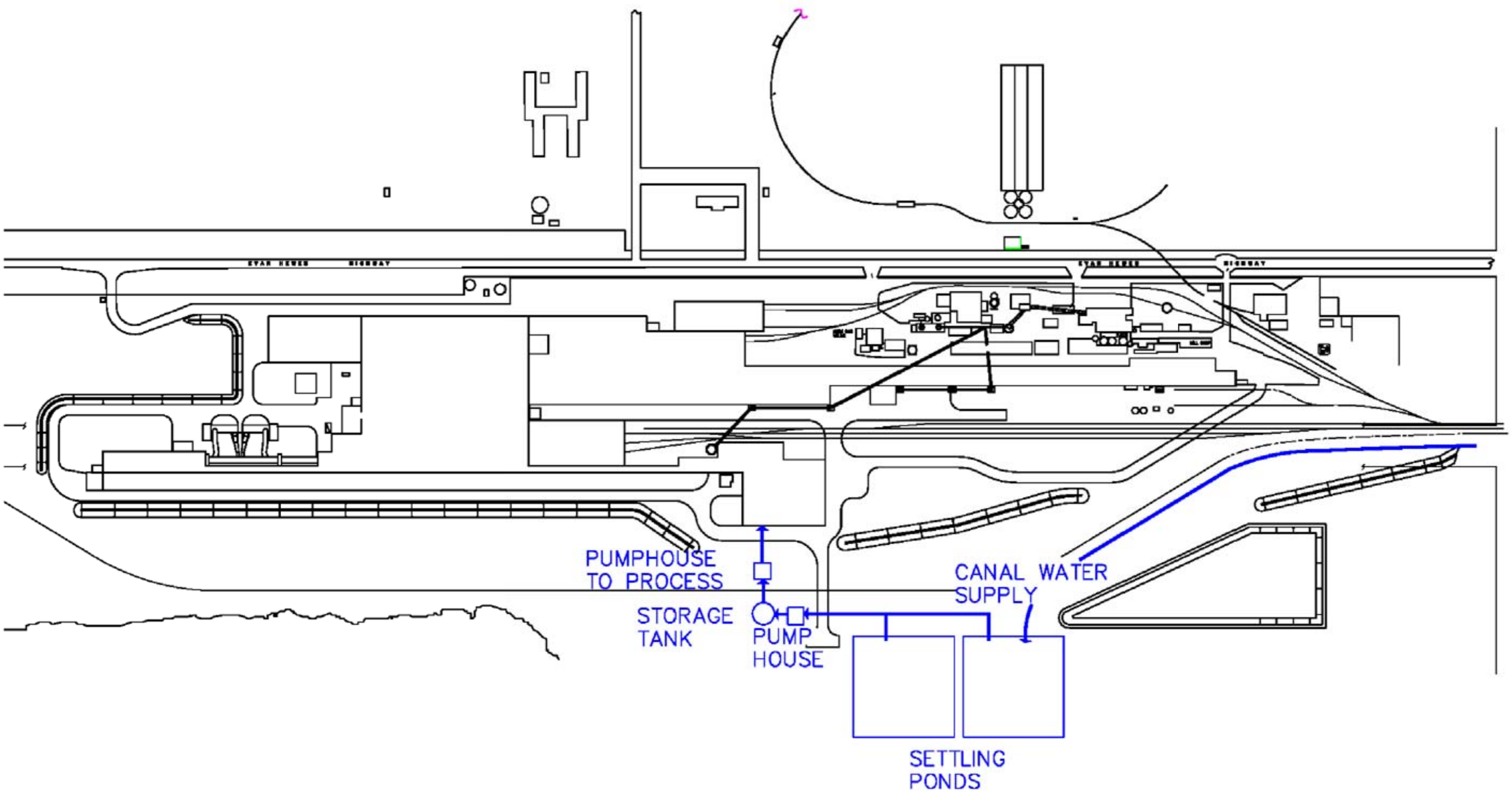
Metropolitan Water District of Southern California, completed negotiations concerning a long term transfer of water from the IID to the other agencies. The negotiations were prompted by numerous State Water Resources Control Board and court decisions. The negotiations gained a sense of urgency subsequent to the decision by the Secretary of the Interior in 2002 to reduce California's allotment of Colorado River water by 800,000 acre feet per year. Despite the end of this nine-year negotiation process, however, lawsuits have been filed by local entities challenging the adequacy of the economic and environmental review conducted prior to the completion of the agreement. In light of these lawsuits, unknowns related to the implementation of the recent water transfer agreement, and the competing demands for Colorado River water, the legal, social, political and economic feasibility of obtaining Colorado River water pursuant to a service agreement with IID is unknown at this time.

2.6.4 Full Use of Water from Imperial Irrigation District

This alternative is similar to the "partial use" alternative discussed above, except that 100 percent of the water needed for Plant operations would be supplied by IID under a water service agreement with USG. This alternative would entail the construction and operation of a new water pipeline as described above in the partial use alternative extending from the Westside Main Canal to the Plant.

Water/settling storage facilities would be larger than that described above under the partial use alternative in order to provide the Plant with a seven-day on-site storage in the event of water delivery interruptions. Under this alternative, it is anticipated that there would be two settling/storage reservoirs, each would be about 225′ by 225′. The storage capacity of each reservoir would be about 4.5 million gallons. Settling ponds would be utilized to settle solids out of the water and sized to store a seven-day supply of water for Plant operations. Water would also need to be filtered and treated to provide the Plant with potable water.

The quality of Colorado River water varies significantly over time. This variation in salinity creates a problem in the process of making wallboard. While a range of salinity can be managed by changing formulations to account for salinity changes, this cannot be accomplished quickly. In other words, the water used to manufacture wallboard



SOURCE: Lilburn Corporation, 2004

- Additional Facilities Needed for Canal Water Supply

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Figure 2.0-20
Site Plan for Canal Water Supply
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must be maintained with a constant salinity or solids. In short, USG would need to treat Colorado River water not only if salinity levels are high, but simply because the levels vary. At times when the salinity levels are relatively low, it may be possible to use Colorado River water to manufacture wallboard in both the existing No. 1 board line and the new high speed No. 3 board line without further treatment. However, when salinity levels are relatively high, the water would not be suitable for use in the manufacture of wallboard unless it is first treated by Reverse Osmosis (RO). The treatment process would require the construction of a desalinization facility, along with wastewater handling facilities to handle the wastewater from the RO process. It is assumed that the RO units could be limited to about one quarter of the flow and that the treated water would be blended with settled canal water to reach the acceptable levels of purity. For example, if the supply from IID were to be 866 AF/yr it would be necessary to take in about 266AF to the RO plant to produce 200 AF/yr of low salinity water. This water would be blended with about 600 AF/yr of settled canal water to produce water acceptable for board manufacture. The waste stream would be 66 AF/yr, which would require on-site evaporation ponds of about 11 acres.

In addition to the RO unit, a treatment facility would be needed to supply potable water for the Plant. While the quantity of water needed for this purpose is relatively small, the unit would require attention and service. The Plant would also be required to isolate the potable system from the industrial use supply system.

Assuming that all necessary approvals can be obtained to implement this alternative (including a service agreement with IID), the process of obtaining these approvals would likely require one to three years. Additionally, the construction of the pipeline and related improvements would require a minimum of two additional years. Thus, for purposes of evaluating the potential environmental effects of this alternative, it is assumed that IID water would not be available for use at the Plant until at least 2008 or 2010.

For the reasons discussed above under the "partial use" alternative, the feasibility of entering into a water service agreement with the IID to provide 100 percent of the water for Plant operations is unknown. Additionally, as compared to the "partial use" alternative, the "full use" alternative would require the installation of additional facilities at the Plant, including a new potable water system, facilities to store a seven-day supply (two reservoirs of approximately 225 square feet each or about nine million gallons) of water to allow for peaking, an RO unit for periods of high salinity in the Colorado River, and 11 acres of evaporation ponds.

2.6.5 Alternatives Considered but Rejected

2.6.5.1 Drilling of New Production Wells in the Vicinity of the Plaster City Plant

This alternative would involve the drilling of several new wells in the vicinity of the Plant in order to provide all or a portion of the water needed for Plant operations.

Under this alternative it is assumed that Ocotillo well water would remain available for blending and for potable use. The groundwater even after treated would be blended for the industrial use. It can be delivered to a common tank. The RO process would include the RO units, some pretreatment, possible post treatment for ph control and booster pumps. The energy requirements for the RO process are high (in the range of 1,000 to 2,100 kwh per AF of water produced). At this rate the annual energy use for RO, exclusive of pumping, would be in the range of 533,000 to 1,119,300 kwh.

Because the quality of the groundwater underlying the Plant was historically known to be of poor quality, USG conducted additional investigations to confirm the quality and quantity of water beneath the Plant. This investigation revealed that the water beneath the Plant is of insufficient quantity and too saline for use by USG to manufacture wallboard. This alternative was considered but rejected based on economic, environmental, and technological factors.

From data obtained in the mid-1920s, the water underlying the Plant contained Total Dissolved Soils (TDS) in the range of 15,000 parts per million (ppm) or about one half of the salinity of ocean water. Such water cannot be used directly in the manufacture of wallboard because the high salt content reduces the strength of the wallboard and causes the paper cover to delaminate from the core. Blending of Ocotillo water to bring the salinity of the Plaster City well water to acceptable levels would require about 30 parts of Ocotillo well water to one part of Plaster City well water. The water would also need to be treated by RO to reduce the total dissolved solids (primarily salts) to acceptable levels.

To confirm or challenge the existing data on the groundwater beneath the Plant, USG performed pumping tests at the Plant in July 2004. The pumping tests were performed to determine the aquifer's production and groundwater samples were collected to assess the water quality. The July 2004 investigations showed that the production rate per well would be less than 100 gpm and that the groundwater quality was poor, with salinity at 10-15 times greater than Colorado River water.

Under this alternative, numerous wells would be drilled at distances of up to one mile or more from the Plant. The well spacing and yield are only educated guesses as the hydrogeology is undocumented and not well known. Collector pipes constructed of PVC would run to a treatment plant location. The water would be treated by RO to remove the salt. The water would also likely need some pretreatment prior to the RO process. The water once processed through the RO units would be acceptable for board manufacture. The water may not be acceptable for potable use without further treatment as required by applicable laws implemented by the health agencies. These may include certified operators, disinfectants or other requirements which have not yet been evaluated.

The RO treatment process would produce a waste stream of about 25 percent of the inflow water. This waste stream would have about four times the salinity of the influent water. This waste stream must also be disposed of. Three possible scenarios for disposal include (i) evaporation ponds, (ii) well injection, or (iii) delivery to the IID drainage system for eventual delivery to the Salton Sea. Because salinity will be higher than the Salton Sea and salinity is a critical issue to wallboard manufacture, this alternative is not environmentally preferred. Well injection can be difficult and expensive. Evaporation ponds are commonly used. Assuming about 400 AF/yr of water could be produced from the wells, the waste stream would be about 133 AF/yr. Assuming 6 AF/yr for evaporation indicates that about 25 acres of evaporation ponds would be required to implement this alternative.

2.6.5.2 Drilling of New Production Wells Within the Ocotillo/Coyote Wells Groundwater Basin

Under this alternative, two new wells would be drilled within the Ocotillo/Coyote Wells Groundwater Basin. These new wells would be drilled at a considerable distance to the northwest and south of Ocotillo in order to minimize the effects of USG's pumping in Ocotillo. One new well would be about 1.5 miles south of Yuha Estates area and one well would be about 1.5 miles northwest of Ocotillo. The new wells would supplement the water currently being supplied by the three existing USG wells in Ocotillo. It is assumed that each of the new wells would produce 200 AF per year of water and that the three existing wells would produce a total of 367 AF per year, divided roughly equally between the three wells.

The south well would require an eight-inch diameter pipe about six miles in length which would terminate at the USG tank near Well No. 5. From that location, the water would flow to the Plant by means of the existing or replacement pipeline. The pipe to the USG tank would be located cross-country for about one mile. The remaining five miles would be either along or under existing rights of way. About one mile of right-of-way is required from the BLM. Right-of-way for the remaining length may be available with easements. In addition to the pipeline, about 1.5 miles of overhead power and signal lines would be required along with about one mile of new dirt road. The well would be sized to produce 400 gpm and would operate about one third of the time. The well pump would be sized to overcome the head and provide the flow needed in the pipeline to move the water to the USG tank. A separate booster would not be required. The pipe material would be PVC and it would be buried with not less than three feet of cover.

The northwest well would be located about 1.5 miles west of Ocotillo. It would also be sized for 400gpm with the well discharging via an eight-inch diameter pipeline to the tank at USG Well No. 5. The total length of pipe would be approximately four miles. About 1.5 miles of overhead power and signal line would be required. About 2.5 miles of right-of-way would be required, mostly along county roads. Right-of-way for a well site is also required from the BLM.

The location of the two new wells is based on projected hydrologic conditions. Because there are no known wells in the immediate area of the potential wells, the probability of obtaining a good producing well is unknown. The likelihood of obtaining a good producing well south of the Yuha Estates area is further diminished by the predominance of two sediment layers which are known to be tighter and less permeable than in other areas of the Basin.

This alternative was considered but rejected because it does not appear to be capable of being implemented in a successful manner within a reasonable amount of time taking into account environmental, economic, and technical factors. USG does not currently own the land on which the new wells would be drilled. Thus, land or the rights to use the land for this purpose would need to be acquired from the BLM or the current private landowner. Additionally, easements or rights-of-way would need to be acquired over the private and public lands along the routes of the new pipelines. Depending on the exact route selected for the pipelines, easements or rights-of-way would need to be acquired from multiple private property owners as well as the BLM.

The feasibility of obtaining the approvals and right-of-ways needed to implement this alternative is unknown at this time.

2.6.5.3 Alternative Locations

No alternatives to the location of the Plant or the Quarry were considered for the following reasons:

- Quarrying of gypsum has been on-going since the 1920s and USG has a vested right to continue quarrying gypsum at the site (see *City of Ukiah v. County of Mendocino*, 196 Cal.App.3d 47 (1987);
- USG has been operating continuously at the Plant and Quarry since 1945;
- There are existing surface and subsurface gypsum reserves on-site sufficient to meet market demand;
- The infrastructure to develop new quarry areas on-site, process gypsum and haul it to the Plant or for purchase and transport off-site by private customers is already in place; and
- Although improvements to the Quarry and Plant have been made as discussed above, the operating process or equipment usage has not changed significantly in the past or is expected to change in the future.

2.6.5.4 Inert Material Storage Area

USG has evaluated several different ideas for recycling and using the off-specification wallboard in storage. These include recycling the material at various rates, chopping up the material and shipping it to agricultural gypsum users, having a third party contractor come on-site and sort and chop up material to expedite recycling, covering and capping the pile as it is, or hauling unusable material to a landfill. However, none of these alternatives are capable of being accomplished in a successful manner within a reasonable amount of time, taking into account economic, environmental, and technological factors.

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3.0 Affected Environment and Environmental Impacts

3.1 REGIONAL OVERVIEW, CUMULATIVE PROJECTS, AND FORMAT OF IMPACT ANALYSIS

3.0 Affected Environment and Environmental Impacts

3.1 REGIONAL OVERVIEW, CUMULATIVE PROJECTS, AND FORMAT OF IMPACT ANALYSIS

Chapter 3.0 provides an analysis of potential impacts that are foreseeable from the USG Expansion/Modernization Project. Sections of this chapter describe the following: for each environmental issue area (1) the focus of the analysis; (2) a summary of the environmental setting as it relates to the specific issues; (3) an evaluation of project-specific impacts using significance criteria and mitigation measures; and (4) a determination of the level of significance after mitigation measures are implemented. Each of the environmental evaluations is conducted using significance standards established by County and State CEQA Guidelines, and NEPA.

3.1.1 Regional Overview

3.1.1.1 Regional Environment

Geology

The Project's operational areas can be divided into the Quarry area and the manufacturing Plant. The Quarry and Plant are both located in southeastern California, in the western portion of Imperial County within the Colorado Desert, which lies at relatively low elevations, in some places below sea level, as shown in Figure 1.0-1, Regional Location. 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.

Plant and Water Supply Area

The Ocotillo/Coyote Wells Groundwater Basin is an alluvial basin that contains silts, sands, and gravels that have been eroded from the surrounding mountains. These Quaternary alluvial deposits are highly permeable and contain groundwater of relatively good quality. Along the western and northern edges of the basin, gravels overlay and abut the bedrock that forms the Jacumba and Coyote Mountains. In the central and eastern parts of the basin, the gravels overlay Tertiary sediments that were deposited in a marine (i.e., ocean or shallow sea) environment. Based on the depth of wells installed in the basin, the thickness of the gravel varies from zero feet along the mountain fronts to at least 600 feet in the Ocotillo area.

There are several prominent fault zones within the basin. The Elsinore Fault forms the boundary between the alluvial sediments of the basin and the bedrock of the Coyote Mountains. South of Yuha Springs, the Laguna Salada Fault separates the alluvial basin sediments on the west from an area of primarily Tertiary marine sediments to the east.

The Tertiary marine sediments are believed to be present beneath the alluvial gravels throughout most of the Ocotillo/Coyote Wells Groundwater Basin. East of Coyote Wells and the Laguna Salada Fault, there are numerous areas where the Tertiary marine sediments crop out and are exposed on the surface of the basin. The Tertiary marine sediments also crop out in several areas west of Coyote Wells and the Laguna Salada fault zone. Exposures of the marine sediments occur over a large area east of Yuha Estates, and in smaller areas to the west and south of Nomirage and several miles to the northwest of Ocotillo. In general, the geology east of Coyote Wells and the Laguna Salada Fault zone is dominated by the marine sediments, although the alluvial gravels are present in many areas.

Quarry Area

The Quarry is located in the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the larger Vallecito Mountains), and southwest of the Fish Creek Wash as depicted in Figure 2.0-1, Location of Project Components. The site lies in an elongated blind valley and the lower hillsides along an unnamed wash located along the west side of the Fish Creek Mountains. The wash flows 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 trend. These mountains reach a maximum elevation of about 2,330 feet above sea level. In the immediate vicinity of the Quarry, elevations range from 500 to 800 feet above sea level along the ridgelines.

Quarry area geology consists of nearly pure beds of gypsum dated from the Miocene age. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation, Fish Creek Gypsum, and Pliocene Marine Imperial Formation. The gypsum beds in the Quarry area are 100-200 feet thick, and are exposed continuously on the surface for a distance of about 2.5 miles. Structurally, they form the northeast limb of a northwest trending syncline, the axis of which lies in the broad valley to the west.

The dominant landforms in the Quarry are a broad alluvial wash and adjacent toeslopes and mountainsides. 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 eroded talus (rock debris). Exposed ridge tops have thin soil overlying bedrock.

Climate and Precipitation

Both the Plant and Quarry are located in a desert environment, marked by relatively high temperatures and relatively low precipitation. Average daytime high temperatures range from 70 degrees Fahrenheit (F) in January to in excess of 110 degrees F in July and August. Average low temperatures range from 40 degrees F to 80 degrees F.

Plant and Water Supply Area

Monthly rainfall data between 1971-2002 for the area of the Plant was measured at the NOAA Ocotillo 2 rainfall guage, located in Ocotillo. Most of the rain falls in December through March, but August and September can experience severe thunderstorms associated with monsoon-like 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.

To appropriately present the variation in rainfall over time, the annual precipitation is typically presented in terms of a water year. For the Project area, a water year extends from October of one year through September of the subsequent year. The average annual water-year precipitation is approximately 3.5 inches. From 1975 through 1993, rainfall was typically above average, with 12 of 18 water years having above-average precipitation and only two water years having annual average precipitation that was less than 3.0 inches (i.e., one-half inch or more below the mean). Since 1993, rainfall has been average to below average.

The relatively high temperatures also result in a relatively high evaporation rate for the region. The California Department of Water Resources (Bulletin #113-3) reports a total evaporative demand for the area of approximately 100 inches per year, with a potential evapotranspiration rate of over 82 inches per year. The potential evapotranspiration is the rate of water lost to the atmosphere by irrigated agriculture in the County.

Quarry Area

Although the average annual rainfall in the vicinity of the Plant site is around 3.5 inches per year, at the Anza Borrego State Park headquarters westerly of the Quarry site, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year.

The BLM maintains a weather data station in the Fish Creek Mountains in the southeasterly portion of the Quarry site. Data from this station show that rainfall experienced at the Quarry is similar to the County's average rather than the Anza Borrego Park Headquarters site.

Hydrology and Water Quality

Plant and Water Supply Area

The existing operation and Proposed Action rely on three water supply wells for water for potable domestic uses and processing and production of wallboard and other gypsum products. The three wells are located in the Ocotillo/Coyote Wells Groundwater Basin in the southwest part of Imperial County. The watershed for the basin consists of approximately 87 square miles of upland area within the Jacumba and Coyote Mountains and approximately 80 square miles of alluvial valley floor. Due to the relatively low precipitation and high evapotranspiration that occurs in the area, virtually all of the groundwater recharge that occurs in the basin comes from runoff from the mountains. The depth to groundwater varies depending on the ground surface elevation and the slope of the groundwater surface. In the Yuha Springs area, to the east of Yuha Estates, the water table is only a few feet below ground surface (ft bgs). Just east of Coyote Wells, the depth to groundwater ranges from 10 ft bgs to 25 ft bgs. In the Ocotillo area, the depth to groundwater ranges from under 100 ft bgs to over 160 ft bgs. At some locations in Yuha Estates, the depth to groundwater may exceed 200 ft bgs.

There are several communities in the Ocotillo/Coyote Wells Groundwater Basin, including Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. These communities, USG and several other commercial/industrial and agricultural users, depend on the Ocotillo/Coyote Wells Groundwater Basin as their sole source of potable water. Surface water is not present in the basin and there are no water imports into the basin. The Ocotillo/Coyote Wells Groundwater Basin was designated as a "sole-source aquifer" by the U.S. EPA in 1996 (61 FR 47752, September 10, 1996) and is, thus, part of the Sole Source Aquifer Protection Program, authorized by Section 14245(e) of the Safe Drinking Water Act.

Quarry Area

The existing and proposed Quarry water wells are located along the southwestern boundary of the Ocotillo Valley Groundwater Basin. This basin is distinctly different from the Ocotillo/Coyote Wells Groundwater Basin in which the USG production wells for the Plaster City Plant are located.

The Ocotillo Valley Groundwater Basin is located to the west of the southwestern corner of the Salton Sea. The Ocotillo Valley consists of sedimentary deposits derived from the surrounding mountain ranges, similar to the sedimentary deposits of the Ocotillo/Coyote Wells Groundwater Basin. The Coyote Creek fault trends northwest near the southwestern margin of the basin. The proposed location of Quarry Water Well #3 is approximately 4 miles southwest of the Coyote Creek fault. The surface deposits in the lower part of the Ocotillo Valley are reported to consist of the remnant shoreline of ancient Lake Cahuilla, which likely filled on several occasions in the Pliestocene due to meandering of the Colorado River. As the ancient lake dried out, saline evaporite deposits were left behind in the sediments.

The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Water Well #3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. Approximately 10 miles northeast of the proposed location for Quarry Water Well #3, groundwater discharges from two springs near the confluence of San Felipe Creek and Fish Creek Wash. Prior to 1984, flow from the San Felipe Creek Spring and the Fish Creek Spring only occurred intermittently. Since 1984, however, flow has occurred year round. The springs support the habitat for a population of Desert Pupfish (*Cyprinodon mascularius*), an endangered species.

Water-quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring are due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. The elevated water table intersects the surface at the location of the springs. From 1983 through 1996, irrigation rates have ranged from approximately 9,250 AF/year to over 12,000 AF/year, based on reported groundwater production.

Groundwater in the area is reported to occur in two aquifers: the shallow aquifer is present at depths above approximately 100 ft bgs in the center of the basin; and the lower aquifer which extends to at least 650 bgs at some locations. An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. Groundwater from the lower aquifer is used for agricultural purposes. According to DWR (Bulletin 118-75), the Ocotillo Valley Groundwater Basin covers an area of about 410 square miles, with a storage capacity of 5,800,000 AF and a usable groundwater capacity of 1,900,000 AF.

Groundwater is reported to be discharging to the Salton Sea at a rate of 2,200 AF/year to 4,500 AF/year. The rate of outflow from the Ocotillo Valley Groundwater Basin is greater than the rate of inflow, as evidenced by declining water levels in the lower aquifer. Water levels are decreasing at the rate of three feet per year. Approximately one-third to one-half of this decline is due to agricultural pumping and the balance is due to natural outflow. The naturally-occurring groundwater deficit is most likely due to long-term climatic changes and/or drainage of the lower aquifer due to the lowering of the hydrologic base level caused by the disappearance of ancient Lake Cahuilla.

Vegetation

Vegetation in the arid Colorado Desert is sparse desert shrubland dominated by creosote bush (*Larrea tridentate*) with white bursage (*Franseria ilicifolia*), burrobush (*Ambrosia dumosa*), brittlebush (*Encelia farinose*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), smoketree (*Psorothamnus spinosus*) as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*). Three special-status plant communities are reported in the area by the California Natural Diversity Data Base (CNDDB): desert fan palm oasis, mesquite bosque, and transmontane alkali marsh.

None of these three communities occur on or in adjacent areas of the Quarry or Plant site, or along the linear water line easement or narrow-gauge railroad right-of-way.

Wildlife

Despite its harsh environment, the Colorado Desert supports a diverse wildlife population, including reptiles, small mammals and the Peninsular bighorn sheep. Vegetation and habitats described above provide habitat for numerous resident and migrant wildlife species including Peninsular bighorn sheep, desert pupfish, flat-tailed horned lizard and barefoot banded gecko.

The Western Imperial/Eastern San Diego counties area includes a number of active and passive uses that impact biological resources. These include the Anza Borrego Desert State Park (camping, hiking), off-highway vehicle recreation areas (Ocotillo Wells State Vehicular Recreation Area and Plaster City Open Area), the Navy Desert Test Range and Carrizo Impact Area, various quarrying operations, roads and railroads, and farming. The central portion of the County southeast of the Salton Sea to the international border comprises the Imperial Valley, an important agricultural area in the state.

In addition, there are a number of sensitive areas also identified in the region. These include the Peninsular big-horned sheep critical habitat, the Fish Creek Wilderness Area and the West Mesa Management Area (flat-tailed horned lizard). In addition to these areas, CDFG is currently reviewing a request from the Center for Biological Diversity to formally list the Western burrowing owls as threatened or endangered. The Imperial Valley area of the County is considered the most likely area to be identified as the owl habitat.

Air Quality

Under the federal Clean Air Act (CAA), state and local authorities have primary responsibility for assuring that their respective regions are in attainment of, or have a verifiable plan to attain, the National Ambient Air Quality Standards (NAAQS). The CAA also provides state and local agencies the authority to promulgate more stringent ambient air quality standards, which is the case in California. Under the California Clean Air Act (CCAA) the more stringent California ambient air quality standards (CAAQS) are set. Enforcement is delegated to the California Air Resources Board (CARB) and regional Air Quality Management Districts. This Project is in the Salton Sea Air Basin (SSAB) under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD).

Areas that violate the NAAQS at least once during the past three years are designated as having nonattainment status. The determination of attainment or nonattainment status is determined by the CARB on the basis of air monitoring data. CARB maintains the designation listings of all the air basins and counties in the state. Imperial County is designated as nonattainment status for both Federal and State standards for ozone and PM_{10}. All the other criteria pollutants, carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, and hydrogen sulfides, are either in attainment status or "unclassified." The "unclassified" designation is defined as pollutant data that is incomplete and do not support a designation of attainment or nonattainment (CARB 2002).

The CARB operates two monitoring stations in the Calexico area and the ICAPCD operates five sites in the County, generally located in the cities in order to monitor the air near the population. There are no monitoring stations located near the Plant or the Quarry due to the absence of a sizeable local human population that would be affected by air emissions. The Quarry is located in an isolated canyon surrounded by natural open space. The Plant is located in a rural area with isolated houses adjacent to County Road 80. The nearest air monitoring station to the Quarry is at Westmoreland, approximately 25 miles to the east. The nearest monitoring station to the Plant is in El Centro, approximately 17 miles east and downwind of the site, within the middle of El Centro.

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

Aesthetics

The region is mainly located on very gently to moderately sloping alluvial fans, terraces, and nearly level basin floors and dry lakebeds. Also, there are some Pliocene and Pleistocene sediments that have been eroded and dissected to form "badlands". Clark and Borrego valleys are aligned toward northwest, along the San Jacinto and Coyote Creek faults. The elevation range is from about – 230 feet on the shore of the

Salton Sea up to about 2,000 feet in the Vallarcito Mountains. The highest elevation in the Superstition Mountains, which trend toward the northwest, is 760 feet.

The predominant natural plant communities are Ocotillo series and Creosote bush-white bursage series and, around the Salton Sea, Allscale series. There are some small areas of fan palm series in riparian areas. Mixed saltbush series is common on basin floors.

Plant and Water Supply Area

The Plant and its facilities, buildings, stockpile areas, and silos are located in the Yuha Desert and are visible to motorists traveling on Interstate 8 and Evan Hewes Highway. Given the general expansive and undeveloped nature of the area, the visual impression near the site is somewhat dominated by these facilities, especially from the adjacent BLM off-highway vehicle recreation area nearby. The Plant facilities are illuminated at night to allow for nighttime operations.

Quarry Area

The Quarry site is accessed from Highway 78 but is not visible from the highway. This road provides access to and through Anza Borrego Desert State Park, several campgrounds, private property (the nearest private resident is four miles north of the Quarry), and recreational trails within the Park. The Quarry site is also not readily visible from adjacent public recreation and wilderness areas due to its location within a canyon surrounded by hills separating the site from these areas.

Cultural Resources

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. Following the Late Archaic Period, Euroamerican exploration of the area and contact with local Native Americans gradually increased across the area. Euroamerican activity in the area, as in other areas of California, dramatically affected Native American populations and culture.

Land Use

Plant and Water Supply Area

Highway 8 is to the south of the Plant, which is located in the Yuha Desert. To the north is the El Centro Naval Reservation. To the west is the community of Ocotillo and the Coyote Mountains. To the east are the communities of Seeley, Imperial, and Heber and the City of El Centro, as well as the Sunbeam Recreation Area and El Centro Naval Auxiliary Air Station.

Quarry Area

Land uses surrounding the Quarry consist mostly of public lands, except for a few properties along Split Mountain Road. To the south of the Quarry are the Fish Creek Mountain Wilderness Area and the Anza Borrego Desert State Park. To the north are Fish Creek and the Anza Borrego Desert State Park. To the west are the Anza Borrego Desert State Park and the County of San Diego. To the east is the Fish Creek Mountain Wilderness Area.

Hazards

Although elements of the Project are located in the vicinity of state parks, and federal wilderness areas and off-highway vehicle areas, both major elements of the Proposed Action are existing facilities. The existing conditions of the Project area's relative hazards and hazardous materials are the result of current mining and manufacturing activities.

Plant and Water Supply Area

The vicinity of the Plant site is relatively undeveloped and with the exception of the Plant, there are no other manufacturing facilities nearby. Hazards to public health and safety are not readily apparent in the vicinity of the Plant site. The existing water supply line is made of asbestos cement, however, this line is buried and is not exposed to the atmosphere, and thus would not be a risk to public health and safety.

Quarry Area

The Quarry area is adjacent to public lands with uses that typically do not use or generate hazardous wastes. Nearby private properties are generally rural residential uses. To the east are agricultural uses that may use pesticides and other farm related materials. However, these would be isolated uses that would not likely affect public health and safety and are unrelated to Quarry operations. The Quarry consists of excavating and processing gypsum ore using crushing and other equipment, conveyors, storage equipment, haul roads, administration and other facilities, and an access road. Quarry operations employ heavy-duty earthmoving equipment to extract minerals and transport those materials to stockpiles that are processed by stationary crushing equipment. This equipment uses petroleum products for fuel and lubrication. Such substances include diesel fuel, gasoline, cleaning solvents, and adhesives. Finally, USG uses explosives to blast minerals from the ore body three to four times per month. The explosives are stored in portable magazines.

Traffic and Circulation

Plant and Water Supply Area

The transportation system within the study area utilizes the local roadway system and an existing rail system for movement of goods and people. Traffic accesses the Plant site via Evan Hewes Highway (S-80) which is aligned parallel to Interstate 8 and connects the Plant to El Centro. Evan Hewes Highway connects to Interstate 8 via Imperial Highway, Dunaway Road and Drew Road. Descriptions of these roadways are as follows:

- Evan 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 asphaltic overlay project.
- Interstate 8 is a four-lane divided conventional freeway which connects San Diego, California 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 connects Evan Hewes Highway to Interstate 8. The existing highway structural section is in fair condition.
- Drew Road is a two-lane undivided rural highway which connect Evan Hewes Highway near Seeley to Interstate 8. The existing highway structural section is in fair condition.

Quarry Area

The Quarry and related Project components would not generate an increase in on-road traffic trips in the Quarry area.

Acoustics/Noise

Plant and Water Supply Area

The locations of Project components are rural, sparsely populated areas with no sensitive receptors nearby. In the vicinity of the Plant site, there are BLM off highway vehicle areas where the public can drive off-road vehicles. The Plant area and surrounding industrially zoned properties are not considered to be noise sensitive.

Quarry Area

In the vicinity of the Quarry, the State Park and federal Wilderness Areas are noise sensitive for hikers traversing the remote areas of the park or wilderness area. However, there are no designated trails or camping areas in the Wilderness Area or State Park near the Quarry.

Public Health and Safety

Plant and Water Supply Area

The region is sparsely populated and there are no residents in the immediate vicinity of the Plant site. Activities at the Plant consist of rock unloading and storage areas, milling and processing areas, material warehouses, two boardlines, truck and rail loading areas, and administration and other facilities. The process of wallboard manufacturing involves activities that could generate potential health and safety impacts to Plant employees but not to the general public due to lack of a permanent population in the vicinity.

Quarry Area

The Quarry consists of gypsum extracting and hauling vehicles and equipment, crushing and other equipment, conveyors, storage equipment, haul roads, administration and other facilities, and an access road. Like the Plant, activities at the Quarry involve activities that could generate potential health and safety impacts to

Plant employees, but not to the general public due to lack of a permanent population in the vicinity.

3.1.1.2 Project Site Overview

Plant

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 Highway 80 immediately north of I-8. Figure 2.0-2, Plaster City Plant Location, shows the location of the Plant site. The Plant is also located less than 15 miles from the US/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Pipeline Replacement

The Pipeline connects the Plant to the Ocotillo/Coyote Wells Groundwater Basin, located south-west of the Plant. The pipeline is eight (8) inches in diameter and extends approximately eight and a half (8.5) miles in a south-westerly direction from the plant to the well field. The pipeline is old and in disrepair. The Proposed Action includes the replacement of the pipeline with a 10-inch diameter line.

Quarry

The Quarry is located in the western portion of Imperial County, adjacent to the Imperial County/San Diego County line. It is located at the northwest end of the Fish Creek Mountains, east of Split Mountain, and south and west of the Fish Creek Wash. The Quarry is located in a box canyon on an elongated blind valley and the lower hillsides along an unnamed wash. The Quarry is located immediately east of the Anza Borrego Desert State Park. The Quarry is also within Peninsular Bighorn Sheep critical habitat area.

3.1.2 Cumulative Projects

The Environmental Protection Agency (EPA) is the official federal reviewing agency for all EISs. According to EPA's guidance, a cumulative effect is the combined incremental effects of human activities that could pose a serious threat to the environment. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions and include both direct and indirect effects on resources.

The CEQA Guidelines (Section 15130) requires an analysis of the significant cumulative impacts of a proposed project. Cumulative impact refers to "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). The cumulative impact from several projects is defined as follows:

> The change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (Section 15355(b)).

The cumulative impact analysis may be less detailed than the analysis of the project's individual effects. The cumulative impact analysis must identify related projects through this "list" and "projection" approach, summarize effects of the related projects, and contain a reasonable analysis of cumulative impacts and mitigation measures (Section 15130(b)(1)(A)(B)).

Each impact evaluation in this Chapter evaluates the reasonably foreseeable potential cumulative effects of the Proposed Action, with other existing activities in the area and other planned projects.

Criteria for evaluating the significance of adverse effects are identified for each environmental issue. These criteria, which are based on resource sensitivity, quality, and quantity, are also applicable to cumulative impacts. The timing and duration of each activity is also an important consideration for evaluating the potential cumulative effects of activities which occur only for a limited period. In those cases, a cumulative effect may occur only when two or more of the activities are occurring simultaneously. These effects are then evaluated for their impact in combination with other activities in the area for cumulative impact.

3.1.2.1 Other Activities in the Area

The region of influence for the analysis of cumulative impacts varies from resource topic to resource topic. For example, cumulative noise impacts may only be associated with projects that are geographically proximal, and may only affect a small area close to the noise-generating source. In contrast, cumulative impacts to air are determined on a regional airshed basis, and are more appropriately considered based on the General Plan and the current Air Quality Management Plan. Thus, the evaluation needs to consider projects which either are physically located in close proximity to the Proposed Action, or which may have similar impacts on regional resources.

The Project site is located in an unincorporated area of Imperial County. The County Planning Department was contacted for other projects for which applications have been filed, or which have been recently approved, but not yet constructed. CEQA establishes that the environment for which the project is evaluated is established at the time of issuance of the Notice of Preparation (Guidelines Section 15130(b)), which was issued December 20, 2001.

The BLM was also contacted for other projects or new management activities planned on federal lands in the vicinity. Neither agency's records revealed any local or regional planned future projects that could be considered to be in proximity to any of the Project elements with the potential for a cumulative effect. This is not unexpected, due to the remote location of the Project.

Cumulative effects of the Project, together with ongoing existing conditions (such as regional groundwater withdrawal) are considered as part of the effects of the Proposed Action on baseline conditions.

3.1.3 Format of Impact Analysis

Each area of concern (geology, hydrology, etc.) will be addressed in its own section and will generally have four major components:

1. Introduction of concern
2. Affected environment
3. Thresholds of significance, environmental impacts and mitigation measures
4. Analyses of cumulative impacts and mitigation measures for the proposed action and alternative actions

A discussion of NEPA's Affected Environment (Environmental Setting in CEQA) and of Environmental Consequences and Mitigation Measures (Impacts and Mitigation Measures in CEQA) is required for both an EIR and an EIS. CEQA requires an identification of significant unavoidable impacts, which are those impacts for which mitigation to a less than significant level is not feasible. CEQA does not require a discussion of remaining impacts once the level of significance has been reduced through mitigation to a level of less than significant. The format for each subsection is as follows:

Introduction

The Introduction describes the purpose of the section and identifies the main issues of the analysis.

Affected Environment

The Affected Environment section summarizes the existing conditions at the regional, sub-regional and local level, plans, policies and regulations, as applicable.

Thresholds of Significance, Environmental Impacts and Mitigation Measures

The Thresholds of Significance, Environmental Impacts and Mitigation Measures section focuses on project-specific impacts. Thresholds for determining project-level impact significance are identified. Project-specific mitigation measures and potential impact significance after implementation are identified. Individual impacts are addressed for the Proposed Action and each Alternative.

Proposed Action: Impacts and Mitigation Measures

Impact

Impact statements offer a concise summary of relevant concerns, including level of significance. Explanatory text describes the appropriate or relevant analysis.
A general statement of the impact expected is provided.

Explanatory text describes the appropriate or relevant analysis and the type and degree of impacts expected.

Mitigation Measures:

> *Project-specific mitigation is identified that would reduce the impact to the degree possible. In some cases, the measure is cited from existing County Conditions of Approval and BLM Stipulations.*

Explanatory text is included, as necessary, to describe how the mitigation measure has been or would be implemented, or how effective it has been or is expected to be.

Level of Significance After Mitigation: A conclusion statement is made identifying the level of significance following mitigation.

Alternatives to the Proposed Action: Impacts and Mitigation Measures

Impact

This section includes a general statement of how the Alternatives differ from the Proposed Action.

Explanatory text describes the elements of the Alternative that differ from the Proposed Action, focusing on the specific impacts being analyzed.

Mitigation Measures:

Alternative-specific mitigation is identified. In some cases, as the environmental consequences of the Alternative would be similar to the Proposed Action, the mitigation measures would be identical.

Explanatory text is included, as necessary, to describe how the mitigation measure would be implemented, or how effective it is expected to be.

Level of Significance After Mitigation: A conclusion statement is made identifying the level of significance after mitigation.

This format will repeat for each of the alternatives being considered, comparing the relevant impacts within a single area of concern.

3.1.3.1 Determination of Significance

For each area of analysis, a series of criteria are presented for determination of significance. These criteria present thresholds or other methods for determining whether a particular environmental impact is considered to be significant. The analysis in each section presents a determination of whether, following mitigation, each impact is significant, based on the criteria stated in that section. Some impacts are less than significant for the Project as proposed, and mitigation is not required. This meets the requirements of the BLM NEPA Handbook for a description of "assumptions and assessment guidelines."

Three impact categories are used in this report:

- **Less than Significant:** The impact would cause no substantial change in the existing or projected future environment, therefore no mitigation is required. Or, while there may be some associated impact, it is insignificant or acceptable as defined by the applicable thresholds of significance.

- **Significant:** Under CEQA, a significant impact is defined as a substantial, or potentially substantial, adverse change in the environment (CEQA § 21068). CEQA Guidelines state that this determination is made by the decision-making body, and is based on scientific and factual data, to the extent possible. In evaluating the significance of an impact, the lead agency must consider direct and indirect consequences. The determination that an impact is significant is based on the criteria stated in this document.

  Under NEPA, factors to consider in determining significance are set forth in 40 CFR 150; 8.27. Significance is determined by comparing the impact to some parameter or maximum/minimum level of effect beyond which the impacts become significant, i.e., significance threshold (BLM, 1988).

  "Significantly" as used in NEPA requires considerations of both context and intensity:

  Context: This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interest, and the locality. Significance varies with the setting of the Proposed Action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

  Intensity: This refers to the severity of the impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

a. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.
b. The degree to which the Proposed Action affects public health and safety.
c. Unique characteristics of the geographic area such as proximity to historic and cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
d. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
e. The degree to which the possible effect on the human environment is highly uncertain or involves unique or unknown risks.
f. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
g. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
h. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register or Historic Places or may cause loss or destruction of significant scientific, cultural, or historic resources.
i. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
j. Whether the action threatens a violation of federal, State, or local law requirements imposed for the protection of the environment.

- **Significant and Unavoidable:** An impact is considered to be significant and unavoidable when it results in a substantial effect on the environment for which no mitigation has been identified as feasible to reduce the impact to a less than significant level. In some cases, mitigation is proposed to reduce the impact as far as is feasible, although mitigation to reduce the impact to a less than significant level is not feasible.

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3.2 GEOLOGY

3.2 GEOLOGY

3.2.1 Introduction

This section describes the geologic conditions that occur at the Plant and the Quarry, as well as the surrounding region. It also provides a discussion of the potential geologic impacts and mitigation measures. Information used to prepare this section is taken from the *Seismic and Public Safety Element* of the Imperial County General Plan, 1993, the *Geologic Review of the Ocotillo/Coyote Wells Basin, Imperial County California with Recommendations for Changes to the Proposed Groundwater Model*, prepared by Bookman-Edmonston Engineering, Inc., 2003, and the *Fault Activity Map of California and Adjacent Areas*, prepared by the California Department of Conservation, Division of Mines and Geology, 1994.

3.2.2 Affected Environment

The affected environment described in this section addresses the environment of the areas in which the Proposed Action is situated.

3.2.2.1 Regional Geology

The Quarry and Plant are both located in southeast California, in the western portion of Imperial County within the Colorado Desert, which lies at relatively low elevations, in some places below sea level, as shown in Figure 1.0-1, Regional Location. The western portion of Imperial County is characterized by a series of low lying mountains associated with the Peninsular Range, opening up to the Imperial Valley and Salton Sea trough to the east.

The Plant is located in the West Mesa area of the County defined by its elevation in relation to the Imperial Valley. The West Mesa is on a series of alluvial fans emanating from the Jacumba, Coyote, and Fish Creek Mountains associated with the Peninsular Range that defines eastern San Diego County and western Imperial County. Elevation of the West Mesa ranges from approximately 400 feet above sea level at the base of the mountains to sea level; the Imperial Valley is below sea level adjacent to the West Mesa.

The Quarry is located in the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the larger Vallecito Mountains), and southwest of the Fish Creek Wash as depicted in Figure 2.0-1, Location of Project Components. The Quarry lies in an elongated blind valley and the lower hillsides along an unnamed wash located along the west side of the Fish Creek Mountains. The wash flows 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 trend. These mountains reach a maximum elevation of about 2,330 feet above sea level. In the immediate vicinity of the Quarry, elevations range from 500 to 800 feet above sea level along the ridgelines.

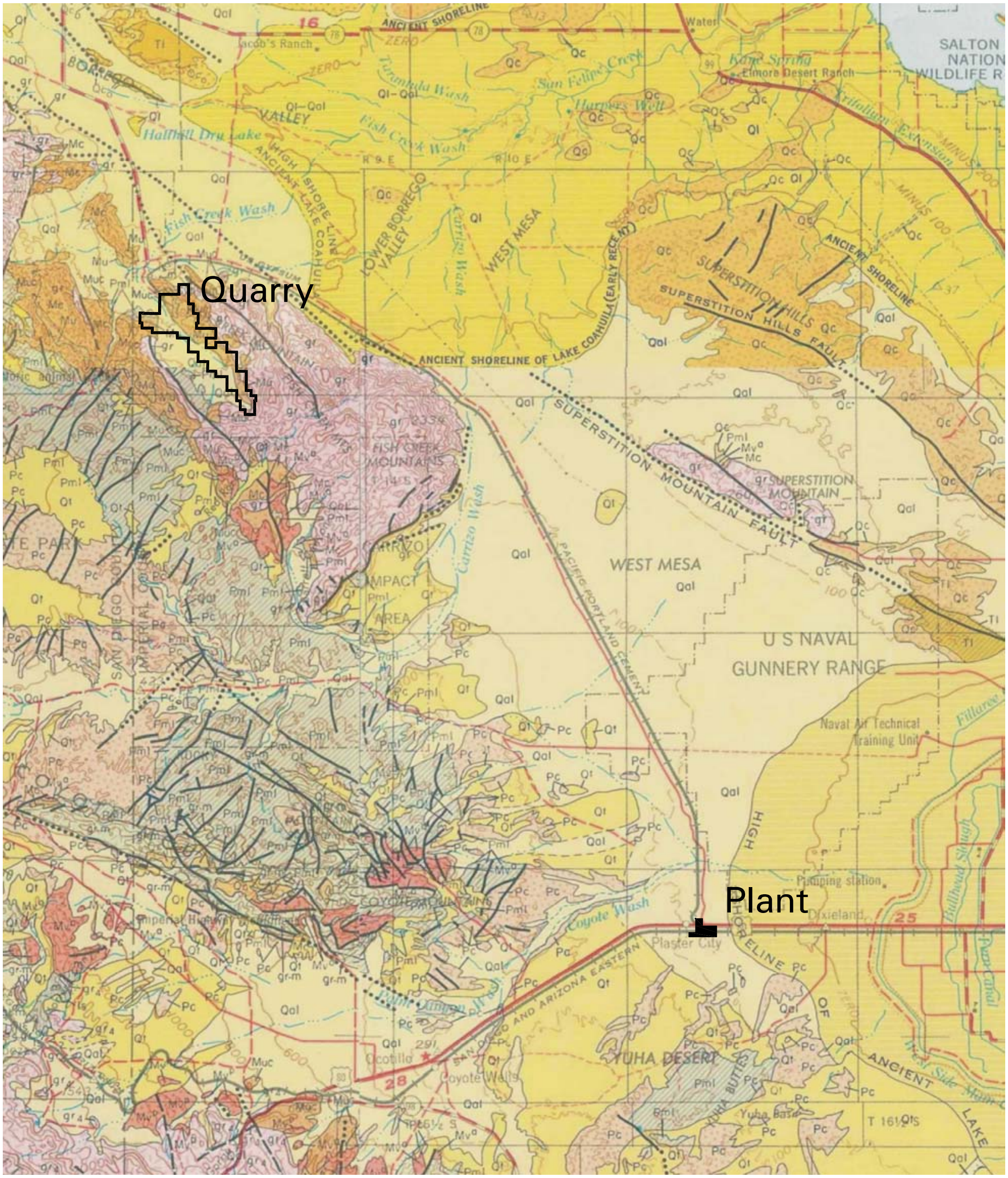
Plant and Water Supply Area Geology

The West Mesa area is located on a series of alluvial fans; it contains silts, sands, and gravels that have been eroded from the surrounding mountains. These Quaternary alluvial deposits are highly permeable and contain groundwater of relatively good quality, as discussed below. Along the western and northern edges of the basin, the gravels overlay and abut the bedrock that forms the Jacumba and Coyote Mountains. In the central and eastern parts of the basin, the gravels overlay Tertiary sediments that were deposited in a marine (i.e., ocean or shallow sea) environment. Based on the total depth of wells installed in the Ocotillo/Coyote Wells Groundwater Basin, the thickness of the gravel varies from zero feet along the mountain fronts to at least 600 feet in the Ocotillo area.

There are several prominent fault zones within the vicinity of the Project Components. The Elsinore Fault forms the boundary between the alluvial sediments of the West Mesa area and the bedrock of the Coyote Mountains (see Figure 3.2-1, Regional Geology). South of Yuha Springs, the Laguna Salada Fault separates the alluvial basin sediments on the west from an area of primarily Tertiary marine sediments to the east (see Figure 3.2-2, Generalized Geology of the Southerly Half of Imperial County).

The Tertiary marine sediments are believed to be present beneath the alluvial gravels throughout most of the Ocotillo/Coyote Wells Groundwater Basin. East of Coyote Wells and the Laguna Salada Fault, there are numerous areas where the Tertiary marine sediments crop out and are exposed on the surface, as shown in Figure 3.2-2. In general, the geology east of Coyote Wells and the Laguna Salada Fault zone is dominated by the marine sediments, although the alluvial gravels are present in many areas.

The Tertiary marine sediments also crop out in several areas west of Coyote Wells and the Laguna Salada fault zone. Exposures of the marine sediments occur over a large area east of Yuha Estates, and in smaller areas to the west and south of Nomirage and several miles to the northwest of Ocotillo.



Source: USGS

- Faults

Figure 3.2-1
Regional Geology
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

N

0 4 Miles
SCALE 1" = 4 Miles

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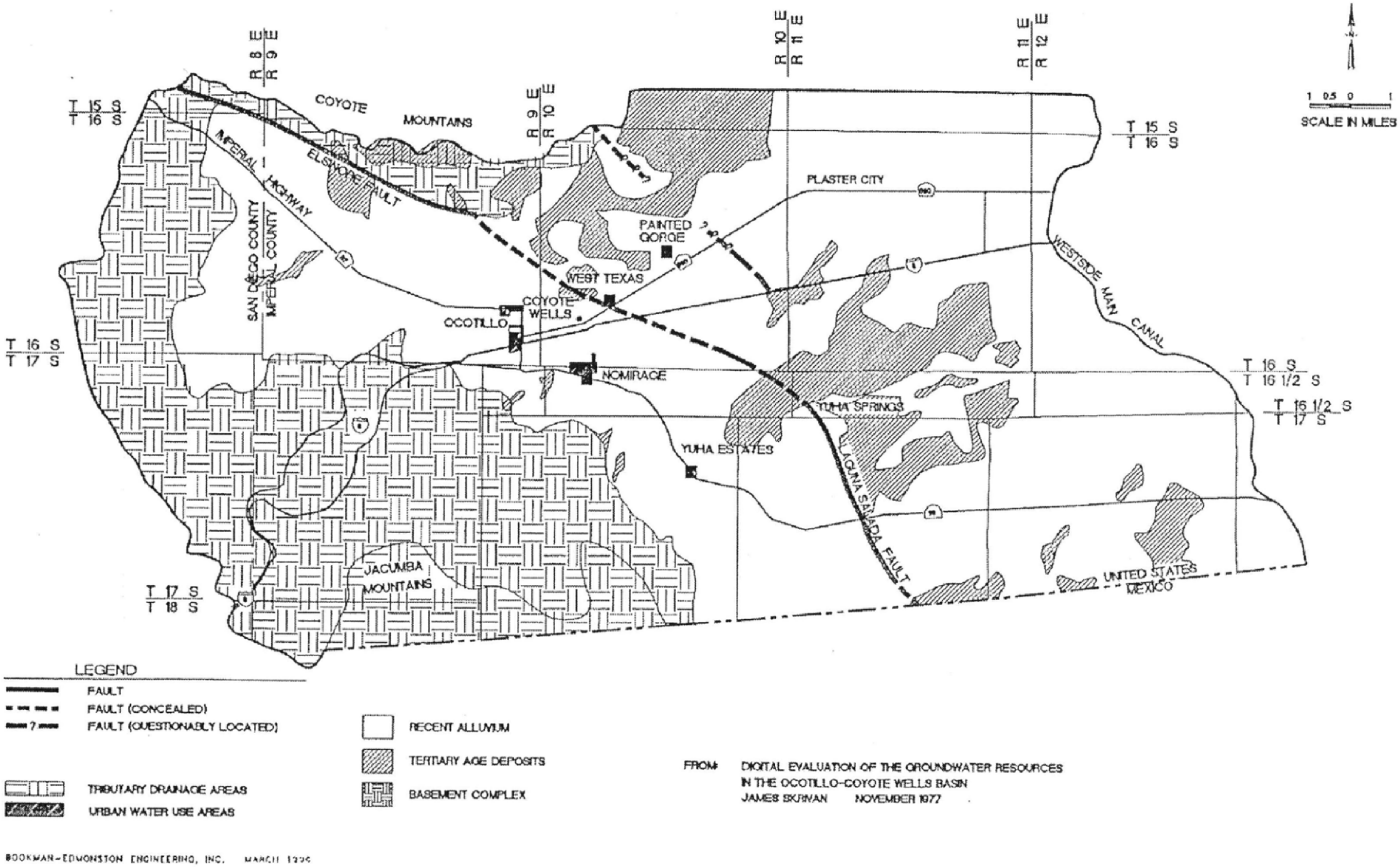

Figure 3.2-2
Generalized Geology of the Southerly Half of Imperial County
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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Several previous studies have assumed that the Elsinore Fault and the Laguna Salada Fault are connected in the subsurface to the east of Coyote Wells (USGS, 1977; Bookman-Edmonston, 1996). These studies also assume that the subsurface fault zone acts as a hydraulic barrier to groundwater flow and assigned low-permeability properties to the fault zone in numerical groundwater models (for an expanded discussion of this issue, see Section 3.3, Hydrology and Water Quality). The basis for this assumption is a change in the hydraulic gradient (i.e. the slope of the groundwater surface) and a change in the water chemistry across the assumed fault zone. More recent field evaluations (Bookman-Edmonston, 2003) indicate that the Elsinore Fault and Laguna Salada Fault may not be connected as a continuous fault zone through the area east of Coyote Wells.

Quarry Area Geology

Quarry area geology consists of nearly pure beds of gypsum dated from the Miocene age. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation, Fish Creek Gypsum, and Pliocene Marine Imperial Formation. The gypsum beds in the Quarry area are 100–200 feet thick, and are exposed continuously on the surface for a distance of about 2.5 miles. Structurally, they form the northeast limb of a northwest trending syncline, the axis of which lies in the broad valley to the west. The general strike of the gypsum beds is north 10–20 degrees west and dip 25–35 degrees southwest. Locally, the beds are warped into minor folds. The material is a light buff-gray, fine to medium-grained compact, equi-granular rock composed almost entirely of gypsum. Minor amounts of anhydrite are present in some parts of the deposit mainly as thin beds and lenses. Very minor shreds of biotite occur disseminated in the beds along with a finely divided opaque material, which is probably iron and manganese oxides. Sodium chloride is present in very small quantities. The basal 5-to-10 feet consists of interbeded shale, gypsum, and sandstone, as do the uppermost beds of the formation although they are not exposed in the mine area.

The geologic units in the Quarry area and vicinity are shown in Figure 3.2-3, Quarry Area Geologic Units, and discussed below. A geologic cross-section is shown in Figure 3.2-4, Geologic Cross-Section A.

Granitic Bedrock (Kgr)

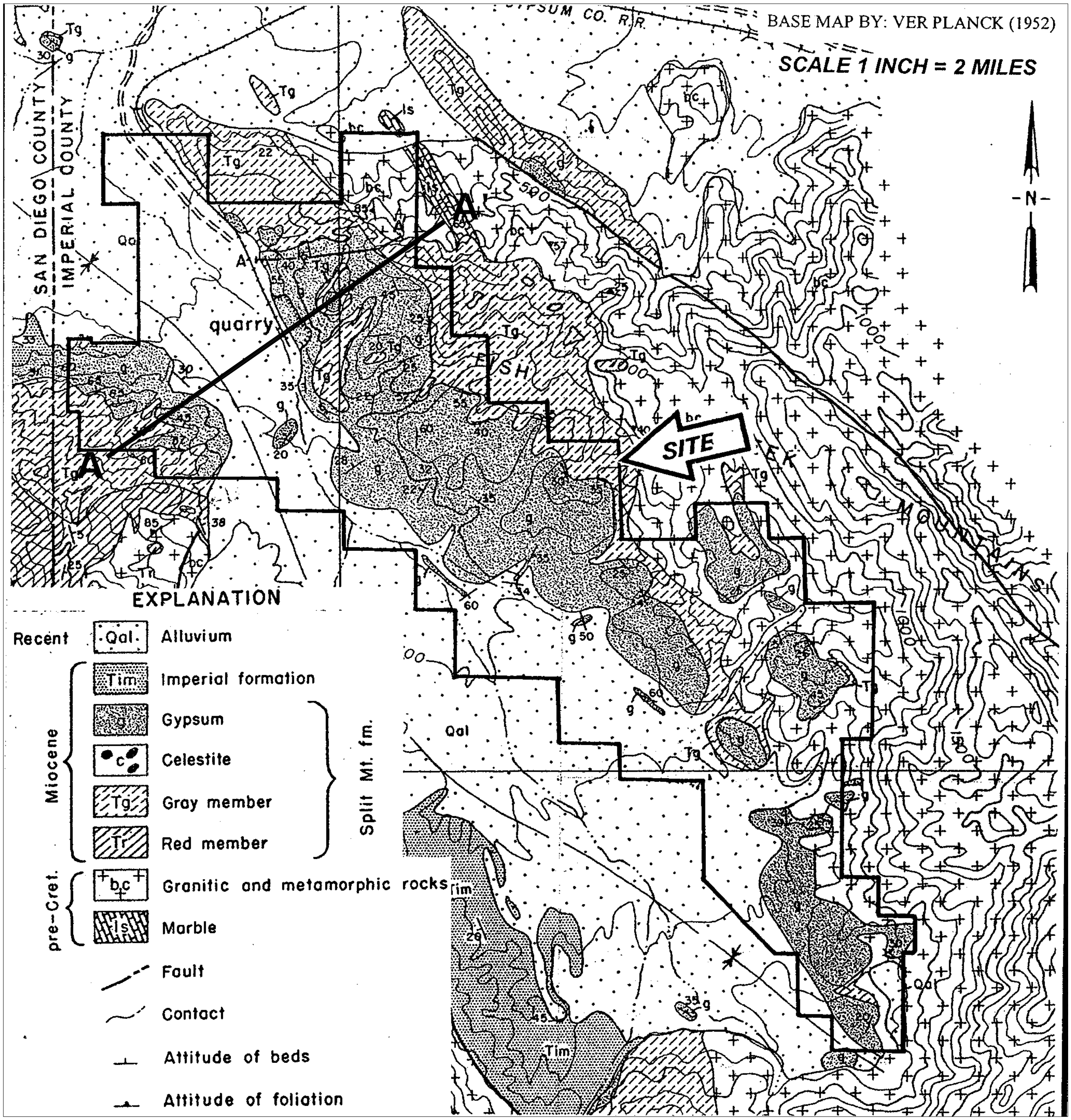
Granitic bedrock of tonalite composition is exposed along the eastern side of the mapped area. The tonalite is coarse-grained and dark gray to black, with minor felsic dikes and sills. Foliation is moderately developed, with no preferred orientation observed. In many places, the rock grades to granitic gneiss. Natural slopes include some rounded boulders. These rocks are Cretaceous and older.

Split Mountain Conglomerate (Tsm)

This unit consists primarily of massive, well-consolidated conglomerate with subrounded clasts up to approximately 10 feet in maximum dimension. Clast types are largely tonalite in the mapped area. Weathered exposures are dark reddish brown and contrast with the dark gray color of fresh exposures. This unit rests on the tonalite and is a basal conglomerate derived from it. In the Split Mountain Gorge area to the west, the conglomerate is overlain by a lens of rock slide megabreccia, but the megabreccia is not present in the mapped area. In the mapped area, the uppermost portion of the Split Mountain Conglomerate consists of fine-grained sandstone with minor shale. The fine-grained beds grade upward into the Fish Creek Gypsum, described below. The thickness of the Split Mountain Conglomerate decreases from at least 600 feet in the northern part of the mapped area to less than approximately 100 feet in the southern portion.

Fish Creek Gypsum (Tfc)

The Fish Creek Gypsum is up to 200 feet thick and averages about 125 feet in thickness in the mapped area. The gypsum is generally greater than 95 percent pure, with minor impurities consisting of clays, carbonate and detrital minerals. The color is variable, but is generally light gray to white, with patches of red and black. The gypsum is an evaporite deposit, formed in a shallow marine environment in Miocene time. As exposed in outcrop and in quarry faces, the gypsum is generally very dense, hard and massive. Blasting is required for efficient excavation. Where thinly bedded exposures are present, the bedding is often highly contorted on a small scale, similar to other evaporite deposits. The deformation is attributed to plastic flow due to gravity and volumetric expansion associated with the change anhydrite to gypsum. However, the deformation is internal to the gypsum bed. The underlying clastic material does not display similar deformation.



Source: C.H.J., Incorporated

A——A' Cross-Section Location

Figure 3.2-3
Quarry Area Geologic Units

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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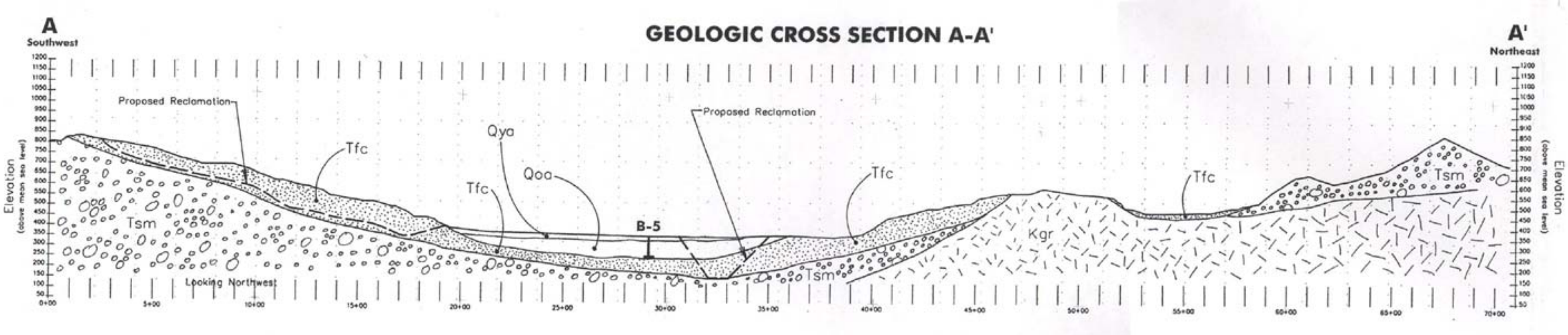

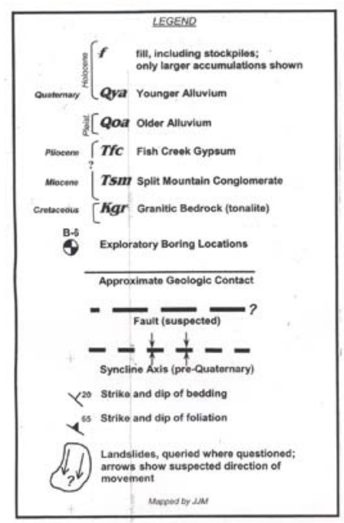

Source: Lilburn Corporation

Figure 3.2-4
Geologic Cross-Section A

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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In most of the mapped area, bedding in the gypsum dips at a moderate to shallow angle (approximately 25-35 degrees) to the southwest. In the western portion of the mapped area ("Shoveler area"), bedding dips moderately to the east. This relationship is a result of a northwest-trending syncline developed in the pre-Pleistocene materials.

The upper surface of the gypsum bed is covered by an oxidized horizon, which lends a yellowish color to the gypsum where it is exposed on stable (relatively flat) geomorphic surfaces. The Fish Creek Gypsum is overlain by clastic materials of the Pliocene Imperial Formation.

Older Alluvium (Qoa)

The broad wash that traverses the mapped area includes a number of relatively stable and elevated erosion surfaces (geomorphic surfaces), particularly in the southern third of the site. The stability of these surfaces is evidenced by various factors including the degree of soil development, the presence of desert pavements and the local topography. The desert pavements are identified by the concentration of surficial clasts and the presence of varnish on the top sides of clasts and rubification (reddening) on the bottom sides. Bar and swale topography is present in these areas, suggesting a long period of gradual dissection. Where exposed in the sides of active drainages, these soils exhibit strong carbonate and gypsum cementation in their upper horizons. All of these factors indicate a long period of subaerial exposure, probably at least 20,000 years and up to approximately 200,000 years. As such, the stable, uplifted surfaces were mapped as older alluvium of late Pleistocene age. Many surfaces of varying ages are present, but all were mapped as older alluvium.

The older alluvium consists of gray to brown, gravelly sands with silt, cobbles and boulders. Clasts are largely subangular tonalite, but metamorphic and gypsum rock clasts are present.

Observation of steep side slopes in incised drainages in the southern third of the site indicates that the older alluvium is only a thin veneer above a relatively planar erosion surface developed on the Fish Creek Gypsum.

Younger Alluvium (Qya)

Active washes incise all of the other units in the mapped area. The active washes merge in the northern portion of the mapped area, becoming a single broad wash several hundred feet wide. The wash deposits are generally coarse sands with cobbles in the southern portion of the site, grading to silty fine sands in the northern portion of the site. Clasts are largely subangular to subrounded tonalite, but metamorphic and gypsum rock clasts are present. No soil development was observed and these materials are entirely unconsolidated.

Fill (f)

Fill observed at the site is associated with material and debris stockpiles in the area of quarrying, as well as with graded pads in the structure areas, with roadways and the rail spur.

3.2.2.2 Mineral Resources

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 come from this deposit; of that, 30.1 million tons have been extracted by USG since 1945. Since 1984, an average of one million tons of gypsum is produced by USG's Plaster City Plant each year. This is the sole active gypsum quarry in the County, and the largest gypsum quarry in the United States. The Plaster City Quarry accounts for 52 percent of statewide gypsum production, and the expected life of the deposit is over 80 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 the United States Gypsum Company. On the southeast portion of United States Gypsum'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.

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.

3.2.2.3 Seismicity

Borrego Valley (north of the Quarry) and West Mesa are located in the vicinity of three major fault zones: 1) the San Andreas fault zone to the northeast, which runs along the east side of the Salton Sea, 2) the San Jacinto fault zone which traverses western Imperial County through the Peninsular Ranges and into the Borrego Valley and West Mesa, and 3) the Elsinore fault zone to the southwest. The Coyote Creek fault, which runs through Ocotillo Wells and skirts the Fish Mountains east of the Quarry, is associated with the San Jacinto fault zone. Known regional and local faults are shown in Figure 3.2-1, Regional Geology. All three of these fault zones include several active faults that are characterized by strike-slip movement. Extensional forces created by movement along these faults results in down-dropping of structural blocks and formation of a complex pull-apart structure across the Imperial Valley which results from the northwesterly drift of the Peninsular Ranges away from the North American Continent causing the Imperial Valley to be spreading out; the Borrego Valley is a "pull-apart basin". The Quarry is located on the structural block between the San Jacinto and Elsinore fault zones.

The San Jacinto fault is the most active fault in southern California. In Imperial County it is represented by the Coyote Creek fault, located approximately 3 miles northeast of the Quarry. The southeast portion of the Coyote Creek fault is very active, having ruptured the ground surface twice in the last 30 years. Several other regionally significant strands of the San Jacinto fault zone exist in the area, including the Superstition Mountain fault (approximately 6 miles southeast of the Quarry and 12 miles from the Plant), the Superstition Hills fault (approximately 10 miles east of the Quarry and 12 miles from the Plant), and the northeast-trending Elmore Ranch fault (approximately 11 miles east of the Quarry and 6 miles from the Plant).

Numerous large earthquakes have occurred in the site region in the historic time period. A map of recorded earthquake epicenters is included as Figure 3.2-5, Regional Earthquake Epicenters: 1977-2002. The epicenters and magnitudes that are shown are based on data from recording instruments in the CalTech database. This enclosure presents circles as epicenters of earthquakes with ML (i.e., the magnitude of a local earthquake) equal to or greater than 4.0 that were recorded from 1977 through 2002.

Table 3.2-1, Modified Mercalli Scale, displays earthquake magnitude scales, and associated physical damages.

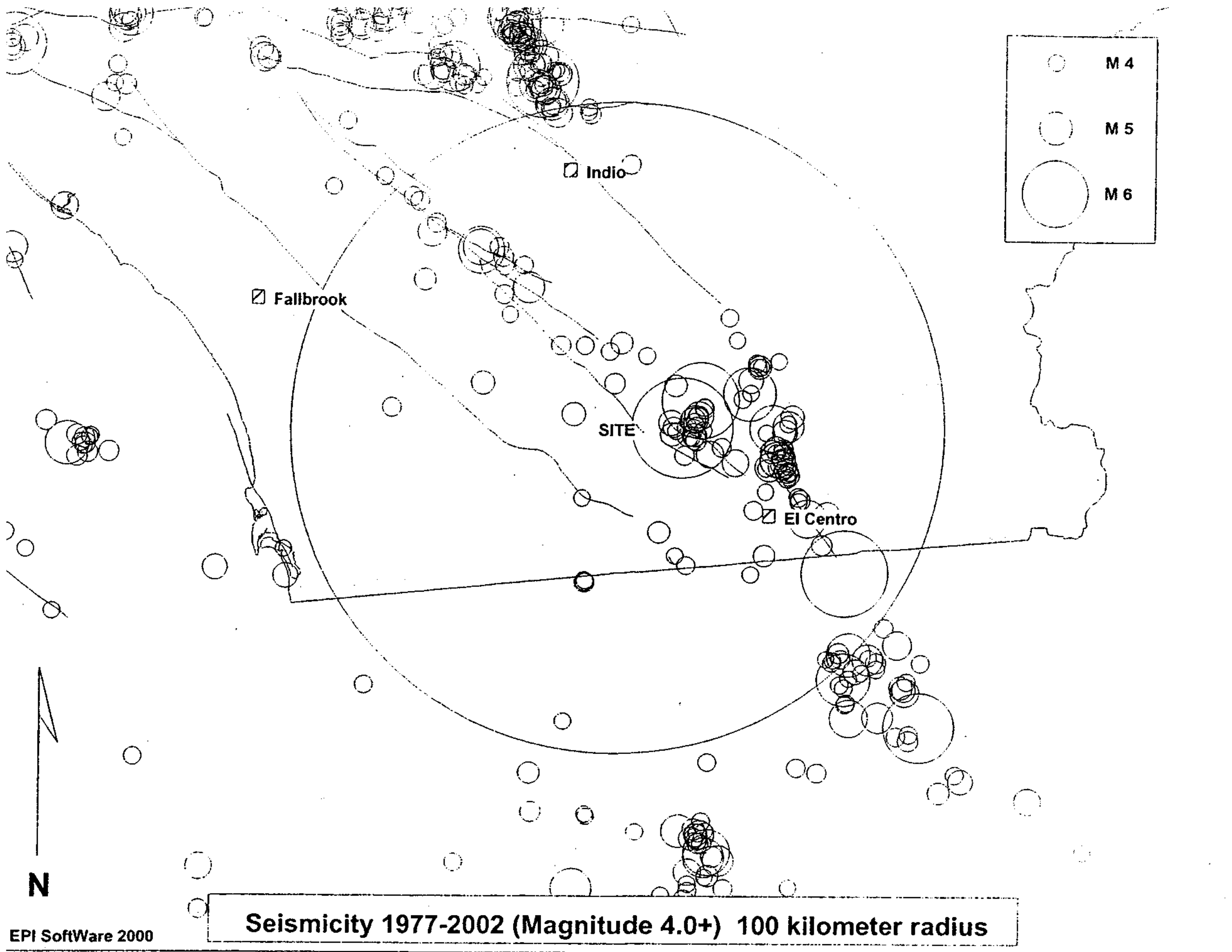
Between 1899 and 1990, seven earthquakes of ML 6.0 or greater have occurred along the San Jacinto fault. The closest of these earthquakes, the ML 6.5 Borrego Mountain earthquake of April 9, 1968, resulted in ground surface rupture along the Coyote Creek fault and the Superstition Hills fault. This earthquake caused moderate ground shaking and slight damage to structures in the Lower Borrego Valley. The Plant has reportedly not been damaged by past earthquakes. The San Jacinto fault is the most seismically active fault in southern California, although it has no record of producing great events comparable to those that occurred on the San Andreas fault during the Fort Tejon (north of Los Angeles in the Tehachapi Mountains) earthquake of 1857 and the San Francisco earthquake of 1906.

The Elsinore fault zone is located approximately 12 miles southwest of the Quarry. The Elsinore fault is an active fault without a historical record of ground rupture. The only large historical earthquake that can definitely be attributed to the Elsinore fault was a magnitude 6.0 event in 1910 in the Temescal Valley area. This event caused damage to structures from Corona to Wildomar in western Riverside County. Since 1932, four magnitude 4.0+ earthquakes have occurred along the Elsinore fault zone in the Santiago Peak area.

Other faults such as the San Andreas fault exist in the region at greater distances from the area, but are considered less important to the facility from a ground shaking standpoint.

Geologists reviewing the Quarry site found no evidence of active faulting traversing the mapped area of the Quarry upon review of stereoscopic aerial photographs, or during the field mapping. Ground rupture due to primary faulting in the mapped area is not anticipated. No geologic survey of the Plant site was conducted.

In the southeast portion of the mapped area of the Quarry, two outliers of the Fish Creek Gypsum exist east of the main body. Review of aerial photographs suggests that these outliers are bounded by two major steeply-dipping to vertical northwest-trending faults. These inferred faults do not traverse any significant Quaternary-age materials, which hinders an assessment of their activity. Although the deformation associated with these faults is relatively wide, no evidence of Quaternary activity was observed along their traces in the mapped area.



SITE LOCATION: 33.008 LAT. -116.063 LONG.

MINIMUM LOCATION QUALITY: C

TOTAL # OF EVENTS ON PLOT: 355

TOTAL # OF EVENTS WITHIN SEARCH RADIUS 125

MAGNITUDE DISTRIBUTION OF SEARCH RADIUS EVENTS:

4.0- 4.9 : 114
5.0- 5.9 : 8
6.0- 6.9 : 3
7.0- 7.9 : 0
8.0- 8.9 : 0

CLOSEST EVENT: 4.5 ON MONDAY, MARCH 22, 198? LOCATED APPROX. 14 KILOMETERS NORTHWEST OF THE SITE

0 50 100
KILOMETERS

Source: C.H.J., Incorporated

Figure 3.2-5
Regional Earthquake Epicenters: 1977-2002
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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TABLE 3.2-1
MODIFIED MERCALLI SCALE, 1956 VERSION[1]

Intensity		Effects	v[2]	g[3]
M[4]	I.	Not felt. Marginal and long-period effects of large earthquakes.		
3	II	Felt by persons at rest, on upper floors, or favorably placed.		
	III.	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.		0.0035-0.007
4	IV.	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV wooden walls and frame creak.		0.007-0.015
	V.	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.	1-3	0.015-0.035
5	VI.	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school, school). Trees, bushes shaken (visibly, or heard to rustle-CFR).	3-7	0.035-0.07
6	VII.	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments-CFR). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.	7-20	0.07-0.15
	VIII.	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.	20-60	0.15-0.35
7	IX.	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundation-CFR.) Frame structures if not bolted, shifted off foundations. Frames cracked. Serious damage to reservoirs. Underground pipes broken. conspicuous cracks in ground. In alluviated areas sand and mud ejected, earthquake fountains, sand craters.	60-200	0.35-0.7
8	X.	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.	200-500	0.7-1.2
	XI.	Rails bent greatly. Underground pipelines completely out of service.	>500	>1.2
	XII.	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.		

Notes:

Masonry A, B, C, D. To avoid ambiguity of language, the quality of masonry, brick or otherwise, is specified by the following lettering (which has no connection with the conventional Class A, B, C construction).

Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.: designed to resist lateral forces.

Masonry B: Good workmanship, and mortar, reinforced, but not designed to resist lateral forces.

Masonry C: Ordinary workmanship and mortar, no extreme weaknesses such as non-tied-in corners, but masonry is neither reinforced nor designed against horizontal forces.

Masonry D: Weak materials, such as adobe; poor mortar, low standards of workmanship; weak horizontally.
(1) From Richter (1958). Adapted with permission from W. H. Freeman and Company
(2) Average peak ground velocity. Cm/s
(3) Average peak acceleration (away from source)
(4) Magnitude Correlation
CFR - CF Richter
Source: Hunt Geotechnical Engineering, Investigation Manual, Rev. Ed., 1984

3.2.2.4 Existing Quarry Facilities

The existing operation has resulted in the creation of surface quarries associated with the gypsum outcrops. No significant problems with landsliding, slumping, or other geologic hazards have been reported for the ongoing operation. The existing Quarry operates under permits that comply with SMARA and other applicable regulations concerning slopes of the overburden site and of the quarries. Quarry walls have been designed for stability, both during extraction of material and following reclamation. Crushing facilities at the Quarry operate under permits approved by the County. These facilities comply with applicable regulations concerning seismic impacts to structures.

3.2.2.5 Existing Plant Facilities

Existing Plant facilities operate under permits approved by the County and have therefore complied with applicable regulations concerning seismic impacts to structures.

3.2.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

3.2.3.1 Thresholds of Significance

The Proposed Action would have a significant geologic impact if it would result in the following:

- Create a substantial geologic hazard, which could affect workers or other persons in the Project area or substantially damage structures; or
- Substantially restrict the future ability to utilize paleontological resources.

3.2.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.2-1: Slope Stability at Quarry

Reclaimed Quarry slopes may be subject to failures and erosion if not properly cut, developed and stabilized.

Potential geologic hazards which must be considered include erosive soils, landslides, and such seismically induced hazards as slope failures, soil liquefaction, induced subsidence, and flooding. Given the level of geologically recent seismic activity in this area, seismically induced impacts, and particularly the potential for major slope failure, represents the greatest potential geological hazard. These potential impacts could result from ground acceleration in the Project area due to movement or rupture along any of the many surficial or deep-seated faults occurring in the Project vicinity.

Generally, slope failure can occur either along natural zones of weakness such as fine-grained silty or clayey layers or faults, fractures, and joints (block or toppling failures), or through intact rock or soil materials when loading exceeds the cohesive strength of the materials and the slope fails at the toe, leaving a semi-circular failure scarp as upslope material slumps and moves down slope (circular failure).

Potential impacts related to seismicity and slope stability include potential risk to facilities, structures, and personnel resulting from a seismic event or slope failure. These potential impacts would be localized to the bottom of quarries and areas directly down slope from future overburden sites.

Landslides (deep-seated slope failures at least 15 feet deep) are typically related to the underlying structure of the parent material. Surficial failures are shallow failures that affect the upper weathered horizon of the parent material. A small number of both types of failures exist in the undisturbed areas at the site.

The susceptibility of a geologic unit to landsliding is dependent upon various factors, primarily: 1) the presence and orientation of weak structures, such as fractures, faults and clay beds; 2) the height and steepness of the pertinent natural or cut slope; 3) the presence and quantity of groundwater; and 4) the occurrence of strong seismic shaking.

The Quarry gypsum deposit is nearly pure, with no weak clay or silt intercalations observed in natural or mined exposures. Within natural exposures, the gypsum exhibits some widely spaced fractures with no preferred orientation. Fracturing is common in the existing mine cuts, with no preferred orientation observed. These fractures are likely caused by the blasting and excavation operation and are not considered to be natural.

The arid environment of the site precludes significant water from accumulating in the proposed reclaimed slopes, except on a very sporadic basis where water may be concentrated by geologic structures such as faults following periods of precipitation.

Potentially three landslides were observed on the site. Two of these slides are located in the southeastern portion of the site and are probably the result of undercutting by recent washes. Neither of these slides is in a proposed quarry.

The third landslide is questionable and appears to place a slice of Split Mountain Conglomerate (with overlying thin Creek Gypsum) over the Fish Creek Gypsum, which is in an existing quarry. If this feature is a landslide, it is expected to be ancient (pre-Holocene and possibly pre-Pleistocene). It displays no geomorphic expression of landsliding on pre-mining (1952) aerial photographs. Any geomorphic evidence of sliding has been removed by mining. Current quarrying exposures were insufficient to determine the exact nature of this feature. Folding was observed in the Split Mountain Conglomerate at this location, and it is possible that the disrupted stratigraphy is related to faulting and/or folding.

Given the steepness of natural slopes at the site and vicinity and the close proximity to the San Jacinto fault, the geologic materials at the site, including the gypsum, display a remarkably low susceptibility to deep-seated landsliding. Due to the purity of the gypsum, no significant clay or silt layers are expected to be exposed in the proposed cut slopes. Mining will not extend into the underlying bedded Split Mountain Conglomerate to avoid problems with clastic dilution of the gypsum. USG is aware of the dip of the gypsum bed and will plan the excavations so as to remain above the top of the Split Mountain Conglomerate. Fracturing in the gypsum is not significant to the stability of the proposed reclaimed slopes. Based on these data and the results of the slope stability study, deep-seated landsliding in the reclaimed alluvial slopes is considered to be non-existent due to the poorly-bedded lithologies and near-horizontal inclination of bedding in the alluvium. Further analyses of the proposed alluvial cut slopes are presented later as slope stability calculations.

Several surficial failures were observed on the site associated with natural runoff draining over steep slopes. These types of failures are a natural part of the incised geomorphic environment. The potential for surficial failures in the reclaimed gypsum slopes is considered to be very low. Some potential may exist for minor surficial failures in the reclaimed alluvial slopes, particularly associated with heavy precipitation events. These events are expected to be extremely rare.

A few potentially unstable rounded boulders were observed on the natural slopes above the proposed reclaimed slopes. These boulders could become dislodged during a major seismic event and roll down-slope. This rockfall hazard is not affected by the proposed mining and reclamation.

The gypsum quarry slopes will be reclaimed by blasting and/or excavating the benches and the resulting debris will be left on the slopes to facilitate revegetation and to give the reclaimed slopes a relatively natural appearance. It is anticipated that any resulting boulders will be angular and relatively resistant to rolling. Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.

Slope Stability Calculations

The factor of safety is defined as the ratio of forces resisting failure to the forces driving failure. A factor of safety of 1.5 is normally considered acceptable for static gross stability of engineered cut slopes. A factor of safety of 1.1 is normally considered satisfactory for seismic conditions. Seismic (pseudostatic) calculations were performed by applying a lateral acceleration coefficient (k) of 0.20g. The k value of 0.20g was specified due to the close proximity of the Coyote Creek branch of the San Jacinto fault and the relatively long period of exposure expected for reclaimed mine slopes. This value is 33 percent higher than the commonly utilized k value of 0.15 for general sites in southern California and is considered to be appropriately conservative.

The slope stability calculations assumed 110-foot high 1.75H:1V cut alluvial slopes above 170-foot high 1H:1V gypsum slopes under static and seismic conditions. The strength of the alluvium was modeled with a total density of 120 pcf, a friction angle of 40 degrees (43 seismic) and an apparent cohesion of 50 psf. The gypsum rock was modeled conservatively as soil by assuming a total density of 140 pcf, a friction angle of 43 degrees, and an apparent cohesion of 1500 psf. The resulting calculations indicate a static factor of safety of 1.61 and seismic factor of safety of 1.17 against gross failure.

Level of Significance Before Mitigation: Significant

Mitigation Measures:

Mitigation Measure 3.2-1a

Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet.

Mitigation Measure 3.2-1b

Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.

Mitigation Measure 3.2-1c

Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.

Level of Significance After Mitigation: Less than Significant

Impact 3.2-2: Loss of Paleontological Resources

Quarrying and construction activities may result in the loss of valuable paleontological resources.

The nature and origin of the geologic formations on-site is such that no significant paleontological resources would be expected to exist. The Split Mountain Formation is made up of non-marine conglomerate and sandstone of Cenozoic age. This formation is very unlikely to contain paleontological resources. The Imperial Formation, the only dominantly marine formation known to occur in Imperial County, is known to contain paleontological resources of oyster-shell reefs. However, because this formation lies below the gypsum formation being quarried, contact with paleontological resources in the

Imperial Formation is not expected. If paleontological resources are located, they will be assessed for their potential paleontological value and extracted, if appropriate in consultation with the BLM.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.2.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.2-1: Slope Stability at Quarry

*Reclaimed Quarry slopes may be subject to failures and erosion if not properly cut, developed and stabilized***.**

In the No Action Alternative, no new Quarry areas not already within the existing reclamation plans for the Quarry would be developed. Areas within existing reclamation plans are Quarry 1A at the Plaster City Quarry and the Shoverler Annex, which would be reclaimed under the existing reclamation plans. Note Quarry 1B predates SMARA and is not subject to reclamation.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.2-2: Loss of Paleontological Resources

Quarrying and construction activities may result in the loss of valuable paleontological resources.

If quarrying was not expanded, there would be no chance of disturbing or destroying valuable paleontological resources.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.2.3.4 Partial IID Water Supply Alternative

Impact 3.2-1: Slope Stability at Quarry

*Reclaimed Quarry slopes may be subject to failures and erosion if not properly cut, developed and stabilized***.**

Changing the source of water for the Plaster City Plant is independent of proposed expansion into new quarry areas at the Quarry. Expansion activities would occur according to the Proposed Action under the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as the Proposed Action (See Mitigation Measure 3.2-1a-c)

Level of Significance After Mitigation: Less than Significant

Impact 3.2-2: Loss of Paleontological Resources

Quarrying and construction activities may result in the loss of valuable paleontological resources.

As with the Proposed Action, no paleontological resources are expected at the Quarry site.

However, the Partial IID Water Supply Alternative would require additional construction of a newly-extended waterline (five miles), a pumping station, access roads and water supply storage facilities. The potential for discovering paleontological resources in this area is not known.

Under this alternative, a new water line would be constructed between the IID Westside Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Paleontological Resources. If this alternative is selected, prior to construction a survey would need to be conducted to determine presence/absence of resources. Recommendations contained in that survey report would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.2-2

Prior to construction of the water line between the Westside Canal and the Plant site, USG shall have a Paleontological Resources survey conducted to determine presence/absence of resources. Recommendations contained in the survey report shall be adopted and implemented as mitigation measures.

Level of Significance After Mitigation: Less than Significant

3.2.3.5 Full IID Water Supply Alternative

Impact 3.2-1: Slope Stability at Quarry

*Reclaimed Quarry slopes may be subject to failures and erosion if not properly cut, developed and stabilized***.**

Changing the source of water for the Plaster City Plant is independent of the proposed expansion into new areas at the Quarry. Expansion activities at the Quarry would occur according to the Proposed Action under the Full IID Water Supply Alternative.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as the Proposed Action (See Mitigation Measures 3.2-1a-c)

Level of Significance After Mitigation: Less than Significant

Impact 3.2-2: Loss of Paleonotological Resources

Quarrying and construction activities may result in the loss of valuable paleontological resources.

As with the Proposed Action, no paleontological resources are expected at the Quarry site.

However, the Full IID Water Supply Alternative would require additional construction of a newly-extended waterline (five miles), a pumping station, and access roads. Additionally, the Alternative will require the construction of a larger water supply storage facility, a desalinization factory, wastewater handling facilities and a treatment facility for potable water, resulting in the disturbance of an addition five to ten acres. The potential for discovering paleontological resources in this area is not known.

Under this alternative, a new water line would be constructed between the IID Westside Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Paleontological Resources. If this alternative is selected, prior to construction a survey would need to be conducted to determine presence/absence of resources. Recommendation contained in that survey report would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.2-2 (see above)

Level of Significance After Mitigation: Less than Significant

3.2.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

3.3 HYDROLOGY AND WATER QUALITY

3.3 HYDROLOGY AND WATER QUALITY

3.3.1 Introduction

This section is formatted in a slightly different manner than the other EIR/EIS evaluations in order to accommodate an analysis of hydrology issues that differ between the Plant and Quarry sites. Rather than one section describing the Affected Environment and one section on Standards, Impacts and Mitigation Measures there are two sections each (one set for the Plant hydrology analysis and one for the Quarry hydrology): because these facilities are in different hydrologic basins with substantially differing conditions. Sections 3.3.2 and 3.3.3 cover hydrology issues at the Plant; Sections 3.3.4 and 3.3.5 cover hydrology issues at the Quarry. Each of these sections addresses the Proposed Action and its various alternatives.

The section is organized as follows:

- 3.3.2 Plant Water Usage
- 3.3.3 Plant Water Usage: Standards of Significance, Environmental Impacts, and Mitigation Measures (starting at page 3.3-34)
- 3.3.4 Quarry Water Usage: Affected Environment (starting at page 3.3-90)
- 3.3-5 Quarry Water Usage: Standards of Significance, Environmental Impacts and Mitigation Measures (Starting at page 3.3-95)

The Proposed Action includes changes in the quantity of water to be used in both the wallboard manufacturing Plant and the Quarry. Water for the Plant is supplied by three wells located in Ocotillo. Water for the Quarry is proposed to be supplied by a new well to be drilled approximately three miles east of the Quarry along the narrow-gauge rail line right-of-way. Evaluation of the proposed increased water usage for the Plant is presented in Section 3.3.2. Evaluation of the proposed new well installation and increased water usage for the Quarry is presented in Section 3.3.4.

3.3.2 Plant Water Usage

The existing Plant operation and Proposed Action rely on three supply wells for water for potable domestic uses and processing and production of wallboard and other gypsum products. The three wells are located in the Ocotillo/Coyote Wells Groundwater Basin in the southwest part of Imperial County. Prior to implementation of the Proposed Action, USG pumped an average of 347 acre-feet per year (AF/yr) from 1994 to 1998. The Proposed Action anticipates increasing groundwater pumping from the existing wells up to a maximum of 767 AF/yr (the amount reported by USG in 1972).

The extracted groundwater is transported by 8 inch diameter pipeline to Plaster City. The location of the Ocotillo/Coyote Wells Groundwater Basin is shown in Figure 3.3-1, Groundwater Basin Location Map.

There are several communities in the Ocotillo/Coyote Wells Groundwater Basin, including Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. These communities, USG and several other commercial/industrial and agricultural users, depend on the Ocotillo/Coyote Wells Groundwater Basin as their source of potable water. Surface water is not present in the Basin and there are no water imports into the Basin. The Ocotillo/Coyote Wells Groundwater Basin was designated as a "sole-source aquifer" by the Environmental Protection Agency (EPA) in 1996 (61 FR 47752, September 10, 1996) and is, thus, part of the Sole Source Aquifer Protection Program, authorized by Section 14245(e) of the Safe Drinking Water Act. The sole-source aquifer designation requires U.S. EPA review of proposed federally-assisted projects. The Proposed Action by USG is not a federally assisted project, and the designation only encourages coordination of federal, state, and local efforts for protection of groundwater resources under the Comprehensive State Ground Water Protection Program (CSGWPP).

Several studies involving the Ocotillo/Coyote Wells Groundwater Basin have been conducted. A partial list of these studies include:

- *Digital Model Evaluation of the Ground-Water Resources of the Ocotillo-Coyote Wells Basin, Imperial County, California*, U.S. Geological Survey Water-Resources Investigation 77-30, November 1977 (prepared by James A. Skrivan).
- *The Magnitude and Potential Effects of Declining Ground Water Elevations in the Ocotillo-Coyote Wells Basin*, prepared by David Huntley, October 1979.
- *Imperial County Groundwater Study – Final Report*, Montgomery Watson, December 1995.
- *Ocotillo/Coyote Wells Basin Hydrology and Groundwater Modeling Study*, Bookman-Edmonston Engineering, Inc., March 1996.
- *Geologic Review of the Ocotillo-Coyote Wells Basin, Imperial County California with Recommendations for Changes to the Proposed Groundwater Model*, Bookman-Edmonston memorandum from Ron Schnabel to Dick Rhone, March 13, 2003.
- *Ocotillo/Coyote Wells Hydrology and Groundwater Modeling Study*, Bookman-Edmonston, January 16, 2004.

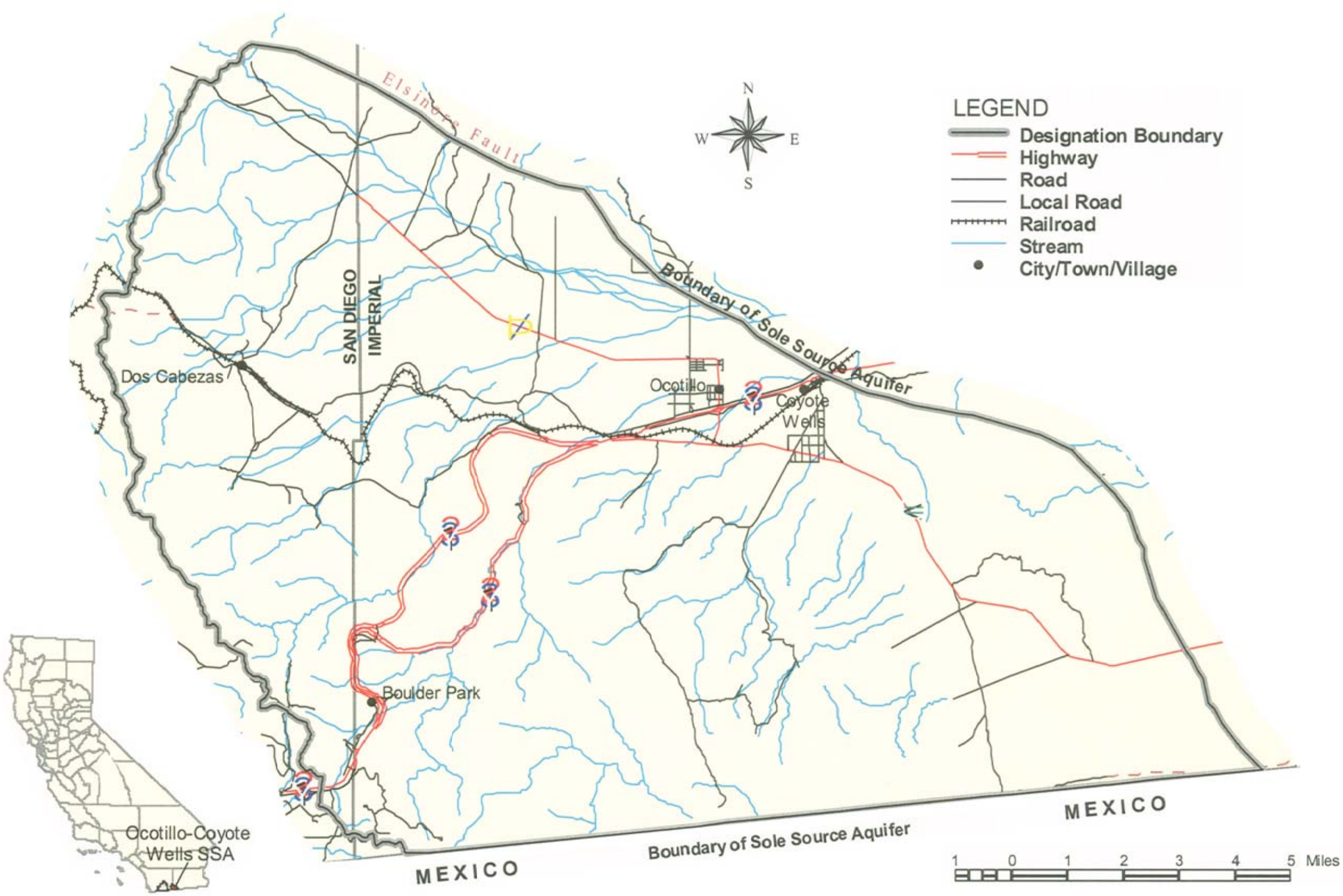

Figure 3.3-1
Groundwater Basin Location Map
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These studies were reviewed in detail for this analysis, and are incorporated by reference. Copies of these studies can be reviewed at the office of the County Planning Department, Imperial County, California. In addition, rainfall data from the National Oceanic and Atmospheric Administration (NOAA) rain gauge in Ocotillo (the Ocotillo 2 gauge), pumping data from USG, and water level and water chemistry data from the U.S. Geological Survey (USGS) were obtained and reviewed. The USGS has been measuring water levels on a semi-annual basis and water chemistry on an annual basis in several wells throughout the basin since the 1970s. These data were obtained from the USGS WATSTOR database and are presented in Appendix B-1, USGS Hydrologic Data.

The 1996 and 2004 Bookman-Edmonston reports also include discussions of several additional studies conducted in the Ocotillo/Coyote Wells Groundwater Basin. These studies include several consultant reports and several unpublished Masters Theses from San Diego State University.

Section 3.3.2.1 presents a summary of the setting of the Ocotillo/Coyote Wells Groundwater Basin, a description of the baseline conditions developed for the Proposed Action, and an evaluation of the existing data. Section 3.3.2.2 presents the analysis of potential environmental impacts related to the extraction of groundwater from the Ocotillo/Coyote Wells Groundwater Basin for the Proposed Action, and the potential alternatives to the proposed increase in pumping from the existing wells within the Ocotillo/Coyote Wells Groundwater Basin.

3.3.2.1 Affected Environment

Climate

The Ocotillo/Coyote Wells Groundwater Basin is located in the southwestern part of Imperial County, approximately 25 miles from the city of El Centro (Figure 3.3-1), in a desert environment, marked by relatively high temperatures and relatively low precipitation. Average daytime high temperatures range from 70 degrees Fahrenheit (F) in January to in excess of 110 degrees F in July and August. Average low temperatures range from 40 degrees F to 80 degrees F. In the vicinity of the communities of Ocotillo, Coyote Wells, Nomirage, and Yuha Estates, the surface elevation varies from approximately 250 feet above mean sea level (ft amsl) to 600 ft amsl. The Basin is bounded on the west by the Jacumba Mountains and on the north by the Coyote Mountains. The Basin extends approximately 12 miles to 15 miles to the east of Ocotillo to the Westside Main Canal, across the southern projection of the Elsinore

Fault and the Laguna Salada Fault, and another unnamed fault zone. To the south, the basin continues across the international border into Mexico.

Table 3.3-1, Monthly Rainfall Data, 1971-2002, presents monthly rainfall data from 1971 through 2002, as measured at the NOAA Ocotillo 2 rainfall gauge, located in Ocotillo, CA. The raw data provided by NOAA are presented in Appendix B-1. Rainfall in the vicinity of the Ocotillo/Coyote Wells Groundwater Basin occurs from both Pacific storm fronts, which occur during the winter months, and from tropical monsoons, which occur during the summer months. To appropriately present the variation in rainfall over time, the annual precipitation is typically presented in terms of a water year. For the Project area, a water year extends from October of one year through September of the subsequent year. Table 3.3-2, Annual Water-Year Precipitation, presents the annual water-year precipitation for the Ocotillo area from 1948 through 2000. The data from 1948 through 1982 is taken from Table 7-3 of the 1996 Bookman-Edmonston report. The data from 1983 through 2000 are taken from the NOAA data presented in Table 3.3-1. Figure 3.3-2, Annual Water-Year Rainfall, presents the annual water-year precipitation for the Ocotillo area.

The average annual water-year precipitation for the time period represented in Table 3.3-2 is approximately 3.5 inches. The average annual precipitation is shown as a dashed line on Figure 3.3-2. The graph on Figure 3.3-2 indicates that rainfall was typically below average from 1949 through 1965. From 1975 through 1993, rainfall was typically above average, with 12 of 18 water years having above-average precipitation and only two water years having annual average precipitation that was less than 3.0 inches (i.e. one-half inch or more below the mean). Since 1993, rainfall has been average to below average.

The relatively high temperatures also result in a relatively high evaporation rate for the region. The California Department of Water Resources (Bulletin #113-3) reports a total evaporative demand for the area of approximately 100 inches per year, with a potential evapotranspiration rate of over 82 inches per year. The total evaporative demand is equivalent to the rate of evaporation from a Class A pan. The potential evapotranspiration is the rate of water lost to the atmosphere by irrigated agriculture.

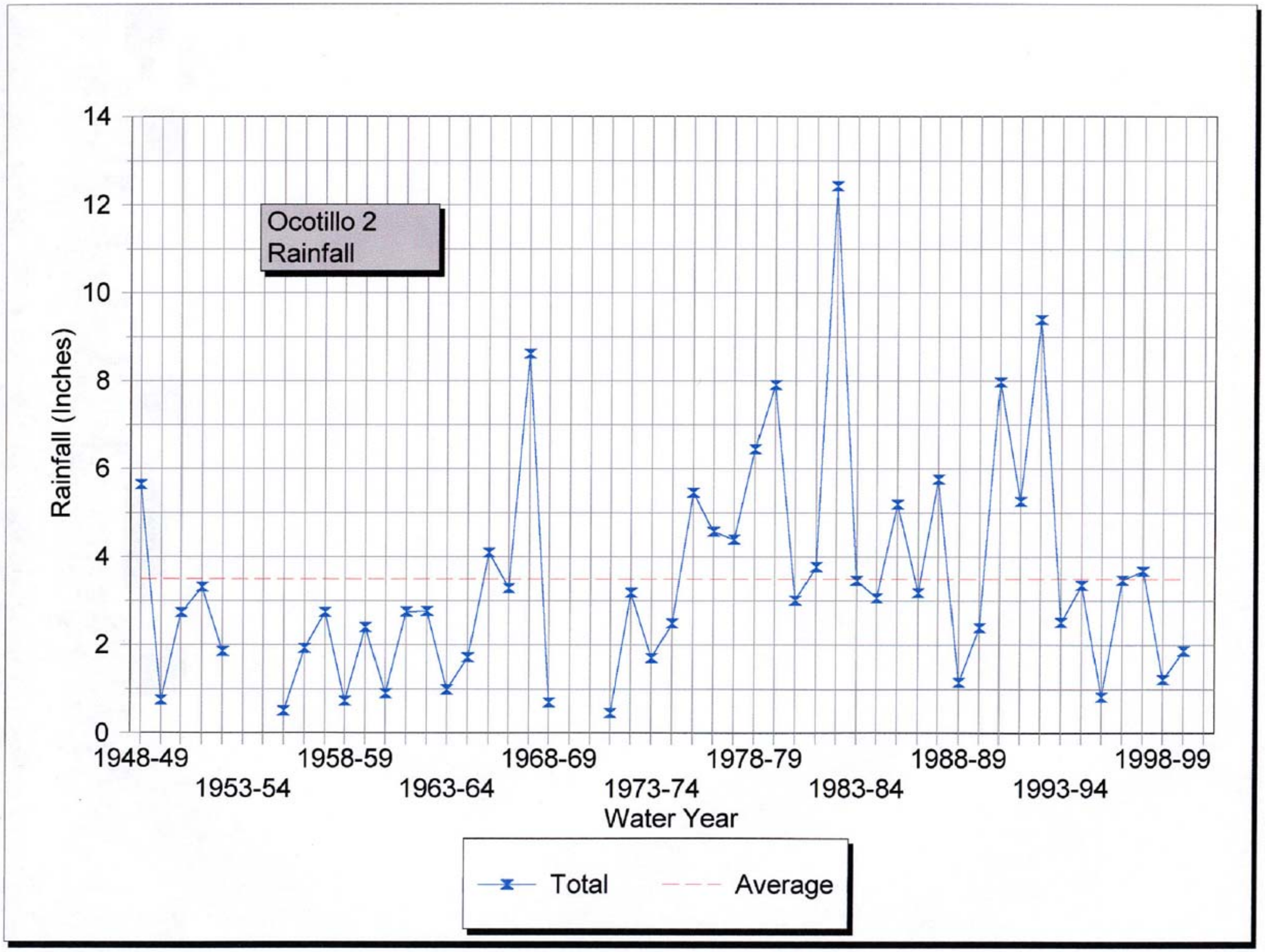

Figure 3.3-2
Annual Water - Year Rainfall
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TABLE 3.3-1
MONTHLY RAINFALL DATA, 1971-2002
OCOTILLO 2 RAINFALL GAUGE

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1971	-	-	-	-	-	0	0	77	14	3	0	3	-
1972	0	0	0	0	0	37	0	2	0	149	32	10	-
1973	13	49	23	0	0	0	0	42	0	0	0	0	-
1974	149	0	3	0	0	0	14	0	4	6	0	8	-
1975	0	0	2	70	0	0	80	0	82	3	25	10	-
1976	0	152	20	25	7	0	10	0	293	0	42	10	-
1977	24	0	2	0	0	0	0	379	0	60	0	129	-
1978	139	57	29	14	0	0	0	0	10	6	110	143	-
1979	235	26	4	0	35	0	55	30	0	0	0	12	-
1980	378	202	88	10	100	0	0	0	0	0	0	0	-
1981	79	58	129	0	14	0	6	14	0	0	80	0	-
1982	95	0	-	-	-	-	1	31	169	0	19	584	-
1983	29	258	194	0	0	0	13	100	45	5	1	42	687
1984	17	0	0	1	0	0	216	39	24	0	40	186	523
1985	6	27	9	0	0	0	0	10	28	54	122	129	385
1986	21	115	33	4	0	0	41	0	0	127	15	24	380
1987	25	62	8	0	0	0	0	36	21	138	23	60	373
1988	53	122	2	0	0	60	0	117	0	7	0	0	361
1989	47	0	2	0	0	0	39	19	0	3	0	0	110
1990	11	0	1	22	0	108	93	0	0	15	0	0	250
1991	42	62	140	0	0	0	310	211	17	0	15	205	1002
1992	12	123	124	11	8	0	0	27	0	115	0	155	575
1993	503	86	0	0	9	0	0	71	0	0	94	0	763
1994	41	29	57	0	23	0	0	6	0	0	46	52	254
1995	154	22	5	0	0	0	0	56	0	0	0	11	248
1996	0	70	0	0	0	0	0	0	0	4	0	2	76
1997	30	2	0	4	0	9	86	0	210	0	11	146	498
1998	39	121	19	0	0	0	0	16	15	0	0	39	249
1999	0	26	0	15	0	0	13	0	28	0	0	0	82
2000	0	42	12	0	0	15	0	116	1	57	2	0	245
2001	12	186	43	0	-	0	0	0	0	0	0	0	-
2002	11	-	-	-	-	-	-	-	-	-	-	-	-

Note: Units are measured in 1/100th of an inch.

TABLE 3.3-2
ANNUAL WATER-YEAR PRECIPITATION
1948 THROUGH 2000

Water Year	Total (Inches)	Water Year	Total (Inches)
1948-49	5.64	1974-75	2.48
1949-50	0.75	1975-76	5.45
1950-51	2.73	1976-77	4.57
1951-52	3.3	1977-78	4.38
1952-53	1.85	1978-79	6.44
1953-54	-	1979-80	7.9
1954-55	-	1980-81	3
1955-56	0.5	1981-82	3.77
1956-57	1.93	1982-83	12.42
1957-58	2.74	1983-84	3.45
1958-59	0.73	1984-85	3.06
1959-60	2.4	1985-86	5.19
1960-61	0.9	1986-87	3.18
1961-62	2.75	1987-88	5.75
1962-63	2.76	1988-89	1.14
1963-64	0.98	1989-90	2.38
1964-65	1.71	1990-91	7.97
1965-66	4.09	1991-92	5.25
1966-67	3.28	1992-93	9.39
1967-68	8.61	1993-94	2.5
1968-69	0.69	1994-95	3.35
1969-70	-	1995-96	0.81
1970-71	-	1996-97	3.47
1971-72	0.45	1997-98	3.67
1972-73	3.18	1998-99	1.21
1973-74	1.7	1999-00	1.86

Geology

The Ocotillo/Coyote Wells Groundwater Basin is an alluvial basin that contains silts, sands, and gravels that have been eroded from the surrounding mountains and were deposited on Tertiary marine (i.e., ocean or shallow sea) sediments. These Quaternary alluvial deposits are highly permeable and contain groundwater of relatively good quality, as discussed below. Along the western and northern edges of the Basin, the Quaternary gravels overlie and abut the bedrock that forms the Jacumba and Coyote Mountains. In the central and eastern parts of the Basin, the gravels overly the Tertiary marine sediments. Based on the total depth of wells installed in the Basin, the thickness of the gravels varies from zero along the mountain fronts to at least 600 feet in the Ocotillo area.

There are several prominent fault zones within the Basin. The Elsinore Fault forms the boundary between the alluvial sediments of the Basin and the bedrock of the Coyote Mountains (see Figure 3.3-3, Generalized Geology). South of Yuha Springs, the Laguna Salada Fault separates the alluvial basin sediments on the west from an area of primarily Tertiary marine sediments to the east.

The Tertiary marine sediments are believed to be present beneath the alluvial gravels throughout most of the Ocotillo/Coyote Wells Groundwater Basin. East of Coyote Wells and the Laguna Salada Fault, there are numerous areas where the Tertiary marine sediments crop out and are exposed on the surface of the basin, as shown in Figure 3.3-3. In general, the geology east of Coyote Wells and the Laguna Salada Fault zone is dominated by the marine sediments, although the alluvial gravels are present in many areas.

The Tertiary marine sediments also crop out in several areas west of Coyote Wells and the Laguna Salada fault zone. Exposures of the marine sediments occur over a large area east of Yuha Estates, and in smaller areas to the west and south of Nomirage and several miles to the northwest of Ocotillo.

Several previous studies have assumed that the Elsinore Fault and the Laguna Salada Fault are connected in the subsurface to the east of Coyote Wells (USGS, 1977; Bookman-Edmonston, 1996). These studies also assume that the subsurface fault zone acts as a hydraulic barrier to groundwater flow and assigned low-permeability properties to the fault zone in numerical groundwater models. The basis for this assumption is a change in the hydraulic gradient (i.e. the slope of the groundwater surface) and a change in the water chemistry across the assumed fault zone. As discussed in more detail below, however, little evidence exists that the fault zone in this case, if present, has properties that differ from the adjacent geologic deposits and that the fault zone acts as a barrier to groundwater flow. More recent field evaluations (Bookman-Edmonston, 2003) indicate that the Elsinore Fault and Laguna Salada faults are not connected as a continuous fault zone through the area east of Coyote Wells.

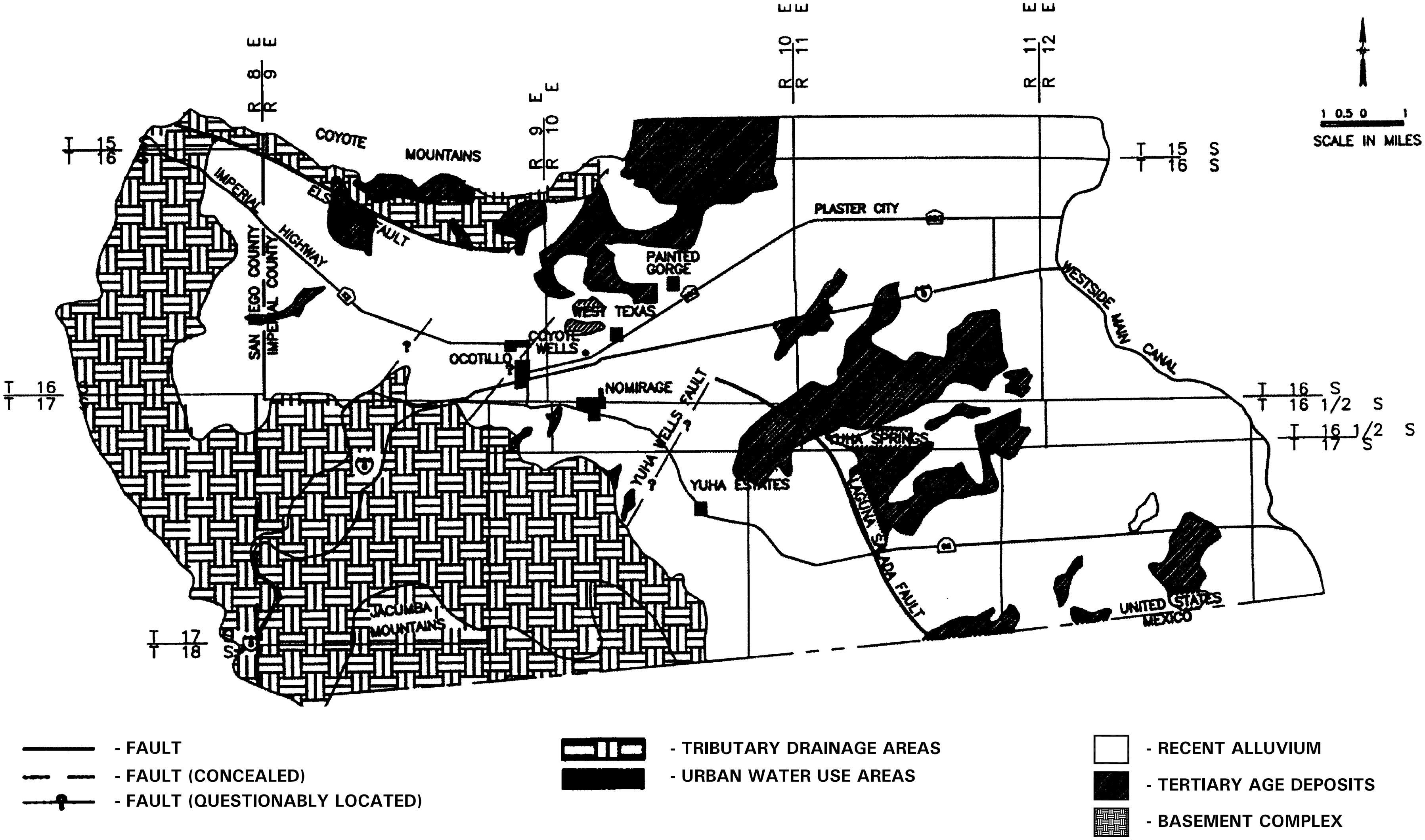
Hydrology

As discussed above, the Ocotillo/Coyote Wells Groundwater Basin contains appreciable quantities of potable water and, in fact, is the sole source of domestic and commercial/industrial water supply for the area. Groundwater well locations are shown in Figure 3.3-4, Location of Wells. According to Bookman-Edmonston (1996), the watershed for the Basin consists of approximately 87 square miles of upland area within the Jacumba and Coyote Mountains and approximately 80 square miles of alluvial valley floor. Due to the relatively low precipitation and high evapotranspiration that occurs in the area, virtually all of the groundwater recharge that occurs in the Basin comes from runoff from the mountains.

The depth to groundwater varies depending on the ground surface elevation and the slope of the groundwater surface. In the Yuha Springs area, to the east of Yuha Estates, the water table is only a few feet below ground surface (ft bgs). Just east of Coyote Wells, the depth to groundwater ranges from 10 ft bgs to 25 ft bgs. However, the groundwater in these two areas could be perched. In the Ocotillo area, the depth to groundwater ranges from under 100 ft bgs to over 160 ft bgs. At some locations in Yuha Estates, the depth to groundwater may exceed 200 ft bgs.

A study conducted by the USGS (1964) suggests that recharge to the groundwater basin may consist of 0.5 inches per year of runoff from the mountains and 0.02 inches per year of direct recharge from precipitation that falls on the valley floor. As discussed below, however, the upper few feet of groundwater throughout the Ocotillo/Coyote Wells Groundwater Basin tends to be saline and have an elevated total dissolved solids (TDS) content. The presence of saline water at the water table indicates that there is no appreciable recharge of fresh, meteoric water from rainfall across the valley floor. Thus, the only significant source of recharge occurs at the base of the mountain front, where surface runoff reaches the alluvium.

Prior estimates of Basin recharge have ranged from 536 AF/yr to 7,200 AF/yr. The most recent groundwater modeling effort for the basin (Bookman-Edmonston, 2004), which is based on extensive review and input from the USGS and the preparers of this EIR/EIS, yields a calibrated recharge to the basin of approximately 1,077 AF/yr. The model estimated recharge of 1,077 AF/yr was used to calibrate the groundwater model and is a conservative recharge estimate. The recharge rate of 1,077 AF/yr is lower than most analytical estimates for the Basin. Mark (1987) estimates recharge using four methods and obtained results of 536, 1044, 1650, and 1820 AF/yr. Mark (1987) concluded that 536 AF/yr was unrealistic and used 1650 AF/yr for his work. Skrivan (1977) estimated the recharge at 2600 AF/yr. Huntley (1979) states that recharge is between 870 and 1672 AF/yr. Zipp (1982) suggests that the recharge rate may be as high as 4600 to 7200 AF/yr.



FROM: Modified from digital evaluation of the grounwater resources in the Ocotillo-Coyote Wells Basin.
James Skrivan November 1977

Figure 3.3-3
Generalized Geology
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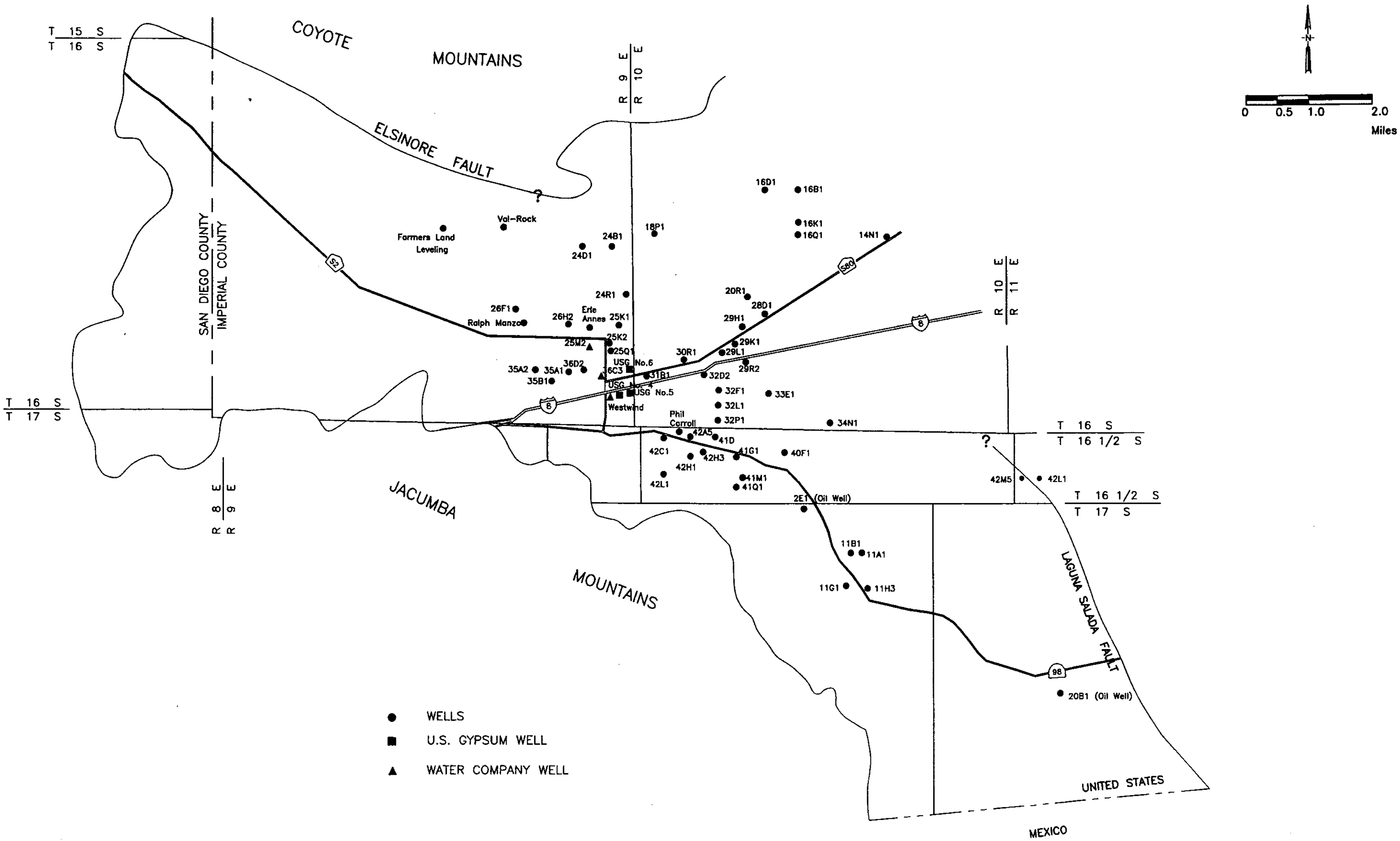

Figure 3.3-4
Location of Wells
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Bookman-Edmonston (1996) estimates the recharge at 2400 AF/yr. The recharge to the Groundwater Basin may consist of 0.5 inches per year of runoff from the mountains (USGS), which suggests a total recharge of about 2,300 AF/yr. Nonetheless, as stated above, for the modeling efforts undertaken for this Project, a conservative recharge rate of 1,077 AF/yr was used.

The groundwater flow direction trends from the northwest toward the southeast. Figure 3.3-5, Simulated Water-Level Contours, and Figure 3.3-6, Simulated 1995 Contours, are contour maps of the groundwater surface developed by the USGS (1977) and Bookman-Edmonston (1996). In the upper part of the Basin, approximately four to five miles northwest of Ocotillo, the hydraulic gradient is approximately 30 feet per mile or greater, or about 0.006 ft/ft (i.e. $6x10^{-3}$ ft/ft). In the southern part of the Basin, near the international border with Mexico, the hydraulic gradient is only approximately six feet per mile, or about 0.001 ft/ft (i.e. $1x10^{-3}$ ft/ft). To the east of Coyote Wells, in the area of primarily Tertiary marine sediment outcrops, the hydraulic gradient is approximately 40 feet per mile, or about 0.0075 ft/ft (i.e. $7.5x10^{-3}$ ft/ft).

Groundwater Quality

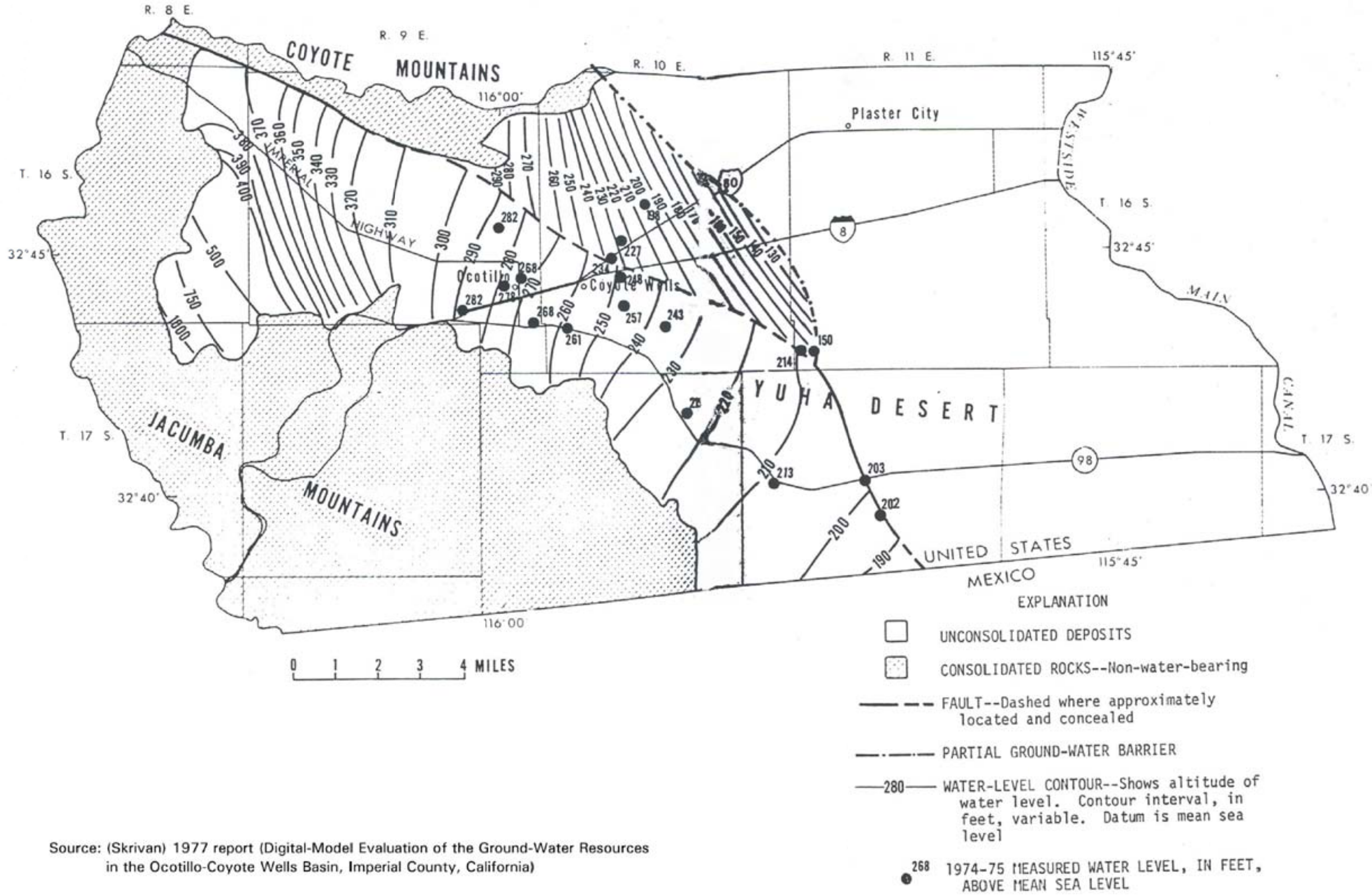
The groundwater quality within the Ocotillo/Coyote Wells Groundwater Basin is variable at different locations. Some areas of the Basin produce waters of relatively good quality and other areas produce highly saline waters. Table 3.3-3A, Summary of Water Chemistry Data, presents a summary of water chemistry data for selected wells throughout the Basin, as reported in the USGS WATSTOR database. The general water quality of the Basin can be evaluated primarily based on the TDS content of the water (Table 3.3-3B, TDS Data Versus Time). The TDS is a measurement of the total amount of salts and other naturally-occurring minerals in the groundwater. The EPA secondary TDS standard for drinking water is 500 milligrams per liter (mg/L), which is equivalent to 500 parts per million (ppm). Thus, groundwater with TDS levels below 500 mg/L is considered high-quality, potable water. In general, water with a TDS level exceeding 1,000 mg/L is not considered potable, although it is not uncommon for local drinking water supplies to exceed this level in some areas of the country.

Figure 3.3-7, Groundwater Quality (TDS Concentrations in mg/L), taken from Bookman-Edmonston (1996), shows the distribution of TDS in the Ocotillo/Coyote Wells Groundwater Basin. The TDS levels range from about 300 mg/L to over 54,000 mg/L. By comparison, sea water has a TDS level of about 30,000 mg/L. In the area of

TABLE 3.3-3A
SUMMARY OF WATER CHEMISTRY DATA
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well		Date	PH	Ca mg/L	Mg mg/L	K mg/L	Na mg/L	Bicarb mg/L	Carb mg/L	Cl mg/L	Fl mg/L	SO4 mg/L	TDS mg/L	Boron ug/L	Fe ug/L
16S/9E	24B1	03/18/97	8.7	3.8	1.4	2.4	430	186	9	390	1.9	270	1220	744	210
	24D1	03/17/97	8.3	14	4.2	3.7	140	117	1	91	1.1	140	475	406	10
	25K2	03/18/97	8	24	5.7	4.6	81	136	0	78	0.9	41	342	211	<1
	25Q1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	35M1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36D2	04/10/90	8.2	15	2.5	2.7	100	NM (115)	NM	82	1.9	27	347	660	100
	36G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36H1	03/18/97	8.1	16	3.3	4	70	124	0	57	0.8	31	288	190	40
	27R1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29L1	03/17/88	8.5	7.9	3.6	3.3	240	NM (100)	NM	240	0.9	66	670	380	30
	29R2	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11B1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G2	03/10/82	8.1	17	5	5	112	NM (135)	NM	99	0.4	67	392	20	<1
	11G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H2	04/04/86	8.1	20	4.5	4.4	75	NM (140)	NM	47	0.5	52	293	170	10
	11H3	03/17/97	8.1	19	4	3.9	82	137	0	53	0.6	58	309	178	<1

Notes:
NM = Not Measured



Source: (Skrivan) 1977 report (Digital-Model Evaluation of the Ground-Water Resources in the Ocotillo-Coyote Wells Basin, Imperial County, California)

Figure 3.3-5
Simulated Water-Level Contours

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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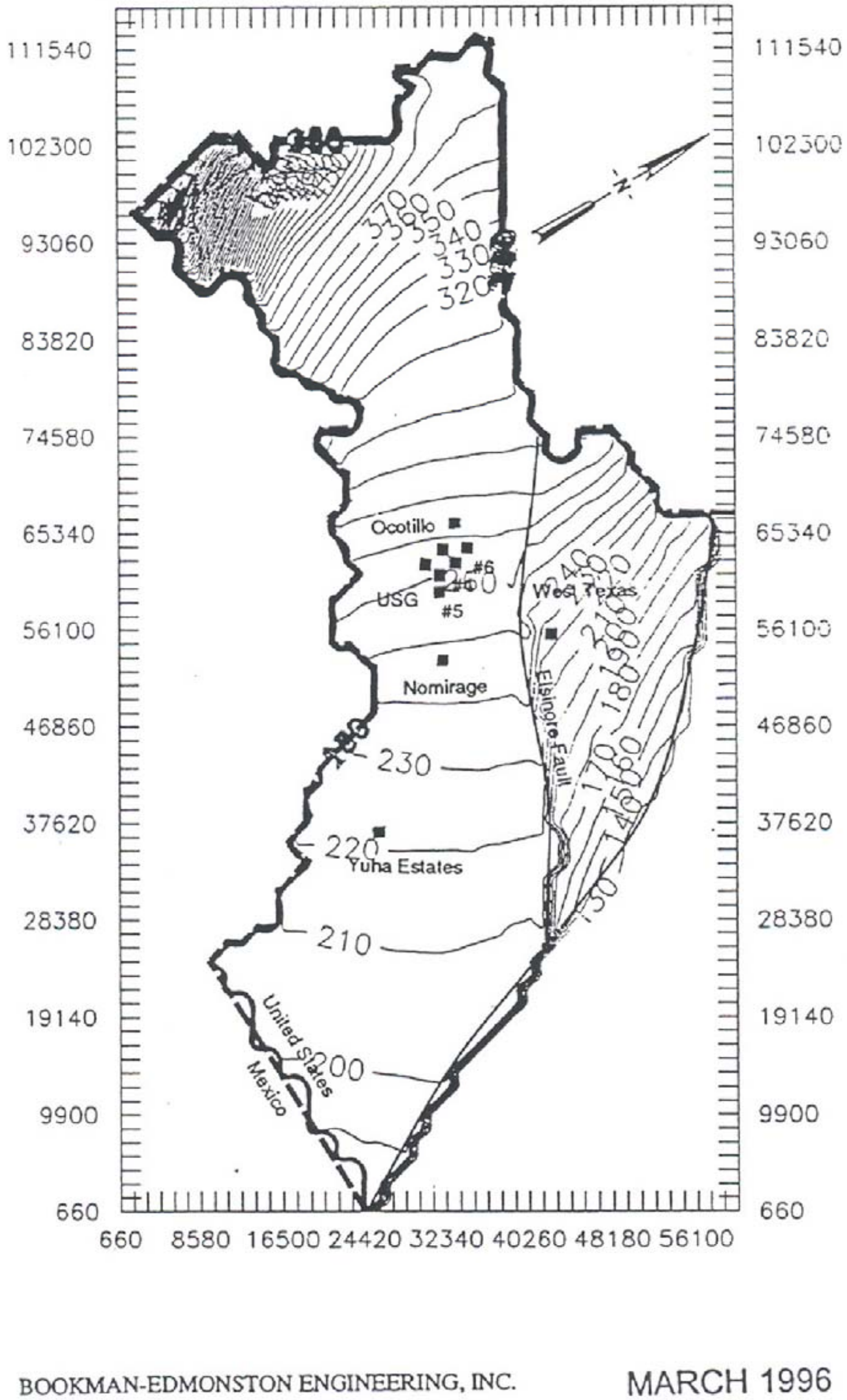

Figure 3.3-6
Simulated 1995 Contours
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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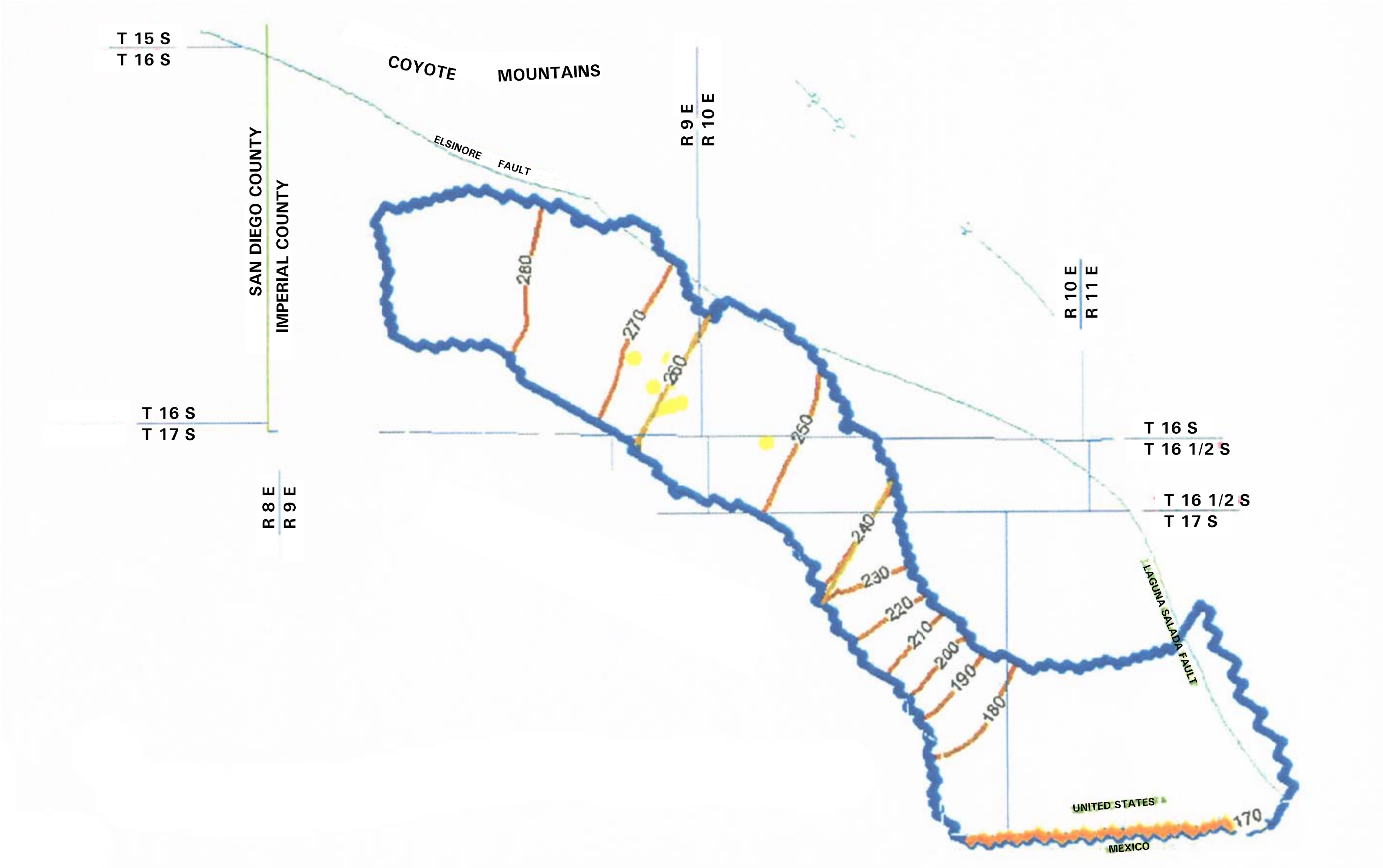

Figure 3.3-7
Groundwater Quality (TDS Concentrations in mg/l)
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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TABLE 3.3-3B
TDS DATA VERSUS TIME
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

	R16S-T9E					R16S-T10E	R17S-T10E		
Date	16S/9E-24B1 (mg/L)	24D1 (mg/L)	25K2 (mg/L)	36D2 (mg/L)	36H1 (mg/L)	29L1 (mg/L)	11G2 (mg/L)	11H2 (mg/L)	11H3 (mg/L)
02/07/63	-	-	-	-	288	-	-	-	-
12/01/72	-	-	253	-	-	-	335	-	-
12/03/74	-	-	245	-	-	-	-	-	-
06/26/75	-	-	307	356	-	-	-	-	-
04/28/77	1270	495	303	350	312	713	363	-	-
04/27/77	1210	471	304	358	300	690	369	-	-
03/15/79	1220	473	301	347	303	662	370	-	-
05/01/80	1240	476	305	353	300	667	377	-	-
04/30/81	1200	478	325	356	296	639	377	-	-
03/10/82	1210	487	383	361	294	656	392	-	-
03/29/83	1230	480	306	344	304	660	-	300	-
04/18/84	1260	479	-	375	294	665	-	291	-
04/26/85	1270	475	-	363	305	667	-	297	-
04/02/86	1340	467	-	349	296	640	-	293	-
04/03/87	1290	486	-	354	299	651	-	-	313
03/16/88	1300	486	405	351	301	670	-	-	311
03/15/89	1290	506	393	352	305	-	-	-	319
04/10/90	1270	492	337	347	-	-	-	-	-
04/04/91	-	-	-	-	299	-	-	-	316
04/06/92	1230	488	326	-	-	-	-	-	-
04/14/93	-	-	-	-	295	-	-	-	307
03/22/94	1240	485	337	-	298	-	-	-	315
03/29/95	1180	483	335	-	297	-	-	-	312
03/19/96	1200	464	334	-	290	-	-	-	306
03/18/97	1220	475	342	-	288	-	-	-	309
03/30/98	1190	472	330	-	300	-	-	-	307
03/22/99	1180	475	325	-	298	-	-	-	299
03/27/00	1210	476	313	-	321	-	-	-	307
03/22/01	1200	470	360	-	295	-	-	-	280

Notes:
- No data

predominantly Tertiary marine sediment outcrops east of Coyote Wells, most wells have TDS levels exceeding 1,000 mg/L, although there is at least one location with a TDS level of 544 mg/L. West of the southern projections of the Elsinore Fault, the TDS levels are generally below 500 mg/L, but there are several wells with TDS concentrations as high as 6,900 mg/L. The distribution of TDS appears to be controlled by two factors:

1. *Well depth*. The uppermost few feet of groundwater tend to have an elevated TDS level. This may be due to the concentration of salts near the water table due to evapotranspiration of groundwater in the past, when the water table was closer to the ground surface; and

2. *Proximity to the Tertiary marine sediments*. The Tertiary sediments were deposited in a marine environment. Thus, the connate water in the pores of the sediments, at the time of deposition, was saline.

The relatively high TDS levels east of Coyote Wells are most likely a result of the greater occurrence of the Tertiary marine sediments. Some of the wells with elevated TDS levels on the west side of the southern projections of the Elsinore Fault are near mapped outcrops of the marine sediments. A 1983 unpublished Masters Thesis from San Diego State University (Jansen, 1983) indicates that a transition in water quality occurs just east of Nomirage and that the available data do not support the theory of a distinct and singular groundwater boundary along a hypothetical connection of the Elsinore and Laguna Salada fault zones. The analysis conducted for this EIR/EIS is consistent with the findings of Jansen (1983).

Where high TDS levels are found, there are also several trace elements that could be of concern in the Ocotillo/Coyote Wells Groundwater Basin. These elements include fluoride, boron, and iron. The state drinking-water standard for fluoride is 1.4 mg/L, based on the local air temperatures. The California Department of Health Services drinking water action level for boron is 1.0 mg/L. Action Levels are advisory levels and not enforceable actions. Levels greater than the action level require a drinking water system to notify the governing body of the local agency in which users of the drinking water reside. The EPA drinking-water standard for iron is 0.05 mg/L. As shown in Table 3.3-3A, there are several wells in the Basin that have fluoride, boron, and/or iron levels that approach or exceed these standards.

Groundwater Use

Groundwater from the Ocotillo/Coyote Wells Groundwater Basin is used for domestic, commercial, industrial, and agricultural purposes for users in the Basin and outside of the Basin. Surface water is not present within the Basin and water is not imported into the Basin.

Domestic water users include the communities of Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. Water is also piped to the community of Painted Gorge. Domestic water supply is provided by a combination of private wells and community water services. Table 3.3-4, Current and Historic Groundwater Use, presents current and historic water use for various users. In the 1996-1997 time period, community domestic water use is estimated to be approximately 110 AF/yr to 115 AF/yr. Changes in water use over time are based on the rate of population growth, as described by Bookman-Edmonston (1996). Current domestic water use is anticipated to be approximately 120 AF/yr to 125 AF/yr.

TABLE 3.3-4
CURRENT AND HISTORIC GROUNDWATER USE
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

	US Gypsum			Export to Mexico	
Year	*Based on Production (AF/yr)*	*Reported to USGS (AF/yr)*	Community Use *(AF/yr)*	*Clifford Well (AF/yr)*	*McDougal Well (AF/yr)*
1925	153	-	-	-	-
1926	153	-	-	-	-
1927	153	-	-	-	-
1928	153	-	-	-	-
1929	153	-	-	-	-
1930	153	-	-	-	-
1931	153	-	-	-	-
1932	153	-	-	-	-
1933	153	-	-	-	-
1934	153	-	-	-	-
1935	153	-	-	-	-
1936	153	-	-	-	-
1937	153	-	-	-	-
1938	153	-	-	-	-
1939	153	-	-	-	-
1940	153	-	-	-	-
1941	153	-	-	-	-
1942	153	-	-	-	-
1943	153	-	-	-	-
1944	153	-	-	-	-
1945	153	-	-	-	-
1946	153	-	-	-	-
1947	264	-	-	-	-
1948	264	-	-	-	-
1949	264	-	-	-	-
1950	306	-	-	-	-
1951	253	-	-	-	-
1952	255	-	-	-	-

Table 3.3-4 (Continued)

Year	US Gypsum		Community Use	Export to Mexico	
	Based on Production	*Reported to USGS*		*Clifford Well*	*McDougal Well*
1953	241	-	-	-	-
1954	278	-	58.2	-	-
1955	295	-	59.4	-	-
1956	274	-	60.6	-	-
1957	272	-	61.8	-	-
1958	353	-	63.0	-	-
1959	375	-	64.2	-	-
1960	395	-	65.4	-	-
1961	348	-	66.6	-	-
1962	422	-	67.8	-	-
1963	442	-	69.0	-	-
1964	480	-	70.2	-	-
1965	415	-	71.4	-	-
1966	451	-	72.6	-	-
1967	511	-	73.8	-	-
1968	552	-	75.0	-	-
1969	560	-	76.2	-	-
1970	393	668	77.4	-	-
1971	338	575	78.6	-	-
1972	451	767	79.8	-	-
1973	375	638	81.0	-	-
1974	406	691	82.2	138	-
1975	361	614	83.4	211	-
1976	414	-	84.6	213	-
1977	473	-	85.8	222	-
1978	491	-	87.0	137	143
1979	496	-	88.2	137	143
1980	469	-	89.4	137	143
1981	261	-	90.8	137	143
1982	456	-	92.1	137	143
1983	472	-	93.5	137	-
1984	472	-	94.8	137	-
1985	489	-	96.2	-	-
1986	521	-	97.6	-	-
1987	512	-	98.9	-	-
1988	518	-	100.3	-	-
1989	492	-	101.6	-	-
1990	476	-	103.0	-	-
1991	428	-	104.5	-	-
1992	379	-	106.0	-	-
1993	362	-	107.4	-	-
1994	378	-	108.9	-	-
1995	327	-	110.4	-	-
1996	367	-	112.1	-	-
1997	332				
1998	333				

Notes:

\- No data

The primary current commercial and industrial use of water is by USG at its wallboard Plant and Quarry. Groundwater is extracted from three wells in the Ocotillo area and piped approximately eight miles to Plaster City. There are several sources of information on the rate of water used by USG. These include a January 5, 1975 letter to the USGS, a January 9, 1997, letter to the Imperial County Public Works Department, a discussion by Bookman-Edmonston (1996), and annual groundwater reports made to the Imperial County Public Works Department by USG. The information from these sources is summarized in Table 3.3-4. The average pumping rate for the five-year period from 1994 through 1998 is 347 AF/yr.

For the period from 1925 through 1975, USG reported water use to the USGS for use in the USGS groundwater modeling study (USGS, 1977). The basis for the pumping rates reported over this time period are uncertain. For the period from 1970 through 1980, USG also provided Bookman-Edmonston estimates of water use based on wallboard production rates (Bookman-Edmonston, 1996, page 6-2). Bookman-Edmonston reports "Estimates of water use provided to USGS are 70 percent greater than estimates of water use based upon production records during 1970 to 1975 (the only years where these records overlap). This difference could not be reconciled." Table 3.3-4 shows the water use reported to the USGS and the values based on production rates for the period from 1970 to 1975. The rates reported to the USGS range from 575 AF/yr to 767 AF/yr. The rates based on production range from 338 AF/yr to 451 AF/yr. The difference between these two data sets is referred to as the "U.S. Gypsum Variance" on Figure 3.3-8, Annual Water Production.

Since 1981, the groundwater extraction rate has reportedly been measured at each well by USG. Thus, these data are considered the most reliable.

Other current commercial and industrial users include several gravel quarries located within the Basin, near Interstate Highway 8 and northwest of Ocotillo. According to the Ocotillo/Nomirage Community Area Plan (ONCAP), the Val Rock and Farmers Land Leveling quarries each use between six to eight AF/yr of water. Bookman-Edmonston (1996, page 6-3) also reports at least three other gravel quarries in the area. Based on these values, annual water use for gravel quarry operations could be as high as 35 AF/yr, or more.

As early as 1958, a well in Ocotillo was used in part to export water to Mexico. Estimates of early water export are not available. In 1979, the Imperial County Planning Department had a study prepared (Copley, 1979) to estimate the amount of water exported to Mexico from the well in Ocotillo (referred to as the Clifford well, or well 16S/9E-25K2), based on the rate of electricity used to pump the well. From 1974 through 1978, the estimated export reportedly ranged from 137 AF/yr to 222 AF/yr. Exports from this well reportedly continued until about 1984.

Water exports also occurred from a well in Yuha Estates (the McDougal well, or well 17S/10E-11G4). Export reportedly began in September 1977 and continued until September 1982. It is estimated that approximately 143 AF/yr were being pumped from the Clifford Well. Table 3.3-4 shows the presumed rate of water export from 1974 through 1984. The information presented in the table assumes that production from the Clifford well continued from 1979 through 1984 at the same rate as that which occurred in 1978 (137 AF/yr). Imperial County attempted to halt or limit the export of water from the basin as early as 1979 due to concerns regarding overdraft and degradation of water quality (Mitchell, 1979; Huntley, 1980). McDougal Water Company ceased groundwater extraction for export in 1984.

1998 Baseline Conditions

Partial implementation of the Proposed Action has resulted in variable but presumably increasing water consumption since approximately 2000, based on the annual groundwater reports provided to the County by USG.

Water level measurements have been made by the USGS at wells in the Basin since at least the 1970s. The USGS has also conducted water-quality sampling at some of these wells over the same time period. The USGS monitoring was established in the 1970s to evaluate suspected overdraft conditions and the threat of water quality degradation in the basin (Montgomery-Watson, 1995, page 2-1). Table 3.3-5, Summary of Well Data, lists the wells with available water level data and water quality data, the dates of the available data, and the well construction information. Well locations are shown on Figure 3.3-4. For some wells, water-quality sampling only occurred in the 1980s or 1990. For other wells, a complete analysis of all significant water-quality parameters (most notably the alkalinity) did not begin until 1997.

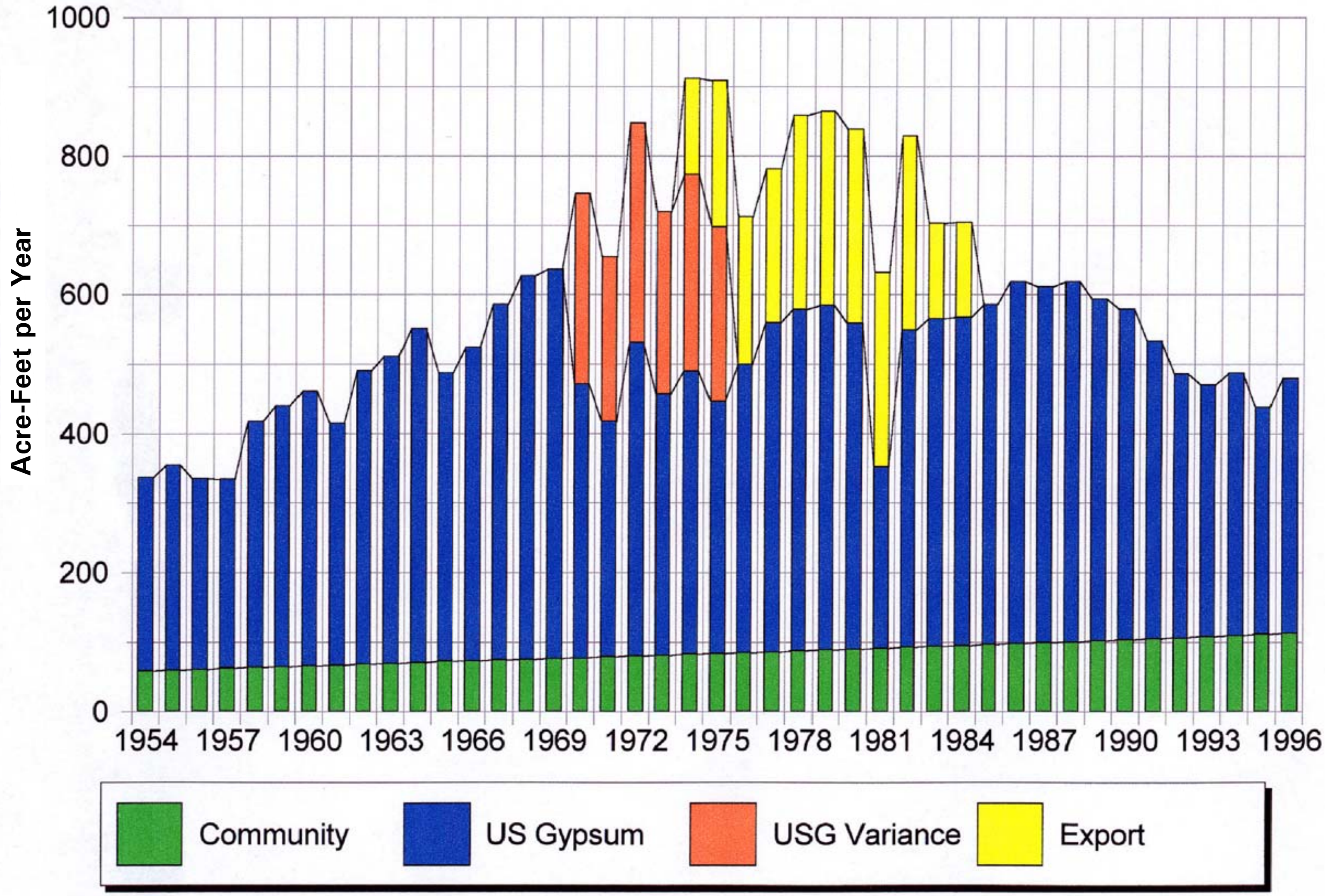

Figure 3.3-8
Annual Water Production
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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TABLE 3.3-5
SUMMARY OF WELL DATA
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well	Surface Elev (ft amsl)	Total Depth (ft bgs)	Perforated Interval (ft bgs)	Diameter (inches)	Use	Available Water-Level Data	Available Water Chemistry Data	Notes	Lat	Long
Yuha Estates Area										
17S/10E-11B1	376	301		7	Domestic	1975-76, 1978-01		McDougal	324138	1155529
17S/10E-11G1	380	300	160-300	8	Domestic/ Commercial	1976, 1971-72, 75-76, 78-01			324123	1155529
17S/10E-11G2	375	335	235-315	6.6	Domestic	1971, 1975-82, 1984	1972, 1977-82		324123	1155531
17S/10E-11G4	382	199/500		10.75	Unused	1978, 81-01			324119	1155532
17S/10E-11H1	380	329.9		8	Domestic	1968, 1978-91			324114	1155523
17S/10E-11H2	376	344		4		1973, 1978-87	1983-86		324118	1155521
17S/10E-11H3	380	348	202-333	5	Domestic	1987-2001	1987-89, 1991, 1993-2001		324117	1155520
Elsinore-Laguna Salada Fault Area										
16S/9E-24B1	385	129	125-128.5	2	Observation	1976-2001	1977-1990, 1992, 1994-01	USGS	324608	1155935
16S/9E-24D1	385	149	145.5-149	2	Observation	1976-2001	1977-1990, 1992, 1994-01	USGS	324558	1155952
16S/10E-27R1	300	104	102-104	2	Observation	1975-2001		USGS	324430	1155555
16S/10E-29H1	251	39	37-39	2	Observation	1975-2001		USGS	324458	1155703
16S/10E-29L1	280	48	44.5-48	2	Observation	1976-1988	1977-88	USGS	324440	1155743
16S/10E-29R2	258	30	28-30	2	Unused	1975-1989			324428	1155707
Ocotillo-Nomirage Area										
16S/9E-25K2	364	372	132-192, 242-372	10	Commercial	1972, 1975-01	1972-83, 1988-90, 1992, 1994-01	McDougal	324439	1155934
16S/9E-25Q1	372	128		8	Unused	1974, 1976, 1981-92			324426	1155936
16S/9E-35M1	616	535	415-495	8	Domestic	1962, 1975-89			324345	1160100
16S/9E-36D2	433	200	150-200	8	Domestic	1975-2001	1975-90		324422	1160003
16S/9E-36G4	382	560	340-560	10.75	Commercial	1975-2001		Westwind	324401	1155932
16S/9E-36H1 USGS	338	410	157-372	10.75	Industrial	1954, 60, 66, 74, 76-2001	1963, 1977-89, 1991, 1993-01	US Gypsum #5	324407	1155909

The variations in the time period of available and reliable data regarding water production, water levels, and water quality complicate the process of identifying the baseline conditions for the Project. For the pumping by USG, the baseline is considered the average water production for the period form 1994 through 1998, which is 347 AF/yr. Based on the available information, the appropriate baseline for water levels and water quality parameters is defined by the conditions that existed in 1996-1997, since that was the latest pre-Proposed Action data available. Thus, the data from this time period will be used as the point of comparison to evaluate potential future impacts from the proposed increase in groundwater extraction rates for the Project. The baseline data are summarized in Tables 3.3-6A, B and C, Depth to Groundwater and Groundwater Surface Elevation. It is important to note, however, that due to the limited information available for definition of the baseline, the evaluation of potential impacts must rely heavily on all of the available historical data for the Ocotillo/Coyote Wells Groundwater Basin, as reported in these table references.

3.3.3 Plant Water Usage: Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.3.3.1 Approach

The County and local water users have expressed concerns regarding the conditions and possible degradation of water quality in the Ocotillo/Coyote Wells Groundwater Basin. These concerns were the basis for initiating the USGS water-level measurement and water-quality sampling program, and the reason the 1977 USGS modeling study was conducted. Previous studies of the Ocotillo/Coyote Wells Groundwater Basin have relied primarily on water-balance calculations and numerical modeling to evaluate potential impacts to water quantity and water quality from existing or projected rates of groundwater pumping (e.g. USGS, 1977; Huntley, 1979; Montgomery-Watson, 1995; Bookman-Edmonston, 1996). Based on detailed review of these previous studies, the available data appreciably limits the usefulness of these methods for evaluating impacts to the Basin.

The water-balance calculations and numerical modeling conducted previously were regional in approach. In general, they address the entire Ocotillo/Coyote Wells Groundwater Basin. This regional, basin-wide perspective provides valuable information and insight into the hydrologic conditions and behavior of the groundwater basin on a large-scale basis. This perspective, however, limits the ability of the previous studies to address local impacts or the performance of individual wells or groups of wells. These limitations are acknowledged by Montgomery-Watson (1995) and Bookman-Edmonston (1996).

Table 3.3-6A
Depth to Groundwater and Groundwater Surface Elevation
Ocotillo-Nomirage Area

WELL	16S/9E-25K2			16S/9E-25Q1			16S/9E-36D2			16S/9E-36G4			16S/9E-36H1			16S/9E-35M1		
	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf
DATE	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)
03/21/54													68.5	338	269.5			
05/15/60													85		253			
03/15/62																321	616	295
06/15/64																		
08/15/66													81		257			
04/26/67																		
09/30/71																		
07/25/72																		
08/25/72	83	364	281															
03/15/73																		
12/01/74				104.24	372	267.76							80.07		257.93			
12/30/74				104.3		267.7												
05/12/75																		
05/14/75																		
06/01/75																		
06/28/75	129.5		234.5				157.9	433	275.1	136.47	382	245.53				323.16		292.84
07/27/75																		
12/09/75																		
01/08/76	99.7		264.3	104.38		267.62	158.16		274.84	126.36		255.64	80.21		257.79			
10/14/76	111.57		252.43				158.46		274.54	128.39		253.61				323.08		292.92
11/10/76																		
11/17/76																		
12/10/76																		
04/27/77	104.1		259.9				158.57		274.43	129.43		252.57	81.66		256.34	327.04		288.96
10/04/77	145.62		218.38				158.87		274.13	126.14		255.86	82.65		255.35	325.38		290.62
04/26/78	98.05		265.95				158.79		274.21	124.7		257.3	80.89		257.11			
05/24/78																324.01		291.99
06/19/78																		
06/24/78																		
06/25/78																		
07/05/78																		
07/06/78																		
08/02/78																		
10/04/78	144.07		219.93				159.15		273.85	128.15		253.85	83.21		254.79	323.66		292.34
03/15/79	101.47		262.53															
03/16/79																		
03/22/79							159.1		273.9	126.68		255.32	91.82		256.18	325.26		290.74
09/13/79	105.8		258.2				159.35		273.65	126.05		255.95	83.26		254.74	323.8		292.2
03/12/80	93.22		270.78										82.01		255.99			
03/20/80	144.85		219.15															
04/18/80	147.3		216.7															
05/02/80	93.93		270.07				159.3		273.7	124.1		257.9				323.84		292.16
09/25/80	145.3		218.7				159.58		273.42	126.53		255.47	82.67		255.33	323.89		292.11
04/29/81	95.04		268.96				159.73		273.27	125.23		256.77	81.25		256.75	324.11		291.89
11/06/81	95.56		268.44	106.89		265.11	160.1		272.9	124.24		257.76	82.72		255.28	323.98		292.02

03/13/82	95.11		268.89	106.41		265.59	160.1		272.9	123.66		258.34	81.65		256.35	324.17		291.83
10/06/82										134.95		247.05	82.89		255.11			
10/07/82	96.84		267.16	107.2		264.8	160.36		272.64	125.77		256.23				324.41		291.59
04/01/83	95.1		268.9	105.85		266.15	160.04		272.96	124.66		257.34	81.02		256.98	324.43		291.57
09/22/83																		
10/26/83	95.9		268.1	107.18		264.82	160.49		272.51	123.3		258.7				324.69		291.31
10/27/83	96.22		267.78										82.51		255.49			
04/11/84										124.95		257.05	82.32		255.68			
04/12/84	94.04		269.96	106.24		265.76	160.32		272.68	123.71		258.29				324.48		291.52
10/24/84	93.48		270.52	106.08		265.92	160.31		272.69	126.35		255.65	82.78		255.22	324.56		291.44
04/25/85	93.73		270.27	106.14		265.86	160.23		272.77	124.86		257.14	82.62		255.38	325.77		290.23
10/31/85	93.86		270.14	106.56		265.44	160.56		272.44	122.63		259.37	84.08		253.92	324.87		291.13
03/27/86	93.63		270.37	105.92		266.08	160.37		272.63	122.14		259.86	83.29		254.71			
04/03/86	93.54		270.46													325.81		290.19
10/23/86	94.24		269.76	106.72		265.28	160.68		272.32	122.61		259.39	84.19		253.81	329.06		286.94
10/24/86	94.03		269.97															
04/01/87	93.78		270.22	106.04		265.96	160.5		272.5	122.4		259.6	83.42		254.58	325.27		290.73
10/23/87	94.06		269.94	106.73		265.27	160.78		272.22	123.39		258.61	84.06		253.94	325.13		290.87
03/15/88	93.94		270.06	106.25		265.75	160.7		272.3	122.65		259.35	83.84		254.16	326.21		289.79
10/19/88	94.4		269.6	107.17		264.83	160.92		272.08				84.65		253.35	325.16		290.84
03/17/89	94.23		269.77	106.71		265.29	160.94		272.06	123.1		258.9	83.67		254.33	326.01		289.99
10/31/89	94.47		269.53	107.33		264.67	161.15		271.85	125.9		256.1	84.2		253.8			
03/20/90	94.46		269.54	107.18		264.82	161.19		271.81	126.93		255.07	84.04		253.96			
10/24/90	94.59		269.41	107.51		264.49	161.3		271.7	129.04		252.96	84.07		253.93			
04/02/91	94.47		269.53	107.11		264.89	161.29		271.71	128.39		253.61	83.45		254.55			
10/07/91	94.57		269.43	107.27		264.73	161.36		271.64	131.26		250.74	83.75		254.25			
04/07/92	94.46		269.54				161.35		271.65	127.85		254.15	83.96		254.04			
10/28/92	95.07		268.93				161.57		271.43	127.62		254.38	84.9		253.1			
04/14/93							161.56		271.44	126.52		255.48	84.32		253.68			
10/21/93	95.08		268.92				161.74		271.26	126.05		255.95						
03/14/94							161.71		271.29	125.11		256.89						
03/24/94	94.85		269.15										83.67		254.33			
10/27/94							161.84		271.16	126.11		255.89	84.69		253.31			
03/30/95	94.32		269.68										82.02		255.98			
05/24/95							162.02		270.98	138.36		243.64						
07/31/95																		
10/17/95							161.85		271.15	123.97		258.03	82.6		255.4			
03/20/96	94.61		269.39				161.75		271.25	128.5		254.5	82.11		255.89			
10/16/96							162.02		270.98	129.87		252.13						
03/24/97	96.59		267.41				161.9		271.1	125.38		256.62	82.39		255.61			
10/20/97							162.05		270.95	125.96		256.04	82.81		255.19			
03/23/98							162.06		270.94	125.2		256.8						
03/30/98																		
10/13/98							162.09		270.91	126.97		255.03	83.36		254.64			
03/23/99							162.24		270.76	128.16		253.84	83.04		254.96			
10/25/99							162.33		270.67	127.93		254.07	83.67		254.33			
03/29/00							162.54		270.46	132.6		249.4	84.24		253.76			
10/23/00							162.57		270.43	128.7		253.3	85.13		252.87			
03/26/01							162.87		270.13				85.54		252.46			

DTW = Depth to water
Surf El = Surface elevation to well casing
GW Surf = Groundwater surface elevation

ft bgs = feet below ground surface
ft amsl = feet above mean sea level

Table 3.3.6B
Depth to Groundwater and Groundwater Surface Elevation
Yuha Estates Area
Ocotillo/Coyote Wells Groundwater Basin

WELL	17S/10E-11H1			17S/10E-11H2			17S/10E-11H3			17S/10E-11G1			17S/10E-11G2			17S/10E-11G4			17S/10E-11B1		
DATE	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)
06/15/64	158.27	380	221.73																		
04/26/67										170	380	210									
09/30/71										150		230	158	375	217						
07/25/72										164		216									
03/15/73				165	376	211															
06/01/75													164		211						
06/28/75													164.25		210.75				156.8	376	219.2
07/27/75										164.94		215.06									
01/08/76										165.11		214.89							154.8		221.2
10/14/76													164.04		210.96						
04/27/77													163.68		211.32						
10/04/77													164.45		210.55						
05/24/78				179.02		196.98							164.91		210.09						
06/19/78	226.46		153.54										164.98		210.02						
06/24/78	195.36		184.64	182.7		193.3													157.9		218.1
06/25/78	164.2		215.8	169.4		206.6							164.8		210.2						
07/05/78										195.56		184.44	165.09		209.91	193.18	382	188.82			
07/06/78										195.58		184.42	165.09		209.91	193.12		188.88			
08/02/78																193.35		188.65			
10/04/78													165.58		209.42						
03/15/79	164.29		215.71	171.16		204.84				204.38		175.62	165.58		209.42				158.27		217.73
03/16/79	164.27		215.73																		
03/22/79	164.24		215.76	170.52		205.48							165.6		209.4				158.25		217.75
09/13/79	166.05		213.95	176.29		199.71				216.86		163.14	166.84		208.16				159.53		216.47
03/12/80	166.55		213.45							222.82		157.18									
03/20/80	166.59		213.41							218.29		161.71									
04/18/80	166.81		213.19							213.7		166.3									
05/02/80	167.65		212.35	176.6		199.4				216.6		163.4	167.64		207.36				159.96		216.04
09/25/80	170.46		209.54	180.36		195.64				225.64		154.36	168.93		206.07				161.06		214.94
04/29/81	170.69		209.31	182.35		193.65				226.73		153.27	170.25		204.75	199.37		182.63	161.47		214.53
11/06/81	173.35		206.65	184.43		191.57				232.8		147.2	172.38		202.62				162.47		213.53
03/13/82	177		203	185.44		190.56				228.15		151.85	172.92		202.08				162.47		213.53
10/07/82	180.83		199.17	189.87		186.13				221.2		158.8	178.03		196.97	206.21		175.79	163.03		212.97
04/01/83	174.12		205.88	185.95		190.05				205.99		174.01				203.14		178.86	163.03		212.97
10/26/83	174.33		205.67	187.34		188.66				195.86		184.14				199.31		182.69	163.37		212.63
04/12/84	172.39		207.61	186.39		189.61				191.17		188.83				196.28		185.72	163.34		212.66
10/24/84	171.79		208.21	186.75		189.25				187.63		192.37				193.25		188.75	163.49		212.51
04/25/85	171.87		208.13	186.77		189.23										191.9		190.1	163.1		212.9
10/31/85	171.69		208.31	190.27		185.73				185.31		194.69				189.71		192.29	163.29		212.71
04/03/86	171.37		208.63	185.06		190.94				182.92		197.08				188.26		193.74	162.99		213.01
10/23/86	171.33		208.67	187.41		188.59				182.68		197.32				187.22		194.78	163.3		212.7

Table 3.3.6B (Continued)

WELL	17S/10E-11H1			17S/10E-11H2			17S/10E-11H3			17S/10E-11G1			17S/10E-11G2			17S/10E-11G4			17S/10E-11B1		
	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf
DATE	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)
04/01/87	171.01		208.99							182.73		197.27				186.69		195.31	163.14		212.86
10/23/87	173.39		206.61				179.29	380	200.71	182.48		197.52				185.92		196.08	163.82		212.18
03/15/88	172.18		207.82				178.81		201.19	181.34		198.66				185.21		196.79	163.29		212.71
10/19/88	171.02		208.98				180.11		199.89	180.5		199.5				184.26		197.74	164.05		211.95
03/17/89	170.45		209.55				177.99		202.01	180.95		199.05				183.91		198.09	163.79		212.21
10/31/89	169.84		210.16				179.08		200.92	181.22		198.78				183.47		198.53	163.84		212.16
03/20/90	169.55		210.45				177.73		202.27	179.61		200.39				182.79		199.21	163.36		212.64
10/24/90							178.57		201.43	179.45		200.55				182.14		199.86	163.72		212.28
04/02/91	172.44		207.56				176.64		203.36	178.21		201.79				181.45		200.55	163.29		212.71
10/07/91	170.39		209.61							177.59		202.41				180.7		201.3	163.72		212.28
04/07/92							175.57		204.43	176.73		203.27				179.76		202.24	163.13		212.87
10/28/92							176.84		203.16	178.03		201.97				180.08		201.92	163.65		212.35
04/14/93							175.47		204.53	176.97		203.03				179.46		202.54	163.21		212.79
10/21/93							176.35		203.65	178.89		201.11				180.1		201.9	163.87		212.13
03/24/94										178.02		201.98				179.56		202.44	163.34		212.66
10/27/94							176.36		203.64							179.58		202.42	163.56		212.44
03/30/95							175.64		204.36							178.97		203.03	163.18		212.82
07/31/95										177.16		202.84									
10/17/95							178.32		201.68	177.15		202.85				178.46		203.54			
03/20/96										176.94		203.06				178.12		203.88	163.2		212.8
10/16/96							178.53		201.47	177.52		202.48				178		204	163.62		212.38
03/24/97							175.69		204.31	176.78		203.22				177.74		204.26	163		213
10/20/97							176.69		203.31	176.35		203.65				177.34		204.66	163.05		212.95
03/23/98							175.29		204.71	175.42		204.58				176.82		205.18			
10/13/98							175.43		204.57	175.5		204.5				176.3		205.7			
03.23/99							176		204	174.97		205.03				176.06		205.94	162.51		213.49
10/25/99							176.39		203.61	174.59		205.41				175.66		206.34	162.53		213.47
03/29/00							175.89		204.11	174.14		205.86				175.34		206.66	163.33		213.67
10/23/00							176.53		203.47	174.03		205.97				174.94		207.06	162.47		213.53
03/26/01							174.26		205.74	173.38		206.62				174.48		207.52	162.02		213.98

DTW = Depth to water ft bgs = feet below ground surface
Surf El = Surface elevation to well casing ft amsl = feet above mean sea level
GW Surf = Groundwater surface elevation

Table 3.3.6C
Depth to Groundwater and Groundwater Surface Elevation
Area East of Coyote Wells
Ocotillo/Coyote Wells Groundwater Basin

WELL	16S/9E-24B1			16S/9E-24D1			16S/10E-29H1			16S/10E-29L1			16S/10E-29R2		
DATE	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)
03/15/62															
06/15/64															
04/26/67															
09/30/71															
07/25/72															
03/15/73															
05/12/75							22.2	251	228.8				9.74	258	248.26
05/14/75															
06/01/75															
06/28/75							22.03		228.97				9.95		248.05
07/27/75															
12/09/75							22.02		228.98						
01/08/76													9.95		248.05
10/14/76							22.04		228.96				9.94		248.06
11/10/76	105.35	385	279.65							23.32	280	256.68			
11/17/76	105.34		279.66							23.34		256.66			
12/10/76				131	385	254									
04/27/77	105.4		279.6	103.86			21.9		229.1	23.64		256.36	10.32		247.68
10/04/77	105.44		279.56	103.93			21.76		229.24	23.98		256.02	10.95		247.05
05/24/78	105.49		279.51	104.07			21.53		229.47	24.08		255.92	10.47		247.53
06/19/78															
06/24/78															
06/25/78															
07/05/78															
07/06/78															
08/02/78															
10/04/78	105.59		279.41	104.16		280.84	21.66		229.34	24.59		255.41	11.75		246.25
03/15/79	105.62		279.38	104.2		280.8	21.55		229.45	24.37		255.63			
03/16/79															
03/22/79													11.07		246.93
09/13/79	105.4		279.6	104.28		280.72	21.96		229.04	25.07		254.93	12.61		245.39
03/12/80															
03/20/80															
04/18/80															
05/02/80	105.74		279.26	104.4		280.6	22		229	25.27		254.73	12.49		245.51

Table 3.3.6C (Continued)

WELL	16S/9E-24B1			16S/9E-24D1			16S/10E-29H1			16S/10E-29L1			16S/10E-29R2		
DATE	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)
09/25/80	105.78		279.22	104.48		280.52	22.24		228.76	25.8		254.2	13.49		244.51
04/29/81	105.84		279.16	104.58		280.42	22.34		228.66	26.03		253.97	13.67		244.33
11/06/81	105.9		279.1	104.71		280.29	22.53		228.47	26.63		253.37	14.43		243.57
03/13/82	105.95		279.05	104.77		280.23	22.55		228.45	26.5		253.5	14.13		243.87
10/07/82	106.03		278.97	104.89		280.11	22.74		228.26	27.05		252.95	14.92		243.08
04/01/83	106.1		278.9	104.97		280.03				26.29		253.71	13.89		244.11
09/22/83										27.25		252.75			
10/26/83	106.16		278.84	105.1		279.9				27.33		252.67	15.65		242.35
04/12/84	106.22		278.78	105.2		279.8				27.49		252.51	15.66		242.34
10/24/84	106.29		278.71	105.27		279.73	22.99		228.01	27.94		252.06	16.24		241.76

Due to the regional perspective of the previous water balance calculations and numerical models, there is a concern that these previous studies are not focused enough to predict the potential local impacts of future increases in pumping with sufficient detail for this evaluation. Therefore, a different set of analyses have been performed for this Project. For this evaluation, the analyses selected include analytical calculations of Basin conditions and comparative analysis of water level and groundwater chemistry data. In addition, the numerical modeling recently conducted (Bookman-Edmonston, 2004) was intended to address issues and concerns specific to the Proposed Action, and received significant input and review from the USGS and the preparers of this EIR/EIS. These evaluations are presented below.

3.3.3.2 Basin Conditions

The hydrologic conditions within the Ocotillo/Coyote Wells Groundwater Basin can be defined using standard hydrologic equations, such as Darcy's Law. Darcy's Law states that:

$$Q = K \times I \times A,$$

where Q is the rate of groundwater discharge (units of volume per time, such as AF/yr), K is the hydraulic conductivity of the aquifer (units of length per time, such as feet per day), I is the hydraulic gradient, or slope of the groundwater surface (units of length per length, such as foot per foot), and A is the cross-sectional area of the aquifer across which the groundwater discharge, Q, is perpendicularly occurring (units of area, such as square feet).

In some instances, it is easier to estimate the transmissivity of the aquifer, T, as opposed to the hydraulic conductivity, K. The transmissivity is simply the hydraulic conductivity, K, multiplied by the aquifer thickness, b. The cross sectional area of the aquifer, A, can also be defined as the aquifer thickness, b, multiplied by the length of the cross-sectional area across the ground surface, L (if the cross-section is assumed as rectangular). With these terms, Darcy's Law may also be rewritten as:

$$Q = T \times I \times L.$$

The groundwater flow rate, or velocity, q (units of distance per time, such as feet per year) is also defined as:

$$q = (K \times I)/n,$$

where n is the effective porosity of the aquifer and the other terms are as defined above.

Figures 3.3-5 and 3.3-6 present groundwater contours of the Basin as interpreted by the USGS (1977) and Bookman-Edmonston (1996) for the years 1975 and 1995, respectively. Comparison of these two figures indicates that the groundwater contours have been relatively consistent in the areas of the Basin that are more than a few miles from Ocotillo, Nomirage, and Yuha Estates. Thus, the hydraulic gradients that can be calculated from these figures can be used in the evaluation of Basin conditions.

Three lines extending across different parts of the Basin are indicated on Figures 3.3-5 and 3.3-6. These lines are drawn parallel to the groundwater contours. The first line is located in the upgradient part of the Basin, approximately three miles northeast of Ocotillo. A small embayment exists at this location where the bedrock of the Jacumba Mountains extends northward into the Basin, causing a narrowing of the alluvial aquifer. The second line exists in the downgradient part of the Basin located to the west of the Laguna Salada fault, north of the international border with Mexico. The third line extends across the downgradient part of the Basin that is present to the east of Coyote Wells and the Laguna Salada fault zone.

In the upgradient area of the aquifer, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 30 feet per mile. The length across the alluvial basin is approximately 3.25 miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the alluvial material in the basin was determined to have an average hydraulic conductivity of 15 ft/day, resulting in a transmissivity of about 1,000 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the upgradient area of the Basin, is approximately 800 AF/yr. The average groundwater velocity, or flow rate, is about 100 ft/yr, meaning that it takes over 50 years for the groundwater to flow one mile.

Figure 2 of the USGS (1977) model report and Figure 7-1 of the Bookman-Edmonston (1996) report each present a map of the mean annual precipitation across the Jacumba Mountains, Coyote Mountains, and the Ocotillo/Coyote Wells Groundwater Basin. Based on the distribution of rainfall in the mountains, and the extent of the mountain front along the edge of the Basin, it is estimated that at least two-thirds of the groundwater recharge enters the Basin in the upgradient area of the aquifer. Thus, if the groundwater discharge from the upgradient area of the aquifer is approximately 800 AF/yr, the total recharge to the Basin may be as high as 1,200 AF/yr. As discussed in

Section 3.3.1, the recharge to the Basin was calibrated to be approximately 1,077 AF/yr. These two estimates of recharge to the Basin differ by only about 10 percent. Thus, the average annual recharge to the Basin can be estimated to be between about 1,100 AF/yr and 1,200 AF/yr, given that the two estimates were calculated using completely different approaches (groundwater discharge versus model calibration) but yield similar results. It should be noted, however, that it takes several decades for the recharge that occurs along the mountain front to reach the communities of Ocotillo, Nomirage, and Yuha Estates.

In the downgradient area of the aquifer near the international border with Mexico, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately six feet per mile. The length across the alluvial basin is approximately 5.25 miles. Using the model-calibrated hydraulic conductivity of 15 ft/day, the transmissivity of the aquifer in this area of the Basin is about 2,100 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin and across the international border, is approximately 550 AF/yr. The average groundwater velocity, or flow rate, is about 20 ft/yr, meaning that it will take over 250 years for the groundwater to flow one mile.

In the downgradient area of the aquifer east of Coyote Wells and the Laguna Salada fault zone, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 40 feet per mile. The length across the alluvial basin is approximately five miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the Tertiary marine sediments in this area of the Basin were determined to have an average hydraulic conductivity of one ft/day, resulting in a transmissivity of about 500 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin to the east of the Elsinore-Laguna Salada fault zone, is approximately 840 AF/yr. The average groundwater velocity, or flow rate, is about 10 ft/yr, meaning that it will take over 500 years for the groundwater to flow one mile.

Based on the above calculations, the total groundwater discharge from the Basin is estimated to be approximately 1,300 AF/yr. This value is less than the total groundwater underflow of 1900 AF/yr to 1999 AF/yr estimated by the USGS (1977), Huntley (1979), and Bookman-Edmonston (1996) by approximately 33 percent, but is greater than the 990 AF/yr estimated by the recent groundwater model (Bookman-Edmonston, 2004) by approximately 31 percent. These same previous studies indicate that historic natural evapotranspiration rates from the Basin in areas of shallow groundwater may have ranged from 250 AF/yr to 400 AF/yr. Thus, the total rate of natural groundwater loss from the Basin, exclusive of groundwater pumping for domestic, commercial, industrial, or agricultural purposes could have been between 1,550 AF/yr to 1,700 AF/yr. Comparing these estimates of loss with the total recharge estimate of 1,100 AF/yr to 1,200 AF/yr indicates that the rate of groundwater outflow from the Basin may have been greater than the rate of recharge prior to the initiation of pumping. Similar conditions have been observed in other basins in Imperial County (see, for example, Section 3.3.3, below) due to long-term climatic changes. Specifically, if climatic conditions were much wetter several centuries or even millennia ago, it would take thousands of years for the recharge from the prior wetter periods to drain from the basin given the very slow rates of groundwater movement cited above. The rate of natural groundwater outflow will exceed the rate of recharge until the Basin drains to the point where the hydraulic gradients decrease and the recharge and outflow are once again in equilibrium. Until this equilibrium point is reached, water level elevations throughout much of the Ocotillo/Coyote Wells Groundwater Basin will decrease, even in the absence of pumping.

In many groundwater basins, removal of groundwater, for example by pumping, can cause an increase in the rate of recharge. This can occur by increasing the hydraulic gradient in areas where inflow occurs from an adjacent groundwater basin. It can also occur by lowering the water table near surface-water bodies, resulting in a greater rate of percolation. In the Ocotillo/Coyote Wells Groundwater Basin, however, the only source of recharge is seasonal rainfall runoff from the adjacent mountains. The rate of recharge will fluctuate on an annual basis based on variations in the amount of rainfall. The average rate of recharge, however, is expected to remain constant unless there are major long-term shifts in climatic conditions. The long groundwater travel times across the basin (centuries to millennia) will tend to even out short-term (e.g. annual) fluctuations in rainfall amounts.

In the Ocotillo/Coyote Wells Groundwater Basin, pumping may reduce the rate of groundwater loss to some degree. For example, a drop in the water level to the east of Coyote Wells is believed to have reduced the rate of evapotranspiration by several hundred AF/yr (USGS, 1977). Pumping has also caused the hydraulic gradient near the international border with Mexico to flatten. The flatter hydraulic gradient reduces the rate of groundwater discharge. If the rate of pumping occurring in the Basin is approximately equal to the reduction in discharge, it is possible that the additional pumping will not accelerate the natural rate of water-level decline, even though an increase in extraction rates occurs. This possibility is discussed further below.

To the east of Coyote Wells and the Laguna Salada fault, the hydrogeology of the Ocotillo/Coyote Wells Groundwater Basin is dominated by the occurrence of the Tertiary marine sediments. As discussed above, these sediments have a transmissivity that is less than one tenth that of the alluvial aquifer, which is present primarily to the west of the fault zone. The hydraulic gradient to the east of the fault zone is about five times greater (or steeper) than the hydraulic gradient in the Ocotillo area. Several previous studies attribute this difference in hydraulic gradient to some sort of barrier that may exist at the location of a postulated subsurface connection between the Elsinore fault and the Laguna Salada fault.

As part of this evaluation, specific evidence that the fault zone has its own material properties, and acts as a barrier, could not be identified. The change in gradient can be attributed solely to the difference in material types, and their respective properties (e.g., transmissivity), on either side of the fault. Furthermore, the magnitude of the gradient to the east of the fault is not unprecedented within the Basin. In the upgradient area of the Basin, as discussed above, the narrowing of the Basin results in a hydraulic gradient that is almost the same as it is to the east of Coyote Wells in the Tertiary marine sediments. Thus, variations in the Basin are most likely a result of features that cause a restriction in flow. These features can be a narrowing of the Basin, acting like a bottleneck, or a change of material types to one that has a lower transmissivity. In accordance with Darcy's Law, as described above, if the length across the Basin decreases and/or the transmissivity decreases, then the hydraulic gradient must increase to maintain discharge. This issue is discussed further below.

Initial evaluations conducted for this EIR/EIS prompted USG's consultant, Bookman-Edmonston, to conduct additional literature research and field observations. Bookman-Edmonston (2003, p. 2) concluded that "modeling the eastern boundary (of the alluvial material) as a less permeable linear zone representing the extension of the Elsinore fault to the Laguna Salada fault is clearly inconsistent with current geologic interpretation of the basin." As a result of this additional study (Bookman-Edmonston, 2003), the revised numerical model shows the transition from alluvial material to Tertiary marine sediments east of Coyote Wells as a simple upward fold of the underlying bedrock and Tertiary sediments. This folding that has removed the alluvial material and brought the Tertiary sediments to the surface. The interpretation of conditions east of Coyote Wells in the revised numerical model is significantly different than the conditions assumed in previous modeling efforts (USGS, 1977; Bookman-Edmonston, 1996).

3.3.3.3 Water Level Data

As discussed above, the USGS has been monitoring water levels in a number of wells within the Ocotillo/Coyote Wells Groundwater Basin since the early 1970s due to concerns regarding potential overdraft conditions and degradation of water quality. The data collected by the USGS is included in Appendix B and summarized in Tables 3.3-6A-C for selected wells within the Basin. For this analysis, water level data from three separate areas of the basin have been evaluated. These areas include Ocotillo/Nomirage, Yuha Estates, and the area east of Coyote Wells.

Ocotillo/Nomirage

The majority of the groundwater pumping in the Ocotillo/Coyote Wells Groundwater Basin occurs in the Ocotillo/Nomirage area. Figure 3.3-9, Ocotillo/Nomirage Area Hydrograph, is a hydrograph of the water level data from the Ocotillo/Nomirage area. A hydrograph shows the water level data as it changes over time. The wells within the Ocotillo/Nomirage area for which adequate data exist include:

- 16S/9E-25K2 (Clifford well/McDougal Water Co.)
- 16S/9E-25Q1
- 16S/9E-35M1
- 16S/9E-36D2
- 16S/9E-36G4 (Westwind)
- 16S/9E-36H1 (U.S. Gypsum No. 5)

Information regarding well construction and sampling history are presented in Table 3.3-5.

Well 16S/9E-25K2 was pumped for export of water to Mexico from 1974 to 1984. As indicated in Table 3.3-4 and in Figure 3.3-8, Annual Water Production, water production from this well increased from 138 AF/yr in 1974 to 222 AF/yr in 1977, and then is presumed to have decreased to 137 AF/y from 1978 to 1984. Actual production data after 1978, however, is uncertain. The pumping of this well is readily apparent on the hydrograph (Figure 3.3-9). Pumping of this well caused drops in the water level of 50 feet to 60 feet between 1975 and 1981.

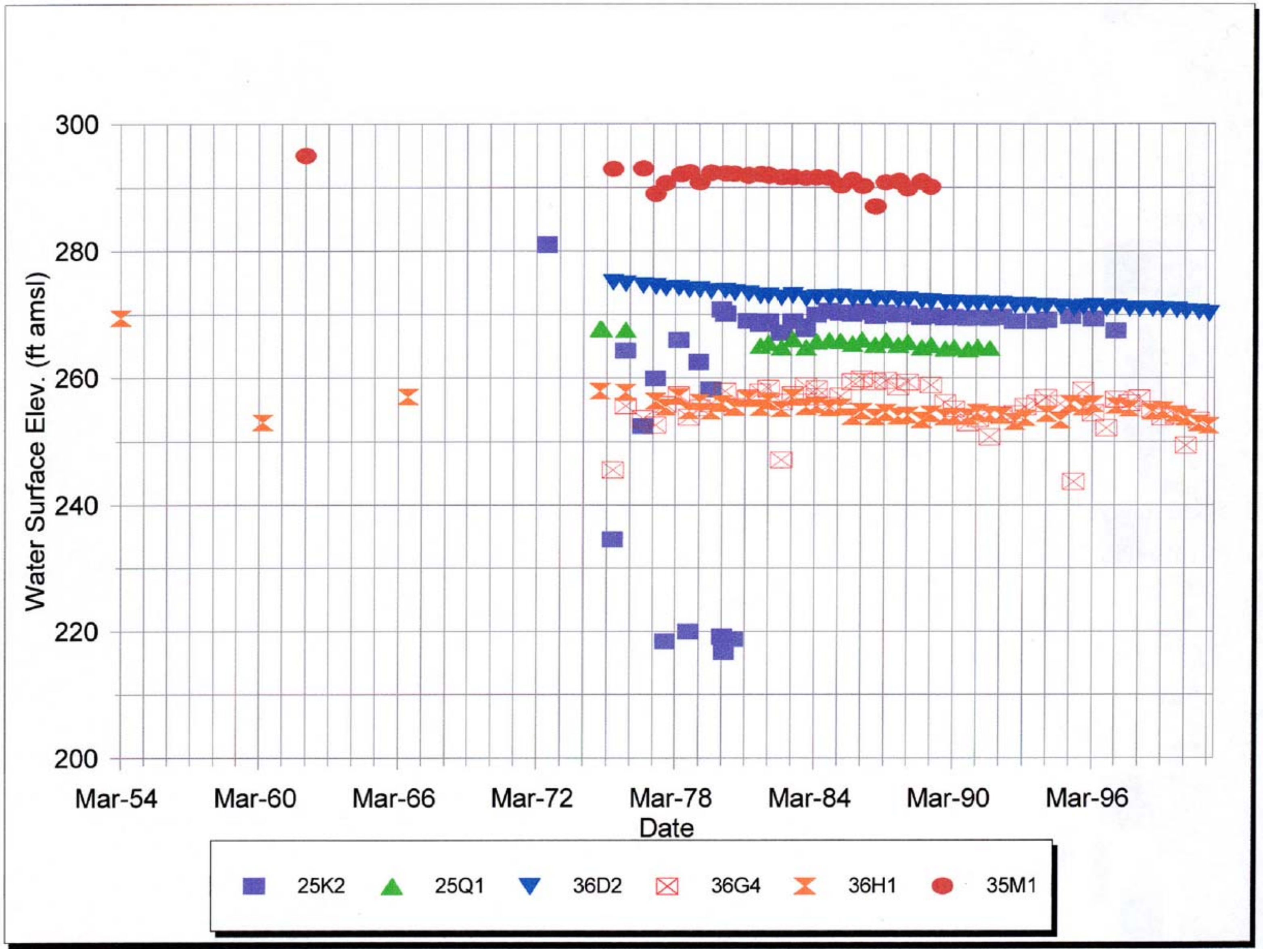

Figure 3.3-9
Ocotillo/Nomirage Area Hydrograph
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Wells 16S/9E-35M1 and 16S/9E-36G4 serve one or more domestic users. The exact pumping rate for each of these wells is unknown. The hydrograph in Figure 3.3-9, however, shows occasional short-term drops in the water level in both of these wells that are most likely indicative of the effects of pumping these wells. The short-term drops in water level are on the order of 10 feet in both wells.

The hydrograph for USG well No. 5 (16S/9E-36H1) shows only minor long-term fluctuations of only a few feet from 1976 through 2001. The total pumping from all three USG wells during this time period varied from about 260 AF/yr to over 500 AF/yr, as shown in Table 3.3-4 and on Figure 3.3-8. The slight fluctuations shown on the hydrograph for USG well No. 5 generally correlate with changes in annual production rate. It is not known how the total water production is distributed among the three USG wells, and it is not possible to evaluate the overall impact of pumping by USG based on the hydrograph for well No. 5.

The hydrographs for all of the wells shown in Figure 3.3-9 indicates that the static (non-pumping) water levels in the Ocotillo/Nomirage area have steadily declined over the last 30 years. The total decline is about five to six feet, for an average rate of water level decline of one foot every five years. The hydrographs for several of the wells, but most notably 16S/9E-36D2, indicate that the decline has been very consistent over this time period. This is somewhat surprising because the rate of rainfall in the basin from 1976 to 1993 was generally above average (see Figure 3.3-2) and the rate of water production from the basin from 1979 to 1996 decreased by almost 45 percent (see Figure 3.3-8).

Yuha Estates

Yuha Estates is located approximately three to four miles southeast and downgradient of the Ocotillo/Nomirage area. The recent literature research and field observations conducted by Bookman-Edmonston (2003) indicate that the geologic conditions in the Yuha Estates area are markedly different than those in the Ocotillo/Nomirage area. The Yuha Estates area sits on both a topographic and structural ridge trending northeast-southwest across the Ocotillo/Coyote Wells Groundwater Basin. The structural ridge is formed by a concave-down curvature of the sedimentary beds referred to as an anticline. The combination of the topographic and structural ridges means that the Tertiary sediments occur at a much higher elevation in the Yuha Estates area than in the Ocotillo/Nomirage area. Bookman-Edmonston (2003) indicates that water from some of the deeper wells in the Yuha Estates area comes, at least partially, from the Tertiary sediments underlying the alluvial material.

Most of the pumping in Yuha Estates is for local domestic use. From 1978 to 1982, water was pumped from one well (17S/10E-11G1) for export to Mexico at a reported rate of approximately 143 AF/yr. Figure 3.3-10, Yuha Estates Area Hydrograph, is a hydrograph of the water level data from the Yuha Estates area. A hydrograph shows the water level data as it changes over time. The wells within the Yuha Estates area for which adequate data exists include:

- 17S/10E-11H1
- 17S/10E-11H2
- 17S/10E-11H3
- 17S/10E-11G1 (McDougal Water Co.)
- 17S/10E-11G2
- 17S/10E-11G4
- 17S/10E-11B1

Information regarding well construction and sampling history are presented in Table 3.3-5.

The hydrograph (Figure 3.3-10) for the Yuha Estates area is dominated by the pumping of well 17S/10E-11G1. Pumping of this well at 143 AF/yr from 1978 to 1982 resulted in a drawdown, or decline in water levels, of almost 70 feet. Drawdown was also observed in all of the other wells in the Yuha Estates area. The magnitude of drawdown in other wells ranged from approximately 8 feet to over 60 feet.

Pumping of well 17S/10E-11G1 ceased 20 years ago. Water levels, however, have still not recovered to their pre-pumping levels. The water levels in the Yuha Estates area are approximately five to 10 feet below the levels recorded in the early 1970s. As shown in Figure 3.3-10, the rate of recharge has been very slow. The water levels in several of the wells appear to have stabilized and suggest that Yuha Estates is experiencing the same long-term decline in water levels as that observed in the Ocotillo/Nomirage area. As discussed above, this decline has occurred despite periods of above-average precipitation and a significant reduction in the rate of pumping over the same time period.

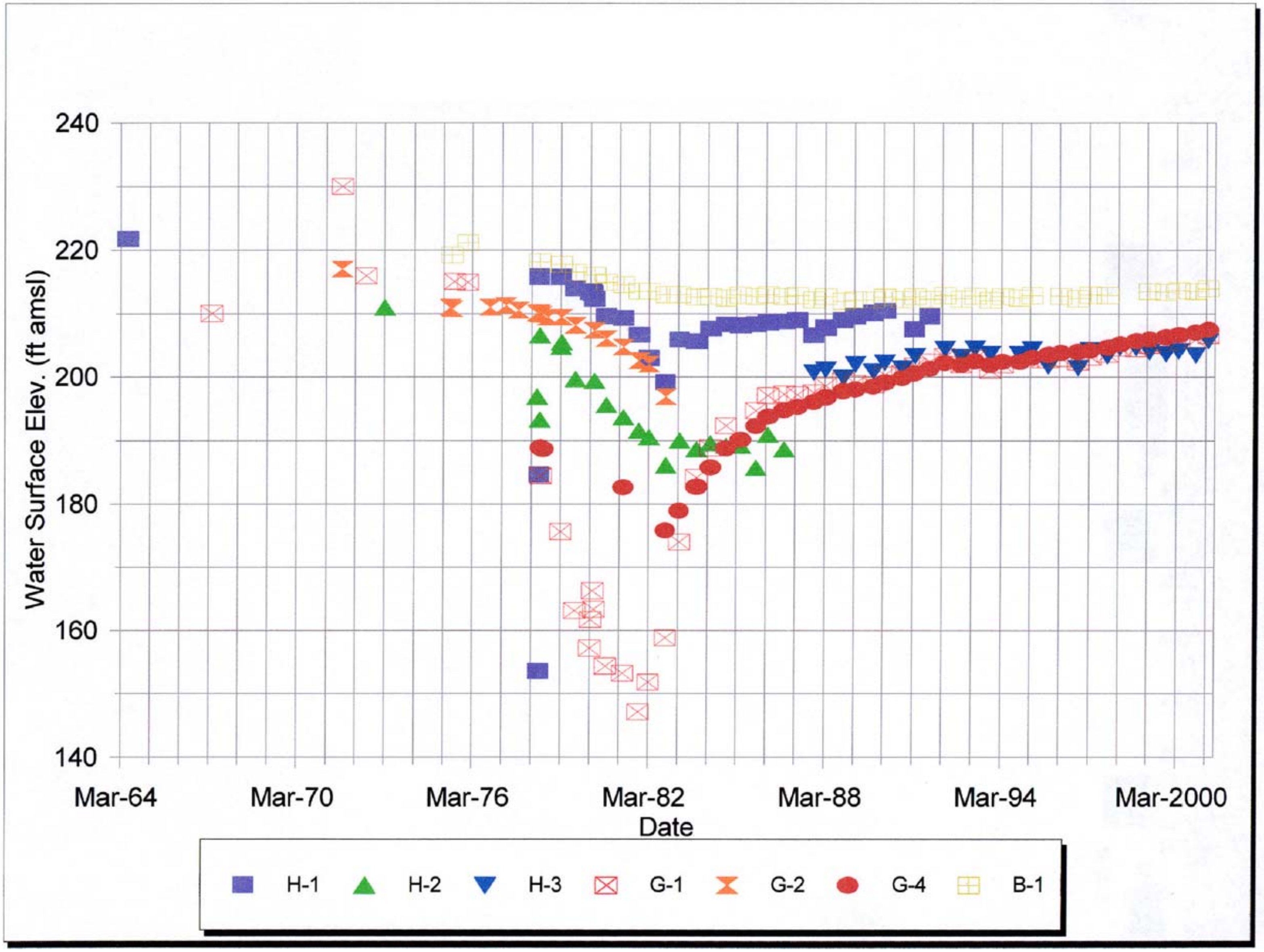

Figure 3.3-10
Yuha Estates Area Hydrograph
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Area East of Coyote Wells

There are several wells that have been monitored on a regular basis in the area east of Coyote Wells. Figure 3.3-11, Area East of Coyote Wells Hydro-Graph, is a hydrograph of the wells in the area near the transition from alluvial material to Tertiary marine sediment outcrops. Wells located west of this transition include:

- 16S/9E-24D1
- 16S/10E-29L1
- 16S/10E-29R2

Wells located east of this transition include:

- 16S/9E-24B1
- 16S/10E-29H1

Wells 16S/10E-24D1 and 16S/10E-24B1 are located across the transition from each other, approximately 1.5 miles north of Ocotillo. As shown in Figure 3.3-11, the water levels in these two wells are nearly identical and have steadily declined over the last 25 years. The total amount of the decline is approximately three feet. The rate of decline is about one-half of the rate of decline in water levels in the Ocotillo/Nomirage area and the Yuha Estates area. The virtually-identical hydrographs for wells 16S/10E-24D1 and 16S/10E-24B1 indicate that the transition is not a fault zone or other geologic feature with unique properties that may inhibit groundwater movement, as discussed above, and does not have any hydrologic influence in the area north of Ocotillo.

Wells 16S/10E-29L1 and 16S/10E-29H1 are located across the transition from each other, to the east of Coyote Wells. Well 16S/10E-29R2 is located approximately one-half mile south of well 16S/10E-29H1. As shown in Figure 3.3-11, data from wells 16S/10E-29L1 and 16S/10E-29R2, both located west of the transition, is only available for about 10 years, from the late 1970s to the late 1980s. Data from well 16S/10E-29H1, located east of the transition, is available from 1975 to 2001. The three wells are shown on Figure 3.3-11 to be declining at the same rate.

Water levels in wells 16S/10E-29L1 and 16S/10E-29R2, to the west of the transition, decreased by approximately eight feet from the late 1970s to the late 1980s, as shown on Figure 3.3-11. As indicated in Figure 3.3-8, this time period corresponds to the period of the greatest amount of groundwater pumping from the Basin. The water level in well 16S/10E-29H1, to the east of the transition, decreased by about five feet from 1975 to

2001. This corresponds to an average rate of decline of one foot every five years, which is identical to the rate of decline for the Ocotillo/Nomirage area over the same time period, as discussed above. Thus, the trend in water levels appears to be similar on both sides of the transition in the Coyote Wells area.

3.3.3.4 Groundwater Chemistry Data

In addition to monitoring water levels, the USGS has also been collecting water quality samples from several wells within the Ocotillo/Coyote Wells Groundwater Basin since the early 1970s due to concerns regarding potential overdraft conditions and degradation of water quality. The water quality data collected by the USGS is included in Appendix B and summarized in Tables 3.3-3a and b for selected wells within the Basin. The number of wells for which water quality data are available is less than the number of wells for which water level measurements are available. As with the analysis of the water level data, above, the water quality data are evaluated for three separate areas of the basin, including Ocotillo/Nomirage, Yuha Estates, and the area east of Coyote Wells.

As discussed in Section 3.3.1, the general water quality of the Basin can be evaluated primarily based on the total dissolved solids (TDS) content of the water. The TDS is a measurement of the total amount of salts and other naturally-occurring minerals in the groundwater. EPA secondary standard for TDS in drinking water is 500 mg/L, which is equivalent to 500 ppm. Thus, groundwater with TDS levels below 500 mg/L is considered potable water. In general, water with a TDS level exceeding 1,000 mg/L is not considered potable, although it is not uncommon for local drinking water supplies to exceed this level in some areas of the country.

Ocotillo/Nomirage Area

Long-term water chemistry data is available from three wells in the Ocotillo/Nomirage area. These wells are:

- 16S/9E-25K2 (Clifford well/McDougal Water Co.)
- 16S/9E-36D2
- 16S/9E-36H1 (U.S. Gypsum No. 5)

The TDS concentrations measured over time in these three wells are shown in Figure 3.3-12, TDS Trends – Ocotillo/Nomirage Area.

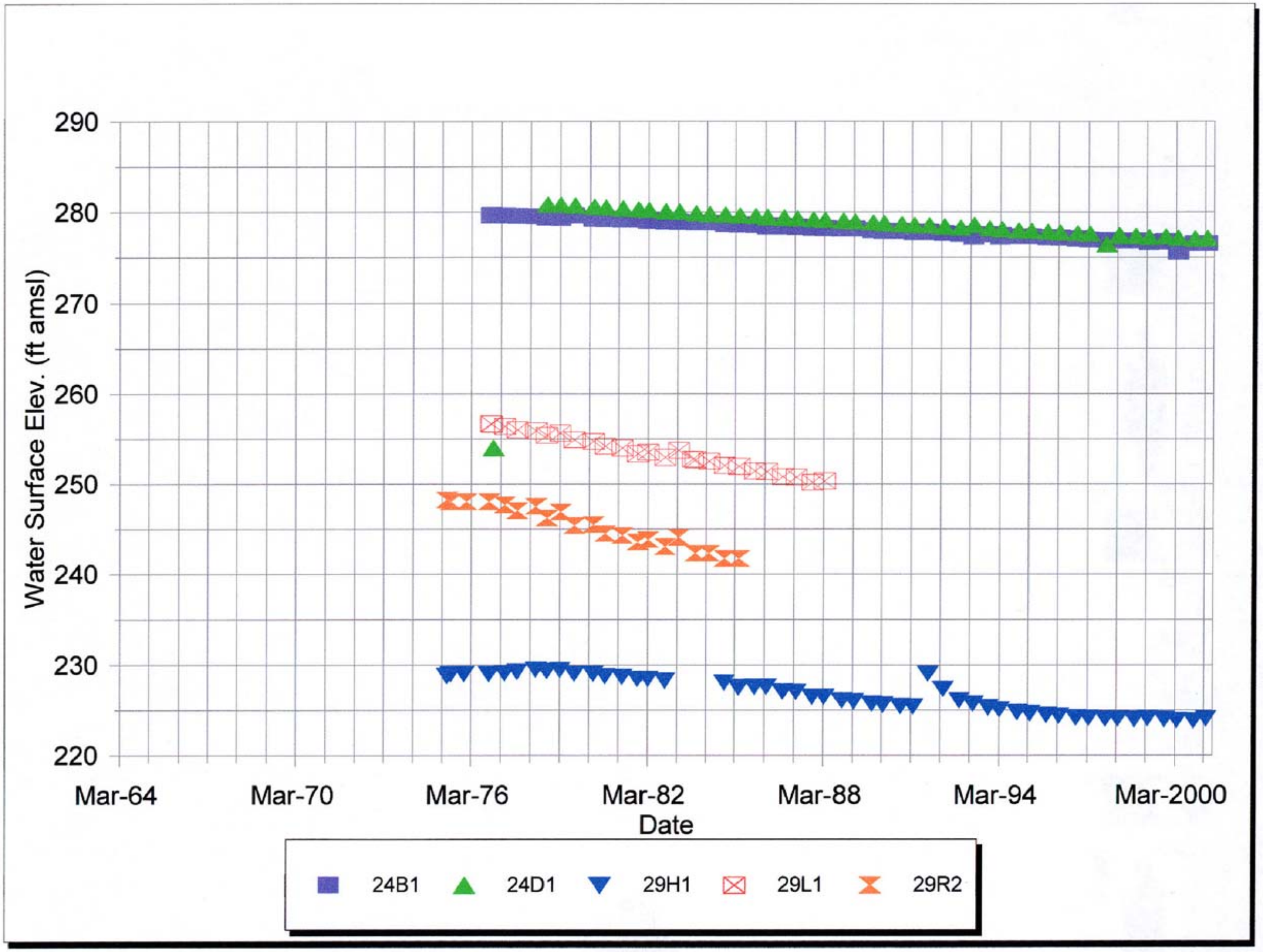

Figure 3.3-11
Area East of Coyote Wells Hydrograph
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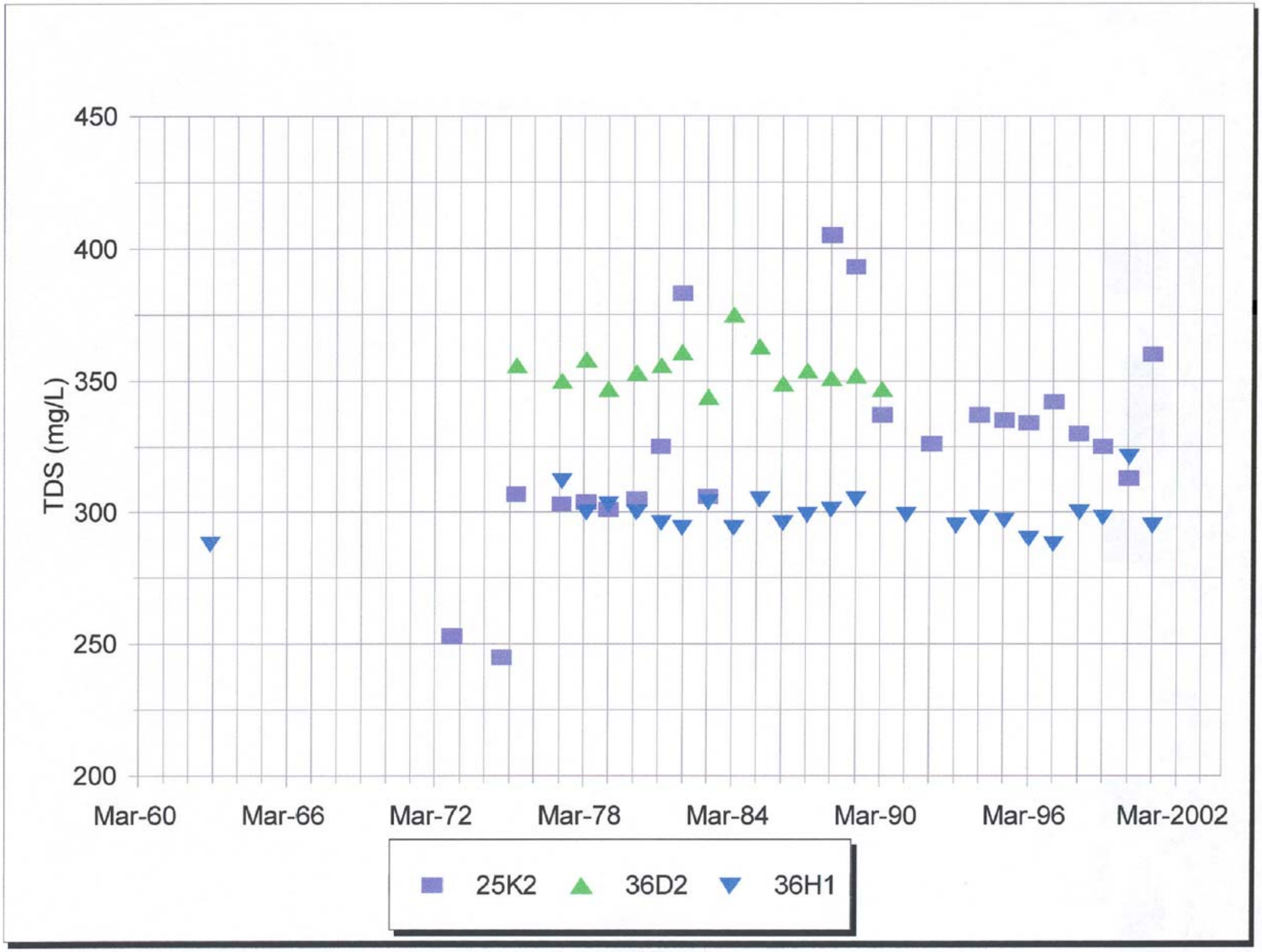

Figure 3.3-12
TDS Trends - Ocotillo/Nomirage Area
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As discussed above, well 16S/9E-25K2 was pumped for export of water to Mexico from 1974 to 1984. As indicated in Table 3.3-4 and in Figure 3.3-8, water production from this well increased from 138 AF/yr in 1974 to 222 AF/yr in 1977, and then is presumed to have decreased to 137 AF/y for 1978 to 1984. Actual production data after 1978, however, is uncertain. Prior to pumping of this well, TDS levels were approximately 250 mg/L to 310 mg/L. Within a few years after pumping began, the TDS concentration increased to as high as 400 mg/L, which is a 60 percent increase from pre-pumping levels. TDS levels have subsequently decreased to between 320 mg/L to 360 mg/L. As shown in Figure 3.3-12, TDS Trends Ocotillo/Nomirage Area, the TDS concentration has not returned to the levels measured prior to pumping.

There are only 15 years of data for well 16S/9E-36D2, from 1975 to 1990. During this time period, there was no distinct trend in TDS concentrations.

The TDS data for USG well No. 5 (16S/9E-36H1) show only minor long-term fluctuations of less than 25 mg/L from 1976 through 2001 (Figure 3.3-12). During the same time, the total pumping from all three USG wells varied from about 260 AF/yr to over 500 AF/yr, as shown in Table 3.3-4 and in Figure 3.3-8. The slight fluctuations in TDS shown in Figure 3.3-12 for USG well No. 5 may correlate with changes in annual production rate.

Yuha Estates

Long-term water chemistry data is available from three wells in the Yuha Estates area. These wells are:

- 17S/10E-11H2
- 17S/10E-11H3
- 17S/10E-11G2

The TDS concentrations measured over time in these three wells are shown in Figure 3.3-13, TDS Trends – Yuha Estates Area.

The data set from the Yuha estates area is, unfortunately, limited, as indicated in Table 3.3-3 and Figure 3.3-13. Despite the limited amount of data, however, the impacts of pumping of well 17S/10E-11G1 (McDougal Water Co.) for export to Mexico is readily apparent. As discussed above and shown in Table 3.3-4, pumping of this well occurred from 1978 to 1982 at 143 AF/yr.

Water quality data are not available for well 17S/10E-11G1. Well 17S/10E-11G2, however, is located a few hundred feet from well 17S/10E-11G1. Prior to pumping for export to Mexico, the TDS level in well 17S/10E-11G2 was approximately 330 mg/L. From 1977 to 1982, however, the TDS level in this well increased steadily to almost 400 mg/L, as shown in Figure 3.3-13.

In addition, from 1987 to 2001, the TDS level in well 17S/10E-11H3 has shown a steady decrease, as indicated in Figure 3.3-13.

Area East of Coyote Wells

Long-term water chemistry data is available from three wells in the area east of Coyote Wells. These wells are:

- 16S/9E-24B1
- 16S/9E-24D1
- 16S/10E-29L1

Well 16S/9E-24B1 is located east of the transition from alluvial material to Tertiary marine sediments. Wells 16S/9E-24D1 and 16S/10E-29L1 are located west of the transition from alluvial material to Tertiary marine sediments. The TDS concentrations measured over time in these three wells are shown on Figure 3.3-14, TDS Trends – Area East of Coyote Wells.

As discussed above, wells 16S/9E-24B1 and 16S/9E-24D1 are located adjacent to each other, but on opposite sides of the transition from alluvial material to Tertiary marine sediments. As shown on Figure 3.3-11, the water levels in these two wells are nearly identical. The TDS levels, however, are very different, as shown on Figure 3.3-14. The TDS concentration in well 16S/9E-24B1 ranges from approximately 1200 mg/L to 1300 mg/L, indicative of the influence of the Tertiary marine sediments. The TDS concentration in well 16S/9E-24D1 ranges from approximately 450 mg/L to 500 mg/L, indicative of the water quality in the alluvial aquifer.

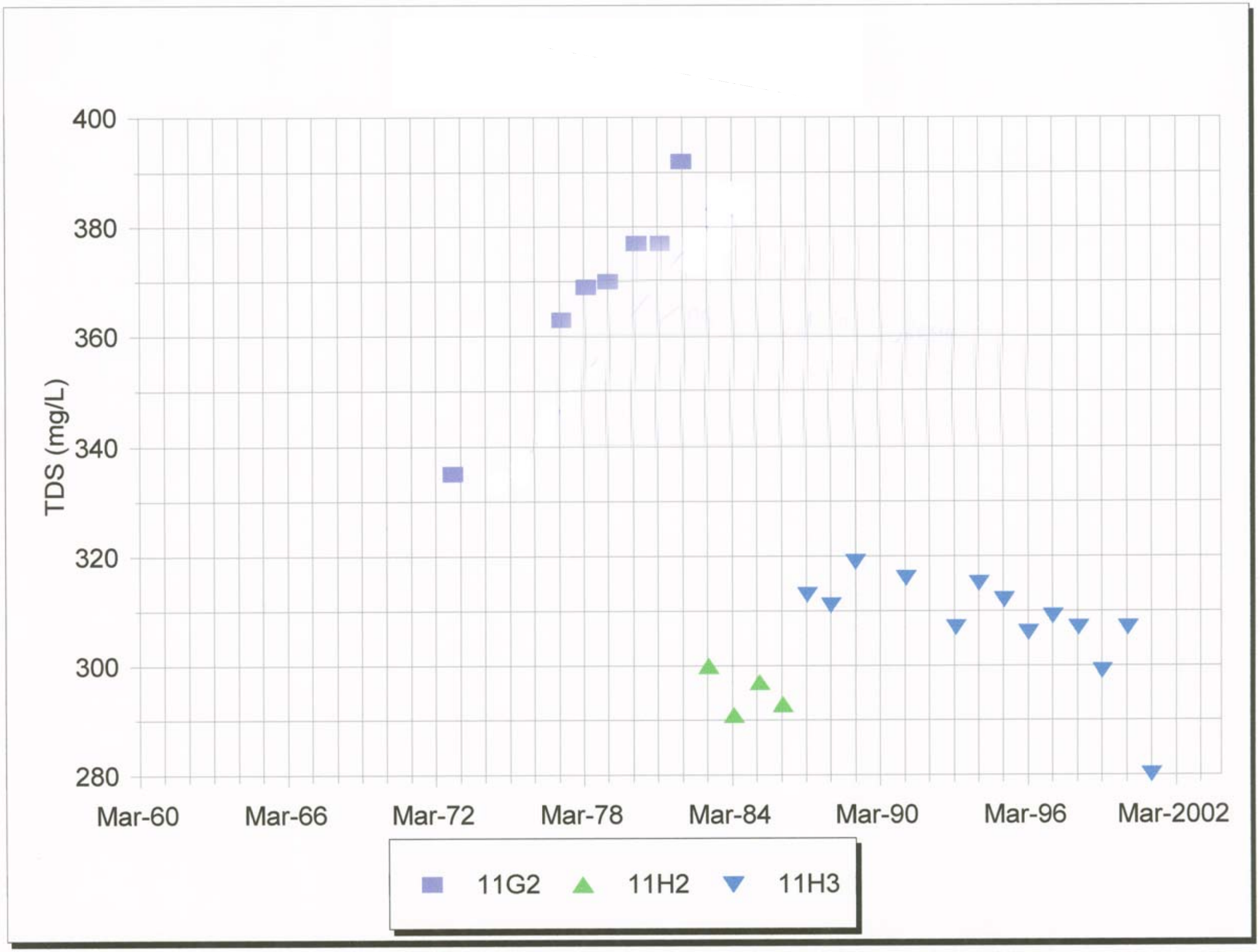

Figure 3.3-13
TDS Trends - Yuha Estates Area
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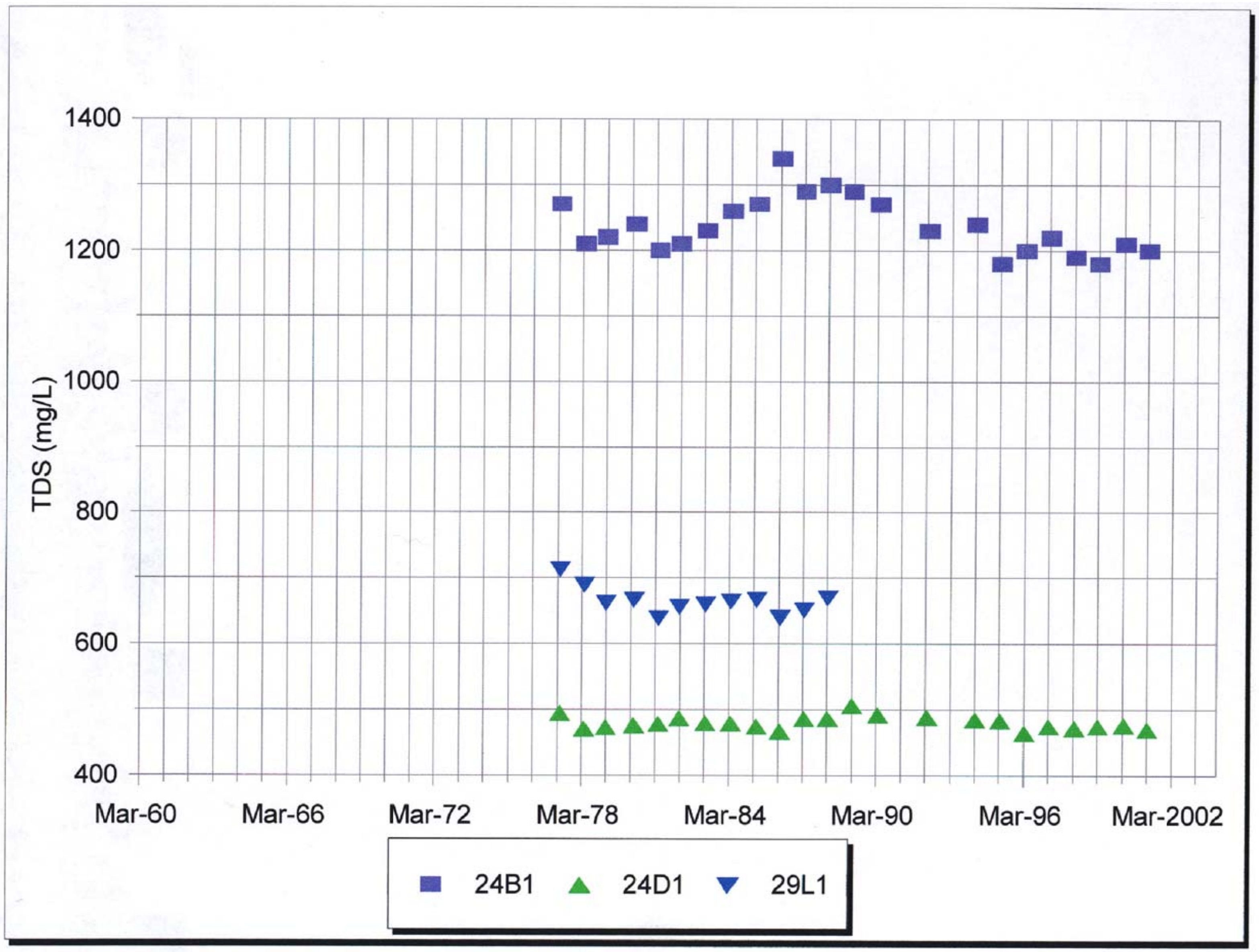

Figure 3.3-14
TDS Trends - Area East of Coyote Wells
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3.3.3.5 Discussion of Water Quality Data

The water quality data discussed above indicates that pumping of wells for a period of several years at rates of 100 AF/yr to 200 AF/yr or more can have a measurable impact on water quality in certain areas of the basin. When it occurs, this impact appears rapidly and persists for many years after pumping ceases. The decrease in water quality may be due to lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediment, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Figure 3.3-15, Piper Diagram of Groundwater Chemistry Data, is a Piper, or Tri-linear, diagram of water quality from the wells discussed above. A Piper diagram is a standard tool for analysis of water-quality data (USGS, 1989). The Piper diagram presents the water quality in terms of cations (positively-charged ions) in the triangle in the lower left corner, anions (negatively-charged ions) in the triangle in the lower right corner, and commonly associated chemical groupings in the central quadrilateral.

Many of the wells from the Ocotillo/Nomirage and Yuha Estates areas cluster together in the Piper diagram shown in Figure 3.3-15. Well 16S/9E-24B1 (labeled number "1" on the Piper diagram) stands apart from the other wells due to its elevated TDS concentration. Several other wells, however, show some TDS impact and plot in the areas between the larger cluster of wells and well 16S/9E-24B1. These wells include 16S/10E-29L1 (labeled number "6" on the Piper diagram), 16S/9E-24D1 (labeled number "2" on the Piper diagram), and 17S/10E-11G2 (labeled number "7" on the Piper diagram).

3.3.3.6 Thresholds of Significance

The significance criteria for this analysis were developed from Appendix G of the CEQA Guidelines. The Proposed Project would have a significant impact on hydrology and water quality if it would:

- Violate any water-quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted); or
- Otherwise substantially degrade water quality.

The impact analysis presented below is based upon the CEQA standards of significance. For the analysis of impacts caused by pumping from the USG wells in the Ocotillo area for the Proposed Project, a separate discussion is provided for impacts that may occur only to individual well owners as opposed to the Ocotillo/Coyote Wells Groundwater Basin resource.

3.3.3.7 Proposed Action: Impacts and Mitigation Measures

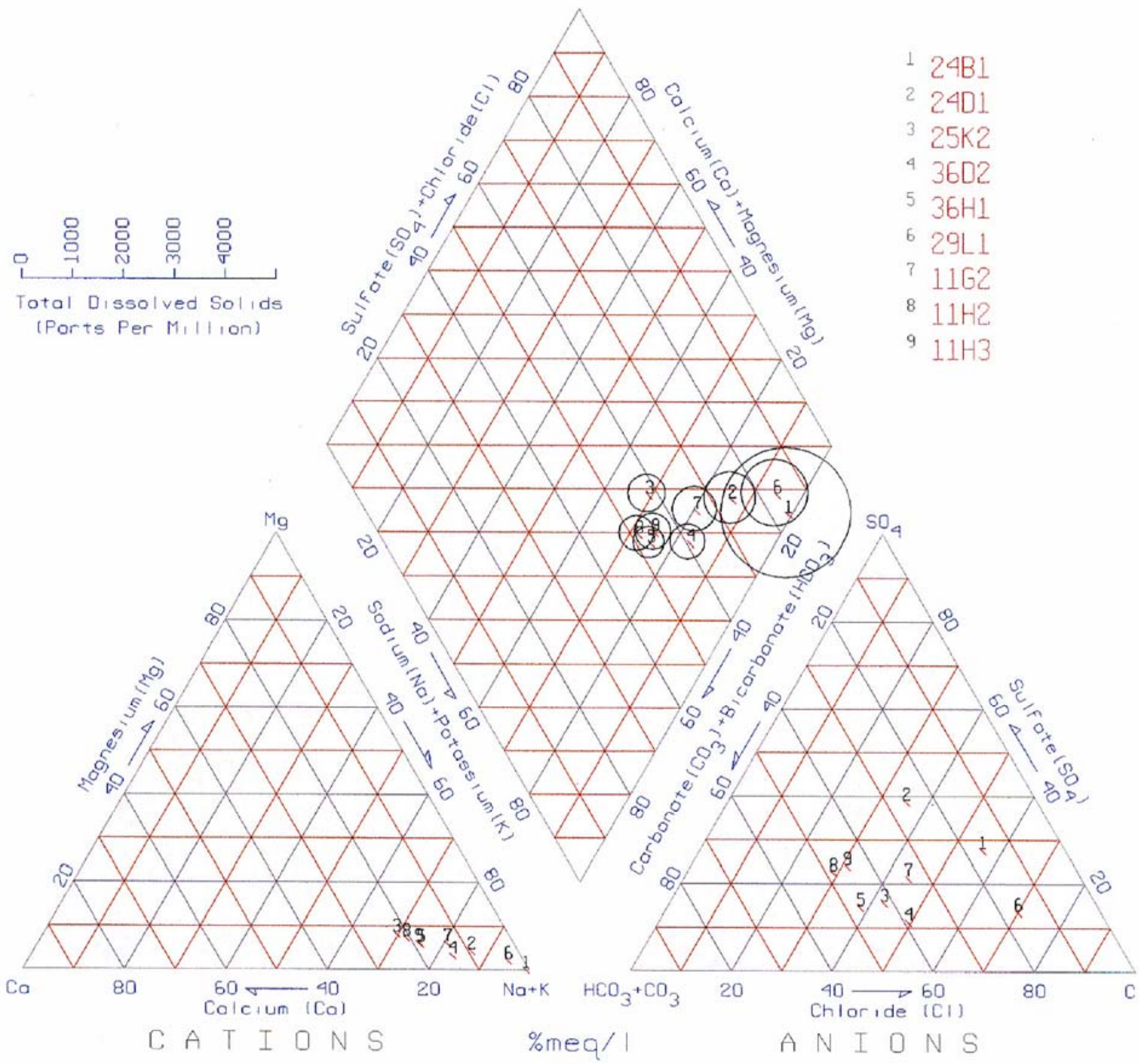
Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater and, causing some wells to go dry.

Previous studies concluded that, since the total volume of water in the basin may range from over 600,000 AF to over 1.2 million AF, an annual overdraft of a few hundred AF/yr is nominal compared to the total volume of water in storage in the Basin. This view, however, may not be consistent with the conditions that occur in the Ocotillo/Coyote Wells Groundwater Basin.

The hydrographs of numerous wells from different locations in the Basin demonstrate that water levels have been steadily decreasing for at least the last 30 years. Periods of increased rainfall and a decreasing rate of groundwater pumping have not halted this long-term trend. However, a decrease of pumpage in USG wells from 1994 through 1998 did show groundwater levels recovered locally.

If water levels continue to drop, the maximum production rate of some shallower wells may be reduced due to the reduced available drawdown. The energy, and thus cost, necessary to pump groundwater, will increase in wells affected. These impacts are expected to occur without implementation of the increased pumping rates associated with the Proposed Action. The revised numerical groundwater model (Bookman-Edmonston, 2004) indicates that over the next 80 years, water levels may decline by up to 10 feet under baseline conditions, without any increase in pumping rates (Table 3.3-7). Thus, the baseline rate of water-level decline is approximately one foot every eight years.



NOTE: The Piper Diagram is a standard graphical tool for presentation and analysis of water-chemistry data. The concentrations of major cations are plotted in the lower left triangle, the concentrations of major anions are plotted in the lower right triangle, and groupings of various cation and anion pairs are plotted in the central quadrilateral. Thus, each water sample will plot at a unique location on all three parts of the Piper Diagram. The point where a specific water sample plots on the Piper Diagram defines the water type of the sample. In addition, the point where a water sample plots relative to other water samples from the same area can define whether the water samples are all chemically related (i.e. from the same hydrologic source) or different, and whether or not there is any mixing between water types.

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Figure 3.3-15

Piper Diagram of Groundwater Chemistry Data

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TABLE 3.3-7
LAYER 1 WELL DRAWDOWNS (FT) FOR BASELINE SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	**42A5**	**36H1**	**36D2**	**24D1**	**29L1**	**29R2**	**25K2**	**25Q1**	**36 G4**
	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

For the Proposed Action, USG plans to increase groundwater extraction rates by as much as 420 AF/yr over the average 1994 through 1998 baseline pumping rate of 347 AF/yr. This water demand is anticipated to continue for up to 80 years. The only empirical point of comparison to this magnitude of pumping over a long duration is the pumping that occurred in Ocotillo and Yuha Estates in the 1970s and 1980s for export to Mexico. In Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. Drawdowns of up to 60 feet occurred at or near the pumping well, and water levels did recover after pumping was suspended. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for five years. Drawdowns of nearly 70 feet occurred and nearby wells experienced drawdowns of several tens of feet. In addition, once the pumping ceased, water levels at Yuha Estates recovered very slowly and have not yet reached their pre-pumping levels. A review of the Basin's geology, however, suggests that the Ocotillo area consists of younger permeable alluvial material, whereas the Yuha Estates area is predominantly less permeable Tertiary sediments.

The revised numerical groundwater model (Bookman-Edmonston, 2004) evaluated the potential drawdown in the Ocotillo area from the Proposed Action, with pumping occurring at 767 AF/yr for 80 years. (See Appendix B-2). The total drawdown in the alluvial aquifer after 80 years is predicted to be approximately 30 feet, which averages about 20 feet, but in two wells may be up to 23 feet, greater than the drawdown predicted to occur over the same time period under the baseline condition (Table 3.3-8, Layer 1 Well Drawdowns (ft) for 767 AF/yr Pumping Scenario).

TABLE 3.3-8
LAYER 1 WELL DRAWDOWNS (FT) FOR 767 AF/YR PUMPING SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

Years	Well								
	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	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

The revised numerical groundwater model (Bookman-Edmonston, 2004) also considered an intermediate project condition, where pumping rates are increased to only 650 AF/yr for 80 years, as opposed to the full 767 AF/yr for the Proposed Action. Under this intermediate condition, the total drawdown in the alluvial aquifer after 80 years is predicted to be up to 26 feet, which is up to 16 feet greater than the drawdown predicted to occur over the same time period under the baseline condition (Table 3.3-9, Layer 1 Well Drawdowns (ft) for 650 AF/yr Pumping Scenario).[1]

[1] The Applicant has provided estimates that indicate a typical residence using about one AF/yr would experience an increase in electrical energy of about 40 kilowatt hours (KWH) to pump water up this additional 20 feet to the surface. The current cost of electric energy in the area is about ten cents per KWH. This indicates an increase cost to a typical residence of approximately $4 per year in the 80th year. In the 40th year, assuming an increase pumping height of approximately 10 feet, the extra cost in the 40th year would be about $2 per year. The average increase cost over the life of the Proposed Action would be about $2 per year. The potential environmental impact from having to generate extra electricity needed to pump water from a greater depth over the life of the Project is speculative, but are not expected to be significant. The increased use of energy in Ocotillo by the increased pump lift is insignificant with respect to the total energy generation by IID. As an example the total increase energy use in 80 years by all affected wells, represents less than the amount of energy used by a single residence in a year. Assuming these estimates are accurate, then the *economic* impact of additional pumping would be insignificant.

TABLE 3.3-9
LAYER 1 WELL DRAWDOWNS (FT) FOR 650 AF/YR PUMPING SCENARIO (DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	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

The total potential drawdown in the alluvial aquifer, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), could lower the water level in some wells. Specifically, if the water level in a well drops to near the base of the screened interval, the ability to maintain current pumping rates in that well may be reduced. Wells in the Ocotillo area that are likely to experience this condition include the E. Annes and Property Construction wells and well 36D2, as shown in Figure 3.3-16, Ocotillo/Coyote Wells Groundwater Study Cross-Section of Screen Intervals.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-1

If the water level in a well in the Ocotillo area decreases at a rate faster than one foot every eight years and the average water levels in the surrounding wells also decrease for more than two years in a row due to the Proposed Action, as measured from the interpolated linear of one foot every eight years with a starting reference point being the date that pumping by USG increases above the baseline rate, and there is a documented reduction in the available water to the affected user, then USG, at its election will:

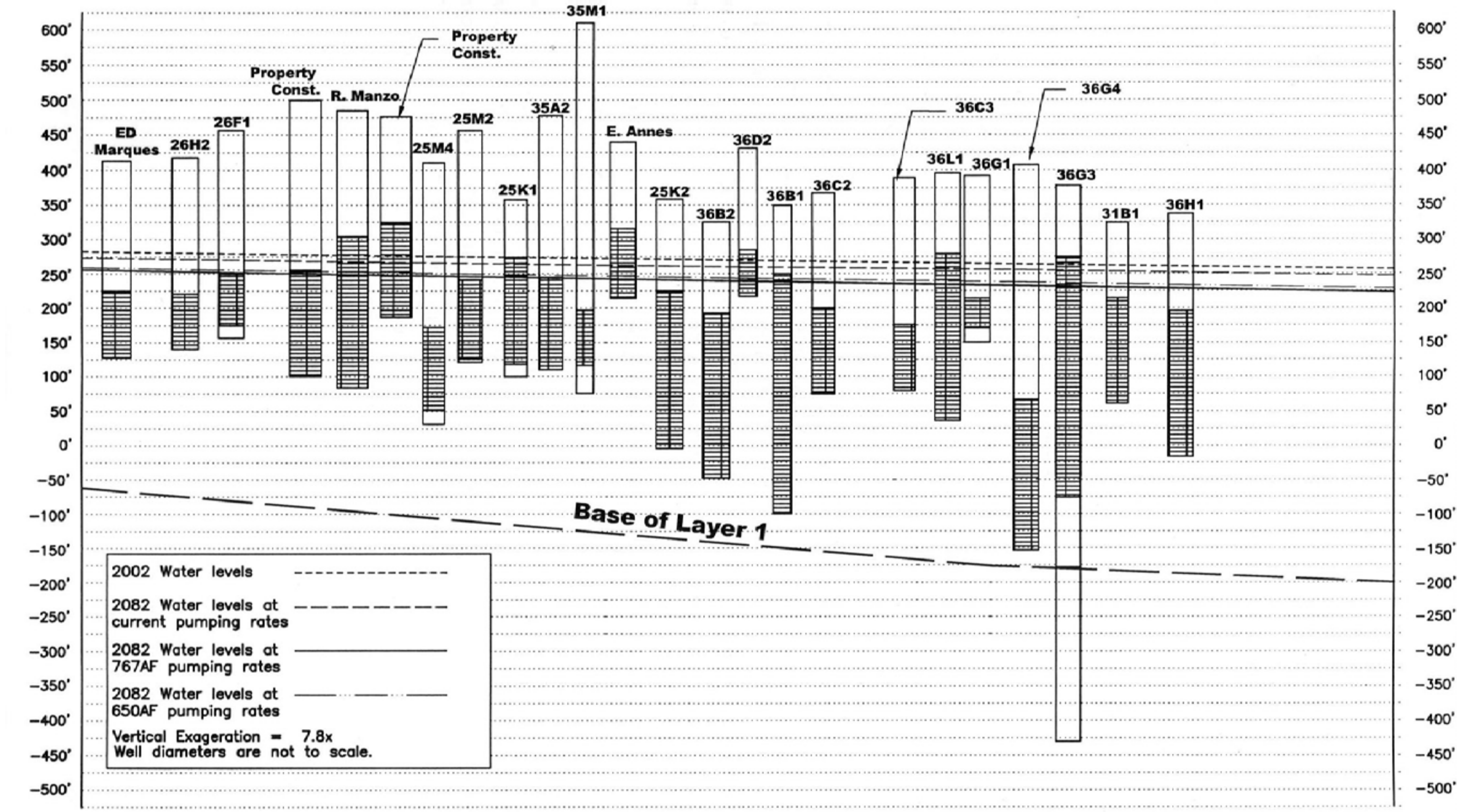
1. *Rehabilitate the well and/or install a new pump to restore the prior pumping rate; or*
2. *Provide an incremental replacement of water equivalent to the amount of the reduced rate of pumping by the affected party, of a like quantity and quality, and provide reimbursement for the incremental increase for the affected party to pump the remaining available groundwater; or*
3. *Provide a full replacement water supply to the affected party of a like kind and quality, at a cost that does not exceed the cost to the affected party at the time the impact occurred; or*
4. *Deepen the existing well or provide a new replacement well to the affected party, drilled to a depth that will not be affected by existing or future Project-related declines in the water table, and capable of providing an equivalent quantity and quality of water that existed prior to the impact, and provide reimbursement for incremental increase in cost for the affected party to pump the available water.*

The extent to which the Proposed Action will be considered as contributing to the decrease in water levels in the Ocotillo area will be determined only after a review of the water level data and a decision by the Imperial County Groundwater Management Committee (ICGMC).

The baseline condition in the Basin includes a declining water table, and existing data suggests that water levels recover slowly after significant drawdown occurs. Therefore, if USG elects to provide replacement water or a replacement water supply, arrangements must be made to provide this mitigation until groundwater levels stabilize at a level equal to the projected baseline condition.

Level of Significance After Mitigation: Less than Significant

Although the Proposed Action would increase the rate of drawdown in the alluvial aquifer as compared to baseline conditions, the impact on existing individual affected wells will be mitigated to a level of insignificance through implementation of Mitigation Measure 3.3-1.



SOURCE: Bookman-Edmonston, 2004

Figure 3.3-16
Ocotillo/Coyote Wells Groundwater Study
Cross-Section of Screen Intervals

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Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Previous studies concluded that, since the total volume of water in the basin may range from over 600,000 AF to over 1.2 million AF, an annual overdraft of a few hundred AF/yr is nominal compared to the total volume of water in storage in the Basin. This view, however, may not be consistent with the conditions that occur in the Ocotillo/Coyote Wells Groundwater Basin. More recent assessments of the basin geology suggest that it is more complex, containing numerous uplifts of older sediments and large folds that bring the Tertiary marine sediments close to the surface. Thus, the available volume of water may be much less than previous estimates.

The hydrographs of numerous wells from different locations in the Basin demonstrate that water levels have been steadily decreasing for at least the last 30 years. Periods of increased rainfall and a decreasing rate of groundwater pumping have not halted this long-term trend. However, a decrease of pumpage in USG wells from 1994 through 1998 did show groundwater levels recovered locally.

The revised numerical groundwater model (Bookman-Edmonston, 2004) indicates that over the next 80 years, water levels may decline by up to 10 feet under baseline conditions, without any increase in pumping rates (Table 3.3-7). Thus, the baseline rate of water-level decline is approximately one foot every eight years.

For the Proposed Action, USG plans to increase groundwater extraction rates by as much as 420 AF/yr over the average 1994 through 1998 baseline pumping rate of 347 AF/yr. This water demand is anticipated to continue for up to 80 years. The only empirical point of comparison to this magnitude of pumping over a long duration is the pumping that occurred in Ocotillo and Yuha Estates in the 1970s and 1980s for export to Mexico. In Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. Drawdowns of up to 60 feet occurred at or near the pumping well, and water levels did recover after pumping was suspended. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for five years. Drawdowns of nearly 70 feet occurred and nearby wells experienced drawdowns of several tens of feet. In addition, once the pumping ceased, water levels at Yuha Estates recovered very slowly and have not yet reached their pre-pumping levels. A review of the Basin's geology, however, suggests that the Ocotillo area consists of younger permeable alluvial material, whereas the Yuha Estates area is predominantly older less permeable formations.

The revised numerical groundwater model (Bookman-Edmonston, 2004) evaluated the potential drawdown in the Ocotillo area from the Proposed Action, with pumping occurring at 767 AF/yr for 80 years. (See Appendix B-2). The total drawdown in the alluvial aquifer after 80 years is predicted to be approximately 30 feet, which averages about 20 feet, but in two wells may be up to 23 feet, greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-8, Layer 1 Well Drawdowns (ft) for 767 AF/yr Pumping Scenario).

The revised numerical groundwater model (Bookman-Edmonston, 2004) also considered an intermediate project condition, where pumping rates are increased to only 650 AF/yr for 80 years, as opposed to the full 767 AF/yr for the Proposed Action. Under this intermediate condition, the total drawdown in the alluvial aquifer after 80 years is predicted to be up to 26 feet, which is up to 16 feet greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-9, Layer 1 Well Drawdowns (ft) for 650 AF/yr Pumping Scenario).

Because the depth to groundwater in the Ocotillo area currently ranges from about 100 ft bgs to 160 ft bgs, an additional 20-23 foot lowering of groundwater level over an 80 year period will not have an adverse effect on any rare, threatened, endangered, or sensitive species of plant or animal life or habitat.

The pumping from the alluvial aquifer for the Proposed Project, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), will lower the water level over a broad area of the Basin. As discussed above, this lowering of water levels will be in addition to the existing condition in the basin where the water table is already declining. Periods of increased rainfall and decreased pumping have not resulted in a Basin-wide recovery of water levels. Thus, the additional decline in water levels caused by the additional pumping of up to 420 AF/yr for the Proposed Project can not be readily offset by decreases in pumping elsewhere in the Basin, enhancing recharge, or importing water.

Level of Significance Before Mitigation: This is a significant and unavoidable impact on the Basin-wide groundwater. This impact is also unmitigatable.

Mitigation Measures: None available

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations have not recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. Based on a comparison with past impacts in the Basin, the proposed increased groundwater extraction rates for the Project could have an impact on water quality.

As discussed, water levels are decreasing throughout most of the Basin and are expected to decrease further from the Proposed Project. As the depth to groundwater decreases, the saline water that is present at the water table may eventually reach the screened interval of some wells. Several wells have relatively short screened intervals, so that the saline water present at the water table could appreciably affect the quality of the water in certain wells.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-2

USG will provide an alternative or replacement source of water if the water quality significantly deteriorates in any well in the Ocotillo area and such deterioration is caused by the Proposed Action. As discussed above, the secondary drinking water standard for TDS is 500 mg/L and water with a TDS level in excess of 1,000 mg/L is considered non-potable. Therefore, if the TDS level in any well exceeds 500 mg/L, or the concentration of any other measured parameter, as described in the Mitigation Monitoring Program below, exceeds its drinking-water standard that is in force at the time of the measurement, then USG will provide the affected party or parties with an alternative supply of water for drinking and cooking, at no cost to the affected party or parties. This alternative supply could be bottled water or a hookup to a replacement water source. If the TDS level in any well exceeds 1,000 mg/L and is caused by the Proposed Action, then the water quality will be such that use of the water for any domestic purpose will be significantly affected due to scale buildup, damage to plumbing, corrosion, and other similar impacts. If the TDS level exceeds 1,000 mg/L and is caused by the Proposed Action, USG will provide the affected party or parties with a hookup to a replacement supply of water. This replacement supply may be a hookup to an existing municipal district or other appropriate drinking water supply system. USG will bear the full cost of the hookup. The affected party or parties, however, would only be responsible for the annual cost of the replacement water equivalent to their costs to pump water prior to the occurrence of the impact. If the annual cost of water for the replacement supply exceeds the affected party or parties costs to pump water prior to the occurrence of the impact, USG will pay the incremental difference.

The extent to which the Proposed Action will be considered as contributing to the decrease in water quality in the Ocotillo area, will be determined only after a *review of the water quality data and a decision by the Imperial County Groundwater Management Committee (ICGMC).*

The existing data from Ocotillo and Yuha Estates indicates that, once the water quality decreases, it may take many decades for the water quality to recover once the pumping causing the impact has ceased. Therefore, USG will need to provide the alternative and/or replacement water supply until concentrations of the above-listed constituents in excess of applicable water-quality standards return to levels below such standards or until the water quality parameters, for which there is data that currently exists, return to pre-Proposed Action levels.

Level of Significance After Mitigation: Less than Significant

With implementation of Mitigation Measure 3.3-2, the potential impacts on individual wells will be mitigated, and the Proposed Action will not violate any water quality standard For these reasons, the impact of the Proposed Action on individual wells, after mitigation, will be less than significant.

The long-term affect to the Basin-wide groundwater resource, however, is still potentially significant and there are no feasible mitigation measures that would reduce the impact to less than significant.

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Relatively rapid increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations in affected wells have not recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. The past water-quality impacts in the Basin were the result of much lower pumping rates and much shorter durations than the proposed increased groundwater extraction rates for the Project. Thus, the Proposed Project could have an impact on water quality.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

The declining water levels in the Basin indicate that the amount of recharge is less than the amount of water being removed from the Basin. Therefore, if the water quality in areas of the Basin decreases to the point where the water is not suitable for its current use, then it is unlikely that there will be sufficient influx of non-saline water to improve the water quality.

Level of Significance Before Mitigation: Significant

Mitigation Measure: None available

> *As part of the Proposed Project, USG will implement the Groundwater Monitoring Program described below. The data from the groundwater monitoring program will provide an indication of a trend of progressively decreasing water quality in individual wells and throughout the basin, if such a trend occurs and is a result of the increased pumping for the Proposed Project. If such a trend is identified in only a few wells in close proximity to the USG pumping wells, and an impact subsequently occurs in any or all of those few wells, then USG can mitigate the impacts in the individual wells as discussed*

above for Impact 3.3-2A: Water Quality Degradation at Plant Affecting Individual Well Owners. If, however, such a trend is identified in a larger number of wells, and these wells are located over a broader area of the basin and not just in the area of the USG pumping wells, it would not be possible to restore the Basin-wide water quality once it is degraded to concentrations at which the groundwater is no longer suitable for its current uses. There is insufficient recharge to restore the Basin and dilute the salts in the saline water. Therefore, it is not possible to mitigate the Basin-wide degradation of water quality. If such trends are detected by the Groundwater Monitoring Program, the only way to halt or reverse these trends would be to curtail pumping by reducing production at the Plant, or by implementing one or more Alternatives that reduce or eliminate withdrawals from the basin, prior to the groundwater quality being degraded to the point where it was no longer suitable for its current uses.

Level of Significance After Mitigation: Significant

Groundwater Monitoring Program

The Proposed Action includes a Monitoring Program to provide consistent, long-term data regarding the Ocotillo/Coyote Wells Groundwater Basin. The Monitoring Program will involve the measurement of water levels and the collection of groundwater samples for chemical analysis. As discussed above, the Proposed Action is predicted to accelerate the decline of the groundwater level in the Ocotillo/Coyote Wells Groundwater Basin, and may potentially cause the migration of saline water. As such, the primary objectives of the Monitoring Program are to:

1. Identify any increases in the rate of water-level decline greater than the baseline rate; and
2. Provide an early warning of potential degradation of groundwater quality from the Proposed Action.

The primary cause of the potential degradation of groundwater quality would be lateral migration of saline water from Tertiary marine sediments that crop out in the Ocotillo and Nomirage area and to the east of Coyote Wells, or vertical migration of saline water from the Tertiary marine sediments that are present at depth below the alluvial aquifer.

The USGS currently monitors water levels and water quality in a number of wells in the Ocotillo/Coyote Wells Groundwater Basin, as listed in Table 3.3-10, List of Current and Proposed Monitoring Wells in the Ocotillo/Coyote Wells Groundwater Basin. For the

Mitigation Monitoring Program, water chemistry and/or water levels will be monitored in the wells currently monitored by the USGS and in 10 additional wells, as shown in Table 3.3-10. Eight of the additional well locations are existing wells and the other two are new nested wells that will be installed by USG. Note that several of the additional wells listed in Table 3.3-10 are already monitored for water levels by the USGS but will also be sampled for water quality as part of this Monitoring Program. The additional monitoring locations were selected based on location, variation in depth and screened interval, and historic trends in water levels and TDS concentrations. In addition, any private currently operating well owner in the Ocotillo, Coyote Wells, and Nomirage areas that would like to include their well in the Monitoring Program may do so by notifying the County within one year after this document is certified. If the groundwater levels, or quality, in any of the monitoring wells included in this Monitoring Program show a declining trend greater than that specified in the Monitoring Program, then the private well owner(s) in the Ocotillo area indicating such a trend that has requested that their groundwater level and water quality be determined, will have their well tested until such time as the groundwater or water quality declines return to below levels of concern as specified in this Monitoring Program.

One new nested monitoring well (MW-1A and MW-1B) will be constructed approximately three-quarters of a mile east of USG Well No. 6 (see Figure 3.3-17, Current and Proposed Monitoring Wells in the Ocotillo Area). This monitoring well location, along with 29L1, 31B1, and 30R1, would show changes in the TDS levels as a result of the potential migration of saline water from the area east of Coyote Wells, and potential upward vertical migration. The deeper interval in this nested well will be screened just above the base of the alluvial aquifer, which is anticipated to be up to 400 ft bgs. The shallower interval will be screened in the same depth range as other wells in the area, which is typically 100 ft bgs to 200 ft bgs. The nested monitoring well will be drilled and constructed in accordance with applicable state and county requirements, including but not limited to those described in California Department of Water Resources Bulletins 74-81 and 74-90.

The second new nested monitoring well (MW-2A and MW-2B) will be constructed in the area between existing USG wells Nos. 4, 5, and 6. The approximate area is shown on Figure 3.3-17. This monitoring well location will provide information regarding the potential vertical migration of saline water from underlying Tertiary marine sediments. The deeper interval in this nested well should be screened just above the base of the alluvial aquifer, which is anticipated to be up to 700 ft bgs. The shallower interval

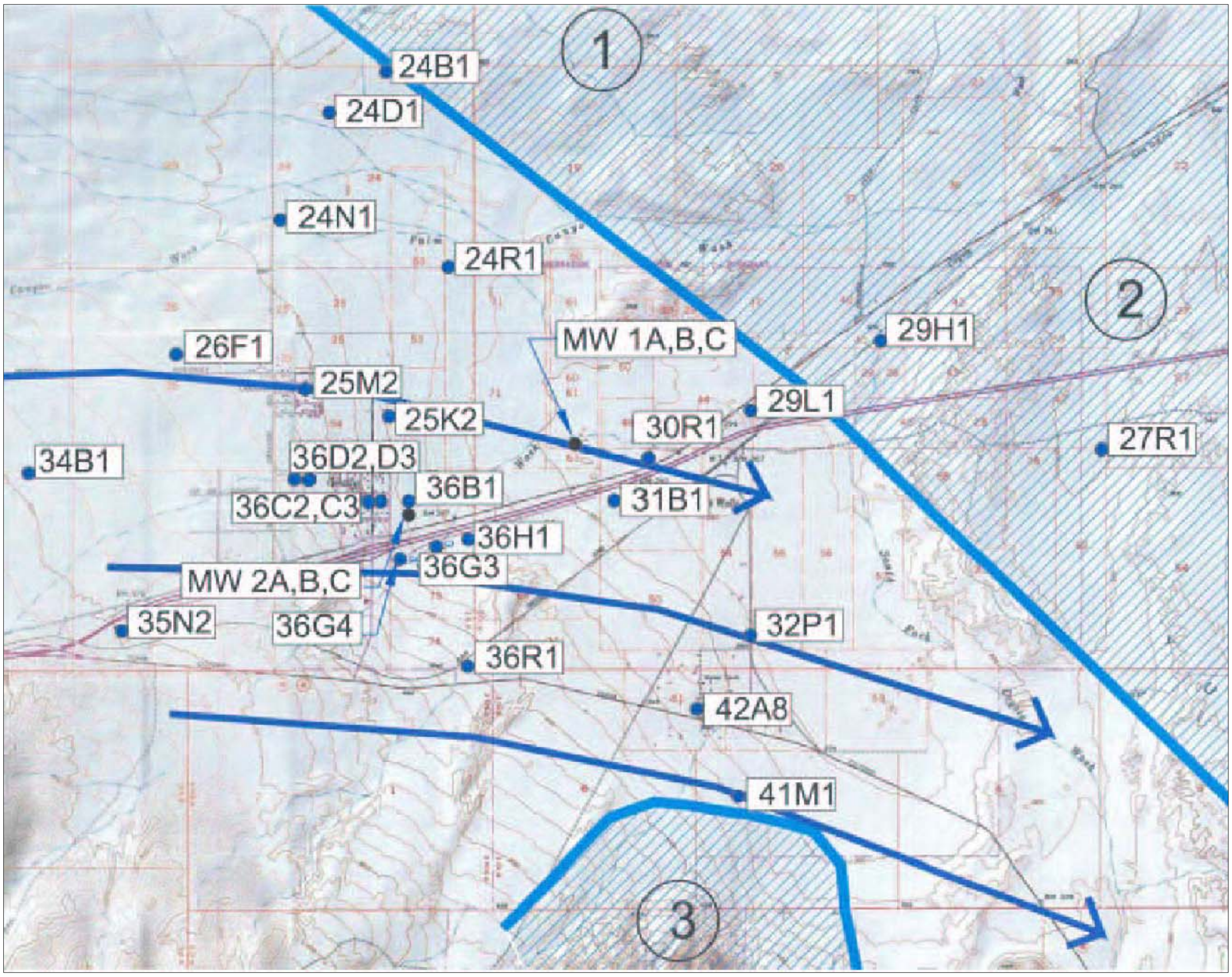

Figure 3.3-17
Current and Proposed Monitoring Wells in the Ocotillo Area

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TABLE 3.3-10
LIST OF CURRENT AND PROPOSED MONITORING WELLS IN THE OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well Number	Owner	Water Level	Water Quality	Well Number	Owner	Water Level	Water Quality
Current Program				16S/11E-27F1	US Government	X	
15S/11E-32R1		X		16S/11E-42L1	US Government	X	
16S/9E-24B1		X	X	16S/10E-42A8	Alan Heinrich		X
16S/9E-24D1	US BLM	X	X	17S/10E-11B1	Samual Gallaghe	X	
16S/9E-25K2	Clifford Water Company		X	17S/10E-11G1	W.E. Simpson	X	
16S/9E-25M2	Ocotillo Mutual Water Co.	X		17S/10E-11G4		X	
16S/9E-26F1	Neil Emory	X	X*	17S/10E-11H3	James Harmon	X	X
16S/9E-34B1	Rick Hamilton	X	X	17S/11E-16J1	Frank Souza	X	
16S/9E-35N2		X		17S/11E-22E2		X	
16S/9E-36C2	Coyote Valley Mutual Water Co.		X	Proposed Additional Monitoring Wells - Existing Wells			
16S/9E-36C3	Coyote Valley Mutual Water Co.	X		16S/9E-24N1	US Government	X	X
16S/9E-36D2		X		16S/9E-24R1	US BLM	X	X
16S/9E-36D3			X	16S/10E-29L1		X	X
16S/9E-36G4	Westwind	X		16S/10E-31B1			X
16S/9E-36H1	USG #5	X	X	16S/9E-36B1	USG #6		X
16S/10E-27R1		X		16S/9E-36G3	USG #4		X
16S/10E-29H1		X		16S/9E-36R1			X
16S/10E-30R1			X	16S/10E-41M1	C. Smith		X
16S/10E-31B1		X		Proposed New Monitoring Wells			
16S/10E-32P1		X		USG MW 1A, 1B	USG	X	X
16S/11E-23B1		X		USG MW 2A, 2B	USG	X	X

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

should be screened in the same depth range as other wells in the area, which is typically up to 500 ft bgs to 600 ft bgs. The nested monitoring well will be drilled and constructed in accordance with applicable state and county requirements, including but not limited to those described in California Department of Water Resources Bulletins 74-81 and 74-90.

Water levels will be measured semi-annually in each well listed in Table 3.3-10, so long as allowed by the well owner, with the exception of the two new nested wells. The two screened intervals in each of the two nested wells will each be monitored using a dedicated pressure transducer-data logger combination (e.g. *In-Situ* MiniTROLL; *Global Water* WL15; etc) that will allow the daily measurement and recording of water levels.

The measurement of water levels in the two screened intervals in each of the two nested wells using dedicated pressure transducer-data logger combinations will continue for 10 years, after which water levels will be measured by hand on the same schedule as the other wells listed in Table 3.3-10.

The water-level data will be posted on a map and groundwater contours will be plotted to evaluate potential changes in groundwater flow direction. As discussed under Impact 3.3-1, the Proposed Action, based on modeling, will result in an acceleration of the baseline rate of water-level decline, which was predicted by the revised numerical groundwater model to be 10 feet over the 80-year life of the Proposed Action, or one foot every 8 years. The water-level data will be evaluated to determine if the rate of decline at a specific location is less than or greater than the model-predicted baseline rate of decline. The water-level decline at a specific well will be considered significant, and subject to mitigation as described in the Mitigation Measure for Impact 3.3-1, if four consecutive semi-annual groundwater levels from that well show a declining trend that is at least 50 percent greater than the baseline trend identified in the revised numeric groundwater model (i.e. 15 feet over the 80-year life of the Proposed Action, or one foot every five years and four months), and all monitoring wells located between the affected well and USG wells Nos. 4, 5, and 6, if any, also show a declining trend that is greater than the baseline trend.

Water-quality samples will be collected from each well listed in Table 3.3-10 on a semi-annual basis. The water samples will be collected following accepted well-sampling protocols and standards of practice, and analyzed by a laboratory certified by the California Department of Health Services for the analyses being conducted. At a minimum, the analyses will include pH, electrical conductivity, TDS, alkalinity, sodium, potassium, calcium, magnesium, chloride, sulfate, bicarbonate, carbonate, fluoride, bromide, boron, and iron.

A sufficient number of samples will be collected so that an adequate number of samples are present from each well listed in Table 3.3-10 to calculate the 95-percent upper confidence limit or other statistical estimate of the upper bound of the mean, such as those described in California Code of Regulations, Title 27, Section 20415(b). Subsequent groundwater monitoring data will be compared with the statistical estimate of the upper bound of the mean to determine if a significant change in concentration may be occurring at a specific well location, or area of the aquifer. A significant increasing trend in concentration will be determined to be present if a chemical constituent is detected at a concentration that exceeds its 95 percent one-sided tolerance limit as defined by Gibbons (Statistical Methods for Detection Monitoring, in

Groundwater Contamination and Analysis at Hazardous Waste Sites edited by Suzanne Lesage and Richard E. Jackson, Marcel Dekker, Inc., 1992, pp. 199-243) for four consecutive monitoring periods. If a significant increasing trend is determined to exist, the monitoring frequency for that well will be increased to quarterly, and any of the private well owner(s) adjacent to any well indicating such a trend that has requested that their groundwater level and water quality be determined at the time the Mitigation Monitoring Program is implemented, will have their well tested until such time as the water quality decline returns to below levels of concern as specified in this Mitigation Monitoring Program. No other specific mitigation action will be required other than an increase in monitoring frequency until the TDS level reaches 500 mg/L, or the concentration of any other monitored constituent exceeds their secondary drinking-water standard in force at the time of the measurement as described in the mitigation measure for Impact 3.3-2 for the Proposed Action, in Section 3.3.2.7 above.

The water-level data, water-quality data, and statistical analysis of trends will be submitted to the County and the USGS within 60 days after the end of each calendar monitoring period. The monitoring will be conducted at the expense of USG. The actual party conducting the monitoring and the financial arrangements will be approved by the County. If no impacts have been identified, the Monitoring Program will continue until the sooner of either the end of the Proposed Action (80 years), or such time as USG implements a Project Alternative that results in USG wells Nos. 4, 5, and 6 being pumped at rates no greater than pre-Proposed Action rates. If significant impacts to groundwater have been identified, then this Monitoring Program will continue until those impacts have been fully mitigated and water levels and/or water quality returns to baseline levels, but no longer than 10 years after the Plant ceases operation.

3.3.3.8 No Action Alternative: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater and, causing some wells to go dry.

The No Action Alternative assumes the rate of water usage at the Plaster City Plant would not increase above pre-Proposed Action levels. As discussed above in Section 3.3.3, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under the No Action Alternative, but there would not be any additional increment of water-level decline associated with the Proposed Action since there would not be any additional increment of pumping above the historic level, and therefore no increased impact to individual well owners. Therefore, the No Action Alternative would maintain the pre-Project conditions in the Basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

The No Action Alternative assumes, the rate of water usage at the Plaster City Plant would not increase above pre-Proposed Action levels. As discussed above in Section 3.3.3, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under the No Action Alternative, but there would not be any additional increment of water-level decline associated with the Proposed Action since there would not be any additional increment of pumping above the historic level. Therefore, the No Action Alternative would maintain the pre-Project conditions in the Basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

The No Action Alternative assumes, the rate of water usage at the Plant would not increase above pre-Proposed Action levels. As discussed above, the pumping that has occurred in the Basin since the mid-1920s has not caused any measurable decrease in groundwater quality. There would not be any potential for the No Action Alternative to change groundwater quality beyond the baseline level since there would not be any additional increment of pumping above the baseline level, and therefore no increased impact to individual well owners. Therefore, the No Action Alternative would maintain the baseline conditions in the basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

The No Action Alternative assumes, the rate of water usage at the Plant would not increase above pre-Proposed Action levels. As discussed above, the pumping that has occurred in the Basin since the mid-1920s has not caused any measurable decrease in groundwater quality. There would not be any potential for the No Action Alternative to change groundwater quality beyond the baseline level since there would not be any additional increment of pumping above the baseline level. Therefore, the No Action Alternative would maintain the baseline conditions in the basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.3.9 Partial Use of Water from Imperial Irrigation District: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry, and reducing the amount of available water in the Basin.

This alternative would supply the Plant with a portion of the water needed for operations from USG's existing wells in Ocotillo. The balance of the water needed for operations would be supplied by the IID. Under this alternative, water from IID would be blended with water from the Ocotillo/Coyote Wells Groundwater Basin as needed to achieve the level of water quality and consistency necessary for use in manufacturing wallboard without the need for further treatment of the process water. The quality of IID water, which comes from the Colorado River, varies over time. Thus, the amount of water that would need to be extracted from USG's wells in Ocotillo would vary over time. However, this alternative assumes that over the life of the Project, the amount of water extracted from the existing wells at Ocotillo would not increase above pre-Proposed Action levels. Water in excess of the pre-Proposed Action amount would be provided by IID under a water service agreement with USG. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

The rate of pumping from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin would remain at the baseline rate. The baseline rate, as discussed above, is an average of 347 AF/yr over a five-year period. As discussed above, the modeled water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under this alternative, but there would not be any additional increment of water-level decline since there would not be any additional increment of pumping above the baseline level. Therefore, this alternative would maintain the baseline conditions in the Ocotillo/Coyote Wells Groundwater Basin.

Level of Significance Before Mitigation: Potentially Significant

Implementation of this partial use of IID water alternative will reduce USG's consumption of water from the Ocotillo/Coyote Wells Groundwater Basin to pre-Project levels. However, as discussed above, implementation of this alternative is not expected to occur until about 2008, or later. Thus, usage of groundwater above the pre-Project levels from 2000 until this alternative is implemented has the potential to adversely affect other wells in the Basin.

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-1)

Level of Significance After Mitigation: Less than Significant

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. Increased long-term affects to the basin groundwater table would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.3.10 Full Use of IID Water Alternative: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry, and reducing the amount of available water in the Basin.

This alternative would provide essentially the full water supply for the Plant from the IID. Under this alternative, water from IID would be piped to the Plant for use in wallboard processing. This alternative assumes that over the life of the Project, groundwater would not be extracted from the existing USG wells at Ocotillo. Therefore, the total pumping in the Ocotillo/Coyote Wells Groundwater Basin would be reduced by the baseline amount. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

As discussed above, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. Under the

Full IID Alternative, this rate of water-level decline would be reduced or even reversed, possibly resulting in restoration of water-levels in the Ocotillo area.

Level of Significance Before Mitigation: Potentially Significant

Implementation of this full use of IID Water Alternative will reduce USG's consumption of water from the Ocotillo/Coyote Wells Groundwater Basin to zero. However, as discussed above, implementation of this alternative is not expected to occur until about 2008, or later. Thus, usage of groundwater above pre-Project levels from 2000 until this alternative is implemented has the potential to adversely affect other wells in the Basin.

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.3-1)

Level of Significance After Mitigation: Less than Significant

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline consumption levels. Long term effects to the basin groundwater table would therefore be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline consumption levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.4 Quarry Water Usage

As part of the Proposed Action, USG is proposing to drill a new water supply well, known as Quarry Water Well No. 3, near the Quarry. (See Figure 3.3-18, Proposed Location of Quarry Water Well Number 3). Approximately 26 AF/yr are needed from this new well for dust control in the quarrying, crushing, and screening operations. Quarry Water Well No. 1, located near the main entrance to the Quarry, was installed in 1983 under an Imperial County Conditional-Use Permit (CUP) limiting maximum withdrawal to 7,000 gallons per day.

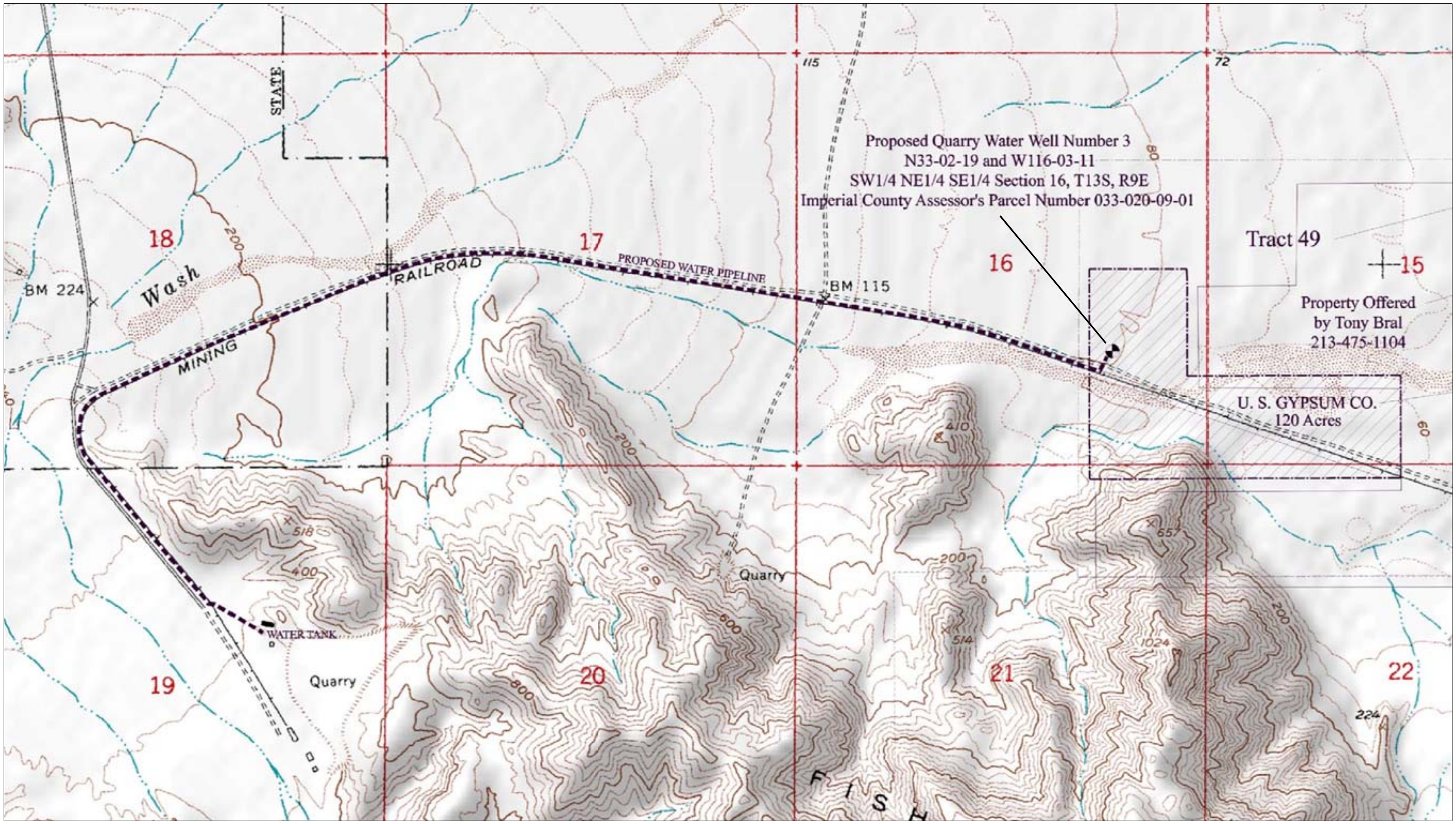

Figure 3.3-18
Proposed Location of Quarry Water Well Number 3
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For comparison purposes, the current permit limit of 7,000 gallons per day is approximately equivalent to 7.8 AF/yr, or 4.9 GPM assuming that the pump is operated continuously. The needed 26 AF/yr is approximately equivalent to 23,000 gallons per day, or 16.1 GPM assuming that the pump is operated continuously. Thus, the Proposed Action will result in an increase in the rate of groundwater extraction of approximately 18.2 AF/yr.

The existing and proposed Quarry water wells are located along the southwestern boundary of the Ocotillo Valley Groundwater Basin. This basin is distinctly different from the Ocotillo/Coyote Wells Groundwater Basin in which the USG production wells for the Plant are located.

Quarry Water Well No. 1 could not achieve the original permitted extraction rate due to the limited presence of groundwater in the penetrated aquifer and severe scale buildup in the well casing due to high TDS levels. In 1993, Quarry Water Well No. 2 was installed. Quarry Water Well No. 2 is not capable of producing the current permit limit of 7,000 gallons per day.

In 2001, USG drilled a test hole approximately three miles east-northeast of the Quarry on company-owned land along the USG railroad right-of-way. Pumping tests indicate that a production rate of 25 gpm to 50 gpm may be sustainable at the test-hole location. The TDS level of the water sampled from the test hole was 1,066 ppm. USG is proposing to install Quarry Water Well No. 3 within one-half mile of the successful test hole.

The following studies and reports were reviewed for this analysis of the proposed installation of Quarry Water Well No. 3 and the increase in annual pumping from 7.8 AF/yr to 26 AF/yr:

- *Imperial County Groundwater Study – Final Report*, Montgomery Watson, December 1995;
- *California's Ground Water*, California Department of Water Resources Bulletin 118-75, September 1975, reprinted January 1994;
- *Hydrogeologic Investigation for Allegretti Farms, Western Imperial County, California*, Krieger & Stewart, Incorporated, February 7, 1997; and
- *Potential Impacts of Pumping the Proposed Quarry Water Well No. 3*, Bookman Edmonston memorandum from John Rotert to Richard Rhone, March 28, 2003.

The information presented in the following section was obtained from these references, and copies of these studies can be reviewed at the office of the County Planning Department, Imperial County, California.

3.3.4.1 Affected Environment

The Ocotillo Valley Groundwater Basin is located to the west of the southwestern corner of the Salton Sea. This area is also commonly referred to as the Borrego Valley. It is bounded on the southwest by the Vallecito and Fish Creek Mountains, on the west by the Peninsular Ranges, on the north by the Borrego badlands, and on the east by the Salton Sea. The climate is comparable to that of the Ocotillo/Coyote Wells Groundwater Basin described above.

The Ocotillo Valley consists of sedimentary deposits derived from the surrounding mountain ranges, similar to the sedimentary deposits of the Ocotillo/Coyote Wells Groundwater Basin. The Coyote Creek fault trends northwest near the southwestern margin of the basin. The proposed location of Quarry Water Well No. 3 is approximately 4 miles southwest of the Coyote Creek fault. The surface deposits in the lower part of the Ocotillo Valley are reported to consist of the remnant shoreline of ancient Lake Cahuilla, which likely filled on several occasions in the Pliestocene due to meandering of the Colorado River. As the ancient lake dried out, saline evaporite deposits were left behind in the sediments.

The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Water Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. In Section 32, T12S, R10E, approximately 10 miles northeast of the proposed location for Quarry Water Well No. 3, groundwater discharges from two springs near the confluence of San Felipe Creek and Fish Creek Wash. Prior to 1984, flow from these springs only occurred intermittently. Since 1984, however, flow from these two springs has occurred year round. These two springs, the San Felipe Creek Spring and the Fish Creek Spring, support the habitat for a population of Desert Pupfish (Cyprinodon mascularius, see Section 3.5, Wildlife), an endangered species.

Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 ft bgs in the center of the basin and contains water with TDS levels reported in the range of 8,000 ppm. The elevated TDS levels are most likely due to leaching of the saline evaporite deposits in the surficial sediments. An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 ft bgs at some locations and contains water with TDS levels reported in the range of 1,400 ppm. Groundwater from the lower aquifer is used for agricultural purposes. According to DWR (Bulletin 118-75), the Ocotillo Valley groundwater basin covers an area of about 410 square miles, with a storage capacity of 5,800,000 AF and a usable groundwater capacity of 1,900,000 AF.

Groundwater is reported to be discharging to the Salton Sea at rates of 2,200 AF/yr to 4,500 AF/yr. The rate of outflow from the Ocotillo Valley Groundwater Basin is greater than the rate of inflow, as evidenced by declining water levels in the lower aquifer. Water levels are decreasing at the rate of three feet per year. Approximately one-third to one-half of this decline is due to agricultural pumping and the balance is due to natural outflow. The naturally-occurring groundwater deficit is most likely due to long-term climatic changes and/or drainage of the lower aquifer due to the lowering of the hydrologic base level caused by the disappearance of ancient Lake Cahuilla.

Water-quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring are due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. The elevated water table intersects the surface at the location of the springs. From 1983 through 1996, irrigation rates have ranged from approximately 9,250 AF/yr to over 12,000 AF/yr, based on reported groundwater production.

Stream gauge data along San Felipe Creek show that, beginning in 1984, the base flow averaged several cubic feet per second (cfs). Seasonal peak flow generally occurs in late summer or early fall and may reach 50 cfs. If it is assumed that the base flow averages two cfs, then the minimum annual discharge of San Felipe Creek Spring is approximately 1,500 AF/yr. The actual discharge is likely to be appreciably greater due to seasonal peak flows.

3.3.5 Quarry Water Usage: Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.3.5.1 Thresholds of Significance

The significance criteria for analysis of proposed Quarry Water Well No. 3 were developed from Appendix G of the CEQA Guidelines. The Proposed Action would have a significant impact on hydrology and water quality if it would:

- Violate any water-quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted, or the rate of discharge at San Felipe Creek Spring or Fish Creek Spring would decrease to the point that it would degrade the Desert Pupfish habitat); or
- Otherwise substantially degrade water quality.

3.3.5.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

The nearest supply wells are located several miles to the north of the proposed Quarry Water Well No. 3 location. In addition, these wells typically pump at the rate of several hundred to over 1,000 gpm. The average pumping rate for the proposed well will be 16 gpm. The natural discharge from the Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. The maximum annual production from the proposed well will increase from 7.8 AF/yr to 26 AF/yr. The pumping rate and annual production for the proposed Quarry Water Well No. 3 are miniscule in comparison to agricultural pumping rates, and the rate of natural discharge of both groundwater and surface water. Therefore, the proposed well will not have any perceptible affect on the existing water levels or on the current rate of decline of the water table.

The proposed increase in pumping is also small compared to the minimum base flow from San Felipe Creek Spring of 1,500 AF/yr. Water quality data from the USG test hole also demonstrate that the new well would tap groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the proposed increase in pumping from 7.8 AF/yr to 26 AF/yr will not affect the flow at springs that support Desert pupfish habitat.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Based on the test hole drilling results, the shallow aquifer is not present in the area of proposed Quarry Water Well No. 3. In addition, the incremental increase in pumping from 7.8 AF/yr to 26 AF/yr is miniscule compared to the agricultural pumping rates from the lower aquifer in the central part of the basin.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

According to hydrology reports (Joseph E. Bonadiman & Associates 2004), a study was made of approximately 6,856 acres of the drainage area tributary to Fish Creek Wash natural channel. It was estimated that a maximum peak flow-rate for the area is approximately 5,204 cubic feet/second (cfs) for the 3-hrs-100-year storm frequency. It was concluded that the proposed Quarry expansion will not produce a significant reduction of runoff tributaries to Fish Creek because: 1) the Quarry expansion is adjacent to a mountain range that provides the smallest contribution of rainfall in the entire drainage area due to topographic and geologic conditions; and 2) rainfall east of the Quarry or within the Quarry will percolate into the ground, recharging the water table. The proposed Quarry expansion will have no effect on the natural groundwater process, therefore groundwater will transmigrate towards Fish Creek along the standard pattern. However, the main drainage patterns from the western mountain range of the drainage area produces the largest flow rate tributary to Fish Creek, potentially causing a disruption of periodic flows at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Mitigation Measure 3.3-7

An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.

Level of Significance After Mitigation: Less than Significant

3.3.5.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

The nearest supply wells are located several miles to the north of the proposed Quarry Water Well No. 3 location. In addition, these wells typically pump at the rate of several hundred to over 1,000 gpm. The average pumping rate for the No Action Alternative is 4.9 gpm. The natural discharge from the Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. The maximum annual production from the No Action Alternative is 7.8 AF/yr. The pumping rate and annual production for the No Action Alternative are equivalent to the existing baseline conditions and are miniscule in comparison to agricultural pumping rates, and the rate of natural discharge of both groundwater and surface water. Therefore, the proposed well will not have any perceptible affect on the existing water levels or on the current rate of decline of the water table.

The No Action Alternative pumping rate is also small compared to the minimum base flow from San Felipe Creek Spring of 1,500 AF/yr. Water quality data from the USG test hole also demonstrate that the existing well taps groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the No Action Alternative will not affect the flow at springs that support Desert Pupfish habitat.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Based on the test hole drilling results, the shallow aquifer is not present in the area of the existing Quarry Water Well No. 2. In addition, the pumping of 7.8 AF/yr is miniscule compared to the agricultural pumping rates from the lower aquifer in the central part of the basin.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under the No Action Alternative, existing mining would not expand as outlined in the Proposed Action. Therefore, baseline conditions of surface flows would be maintained.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.5.4 Partial IID Water Supply Alternative

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

This alternative does not affect water pumping or usage at the Quarry, therefore the partial IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

Increasing the pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Partial use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the partial IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under this alternative, mining would expand at the Quarry as outlined in the Proposed Action, therefore there is the possibility that natural drainage patterns from the western mountain range of the drainage area could be disrupted at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-3)

Level of Significance After Mitigation: Less than Significant

3.3.5.5 Full IID Water Supply Alternative

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

Full use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the full IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

Increasing the pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Full use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the full IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under this alternative, mining would expand at the Quarry as outlined in the Proposed Action, therefore there is the possibility that natural drainage patterns from the western mountain range of the drainage area could be disrupted at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-3)

Level of Significance After Mitigation: Less than Significant

3.3.6 Cumulative Impacts and Mitigation Measures

The revised groundwater model (Bookman-Edmonston, 2004) assumed a 1.4 percent constant annual population increase in the Ocotillo area based on U.S. Census data and information contained in the Ocotillo-Nomirage Community Area Plan and therefore considered potential cumulative impacts resulting from regional growth.

The County Board of Supervisors recently upheld the County Planning Commission's determination of historical water usage and water well registration terms for a commercial well (State Well #16S/9E-36G4, Westwind Water Company) in the vicinity of the USG wells, and limited future pumping from this well to 40 AF/yr. This maximum rate of pumping is higher than the rate assumed in the modeling conducted for the Proposed Action (Bookman-Edmonston, 2004). The combined effects of the Proposed Action and the proposed additional pumping from the Westwind well have the potential to cause cumulative impacts on water levels and water quality in the Groundwater Basin.

The Proposed Action itself is comprised of three separate components (Quarry, Plant, and Pipeline) that are somewhat separated geographically, reducing the potential for cumulative effects. For example, the existing and proposed Quarry water wells are located along the southwestern boundary of the Ocotillo Valley Groundwater Basin. This Basin is distinctly different from the Ocotillo/Coyote Wells Groundwater Basin in which the USG production wells for the Plant are located.

Impact 3.3-8: Cumulative Reduced Water Levels

Increased pumping of USG wells and the additional commercial pumping from the Westwind well could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry, and reducing the amount of available water in the Groundwater Basin.

As discussed for Impact 3.3-1, the Proposed Action could result in a significant impact on water levels and water quantity in the Groundwater Basin. The cumulative impact of the additional commercial pumping has the potential to further exacerbate this impact.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Same as Mitigation Measure 3.3-1. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-1, as described in Section 3.3.3.

Level of Significance After Mitigation: Less Than Significant as to individual wells; Significant as to Basin-wide impacts

Impact 3.3-9: Cumulative Water Quality Degradation

Increased pumping of USG wells and the additional commercial pumping from the Westwind well could degrade water quality due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the Groundwater Basin.

As discussed for Impact 3.3-2, the Proposed Action could result in a significant impact on water quality in the Groundwater Basin. The cumulative impact of the additional commercial pumping has the potential to further exacerbate this impact.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Same as Mitigation Measure 3.3-2. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-2, as described in Section 3.3.3.

Level of Significance After Mitigation: Less Than Significant as to individual wells; Significant as to Basin-wide impacts

3.4 VEGETATION

3.4 VEGETATION

3.4.1 Introduction

This section describes the affected vegetation environment at the Plant and Quarry. In addition to the description of the local environment, this section includes a description of regional vegetation for the purposes of assessing the potential direct and indirect impacts of the Proposed Action on vegetation. The description of the affected environment is based on studies and reports prepared for the Plant (including the proposed replacement of the existing water line and the existing railroad alignment) and the Quarry, as well as draft Revegetation Plans for the Quarry. These are as follows:

- *Baseline Biological Survey of the United States Gypsum Company Proposed Expansion Areas, Imperial County, California*, June 1995, by Lilburn Corporation;
- *Revegetation Plan for the United States Gypsum Company Proposed Expansion Areas, Imperial County, California*, January 1996, by Lilburn Corporation;
- *Biological Technical Report, United States Gypsum Company Plaster City Quarry Site* November 2002, revised February 2005, by White and Leatherman BioServices;
- *Biological Technical Report, United States Gypsum Company Plaster City Plant*, January 2003, Revised February 2005, by White and Leatherman BioServices; and
- Studies and reports used in the preparation of this section are included in Appendix C, Biological Resources.

3.4.2 Affected Environment

The Project site and Imperial County are located in the Colorado Desert, the California portion of the larger Sonora Desert which encompasses lands around the Gulf of California and the delta of the Colorado River, including northwestern Mexico, southwestern Arizona, southeastern California (US) and Baja California (Mexico). The dominant physical feature of the Colorado Desert is the Salton Trough, an elongated depression that is separated from the Gulf of California by the Colorado River delta and extends northerly to the San Gorgonio Pass, north of Palm Springs. The dominant feature is the Salton Sea located in the lowest portion of the Salton Trough. The Colorado Desert extends from the Colorado River westerly to the base of the Peninsular Ranges in western Imperial County/Eastern San Diego County. The Quarry site is located in the Fish Creek Mountains at the eastern base of the Peninsular Ranges. Figure 1.0-1 in Chapter 1.0 shows the regional location of the Quarry and Plant sites.

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro, the County seat is around three inches, but at the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year.[1] However, average annual rainfall in the County is three to four inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon-like 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 BLM maintains a weather data station in the Fish Creek Mountains in the southeasterly portion of the Quarry site. Data from this station show that rainfall experienced at the Quarry is similar to the County's average rather than the Anza Borrego Park Headquarters site. Table 3.4-1, Annual Precipitation at Anza Borrego Desert State Park and the BLM Fish Creek Mountains Weather Data Stations 1991-2002, shows a comparison of precipitation for years 1991 through 2002 at the Anza Borrego State Park Headquarters and at the Fish Creek Mountains BLM Station. Annual precipitation at the Fish Creek Mountains is shown in parentheses. Years identified in bold represent years when biological field surveys were conducted.

TABLE 3.4-1
ANNUAL PRECIPITATION AT ANZA BORREGO DESERT STATE PARK AND THE BLM FISH CREEK MOUNTAINS WEATHER DATA STATIONS 1991-2002[1]

Year	Precipitation (Inches)	Year	Precipitation (Inches)
1991	9.39 (3.25)	1997	2.55 (4.10)
1992	10.11 (7.04)	1998	6.61 (4.57)
1993	11.54 (7.00)	1999	3.56 (2.61)
1994	4.38 (4.69)	2000	2.50 (2.01)
1995[2]	**6.25 (2.73)**	2001	5.40 (2.87)
1996	2.55 (0.29)	**2002**[2]	**0.38 (0.58)**

1. Data from Fish Creek Mountains is shown in ( ).
2. Years in bold represent years when biological field surveys occurred.

Source: Western Regional Climate Center, *Borrego Desert Park California Monthly Total Precipitation (inches)*, September 2002 and the California Water Resources Data Center for the Fish Creek Mountains Station, October 10, 2002.

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[1] Schoenherr, Allen A, *A Natural History of California*, University of California Press, 1992.

In the winter, daily temperatures can range from the low 30s to the upper 70s, while in the summer, daily temperatures can range from the low 70s to over 110 degrees. Diurnal temperature changes can be extreme as well.

The Colorado Desert drains internally except for a narrow strip of the county along the Colorado River. The major drainage is into the Salton Sea from numerous tributaries east and west, including Fish Creek Wash, just northwest of the Plaster City Quarry and San Felipe Creek. Stormwater from the Quarry site flows into an internal unnamed wash which drains to the northwest into Fish Creek Wash and ultimately into the Salton Sea.

Vegetation in the arid Colorado Desert is sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Franseria ilicifolia*), burrobush (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), smoketree (*Psorothamnus spinosus*) as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*). Three special-status plant communities are reported in the area by the California Natural Diversity Data Base (CNDDB): desert fan palm oasis, mesquite bosque, and transmontane alkali marsh. None of these three communities occur on or in adjacent areas of the Quarry or Plant site, or along the linear water line easement or narrow-gauge railroad right-of-way visited or viewed during the 2002 surveys.

3.4.2.1 Vegetation Survey Methods and Results

Plant Site

The Plant site is located on approximately 473 acres of the desert floor, of which 309 acres had been disbursed prior to the modernization. The Plant site is located at about 100 feet elevation where vegetation is desert shrubland dominated by creosote bush, white bursage, and saltbush. Figure 2.0-4, Plaster City Plant Aerial Photograph, in Chapter 2.0, Project Description, shows a 1996 aerial photograph that depicts conditions at the Plant site prior to the modernization. As shown in the aerial photograph, the Plant site was primarily 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 resulted in the development of an additional 66 acres.

Plant Water Line Alignment

The water line that supplies the Plant is located nearly entirely below the desert floor. The existing eight-inch water line is within an established highway right-of-way. The pipeline crosses desert shrubland, patches of windblown sand and some intermittent drainages. The line originates at a small 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. Along its entire length, the water line is in or near the existing road right-of-way on the south side of the road. The eastern five miles of the water line alignment are at the boundary of the BLM's "Plaster City Open Area" for off-highway vehicles (OHVs), and a designated OHV staging area is located on the north side of Evan Hewes Highway west of the Plant site. 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 power line, and largely adjacent to a designated OHV open area, including a designated OHV staging area.

Narrow-Gauge Railroad Alignment

USG's narrow-gauge railroad operates entirely along an existing right-of-way, crossing through desert shrubland similar to that found at and around the Plant site, 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 railroad alignment. Undisturbed uplands parallel to the railroad support desert shrubland of the creosote bush series, and creosote bush-white bursage series. Washes also are generally covered by creosote bush and creosote bush-white bursage series. They have higher occurrence of cheesebush and indigo bush. Some larger channels also support catclaw, smoke tree, and desert lavender. Vegetation in the larger washes is dry desert wash woodland and, in addition to the creosote bush series, includes such species as catclaw. 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 in 2002.

The existing narrow-gauge railroad line originates in the Fish Creek Mountains at the Quarry at an elevation of about 350 feet; the alignment takes a northwesterly direction from the quarry for about one mile, then turns to the east and descends to just below sea level after about another five miles. It continues to the south-southeast, generally at about 100 feet above sea level to the Plant. The Proposed Action would not alter the existing railroad alignment, so the continued use of the narrow-gauge railroad would not affect any vegetation located in areas adjacent to the railroad.

In Chapter 2.0, Figure 2.0-1, Location of Project Components, shows the location of the various components of the Proposed Action: the rail line, the Plant, Quarry, the alignment of the existing water line to the Plant that would be replaced, and the proposed Quarry Well No. 3 and associated water line to the Quarry that would run within the same right-of-way as the railroad. Biologists from White and Leatherman BioServices drove the length of the railroad alignment between the Plant and the Quarry site on April 23, 2002 to document plant species and wildlife habitat occurring along the route.

Quarry Area

Two biological field surveys have been conducted for the Quarry site; the first by Lilburn Corporation in 1995, and the second by White and Leatherman BioServices in 2002. The 1995 survey did not cover the entire site; Figure 3.4-1, 2002 Transect Locations and 1995 Field Survey Locations, shows the limits of that survey. Each survey is distinct in that although they were conducted in the spring of their respective years, they were conducted under different conditions. The 1995 survey was conducted in the spring of a year when precipitation was normal with previous years at or above normal. The 2002 survey was conducted in the spring of a year when 1.8 inches of rain occurred in the previous 12 months and precipitation in previous years was at or below normal.

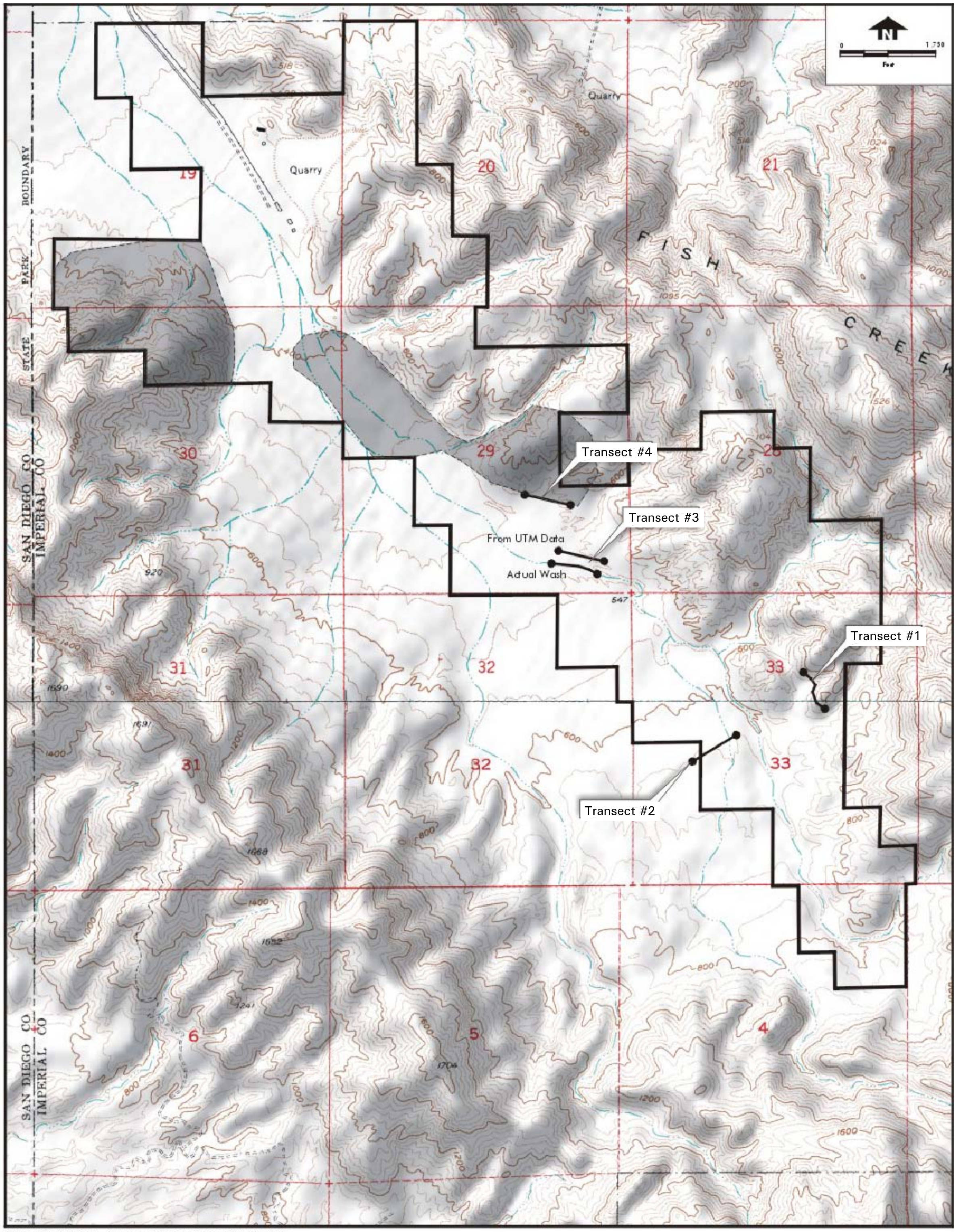
The 1995 field survey of the Quarry largely concentrated on the undisturbed Sonoran Creosote Bush Scrub and Desert Dry Wash microphyllous vegetation present in the wash channels and surrounding hillsides in the proposed new Quarry areas. The areas surveyed included representative portions of the wash, portions of the Shoveler Annex, and hillside areas in the southeast portion of the Quarry. The surveys were conducted in support of a proposed revision to the existing reclamation plan that included incorporating the Shoveler Annex into the USG Quarry. A total of 120 acres of representative hillside, wash and drainage areas were surveyed. Surveys included plant transects within the undisturbed Sonoran Creosote Bush Scrub and Desert Dry Wash vegetation present in the wash and channels and surrounding hillsides in the southeasterly portion of the Quarry site as well as drainages in the Shoveler Annex area. 1995 was a relatively normal year for rainfall so that the findings of the 1995 survey report are applicable to the Proposed Action because a) the surveys were conducted in areas that are representative of the larger Quarry site; b) rainfall in 1995 and previous years were normal to above normal; and c) surveys were conducted at an optimal time of year – late spring.

Methodology for conducting surveys of the Quarry site in 1995 consisted of reviewing the available literature for the region in order to identify any special-status species of plants or animals that may be known from the area. Field surveys consisted of walking meandering transects during a four-day survey period (April 25-28, 1995). Weather conditions during these surveys were similar, generally hot (77 to 91 degrees Fahrenheit) and dry with slight to moderate winds (0-15 mph) by mid-afternoon.

A series of 30-foot transects were conducted on and in the drainages in the Shoveler Annex area. All plant species that were observed were recorded. In addition, 20 belt plant sampling transects approximately 150 by 3 feet were walked on the hillsides in Shoveler Annex and the hills in the southeast portion of the Quarry site. Belt transects were conducted in the undisturbed areas of the site in order to establish the density and diversity of each perennial species per unit area. All perennial species within the belt transect were counted and the width and length of each plant was measured. The transect data provided the baseline for determining seed type and seeding rates that were then used to determine the success criteria for future revegetation of the Quarry site. USG currently has an area in Area 1A of the Quarry site where test plots have been started to track the success of revegetation. Figure 3.4-2, Existing Photographs, photographs 1 and 2 show 2002 conditions of the revegetation efforts. Figure 3.4-3 through 3.4-5 show photographs 3 through 8 show 2002 existing conditions at the Quarry.

Methodology for conducting the 2002 field surveys of the Quarry was to review available literature; all special-status plants or animals reported from the region were noted prior to field surveys. Biologists conducted a preliminary reconnaissance of the site on January 17, 2002 then returned on February 8 and April 23, 2002 to document plants and animals occurring on the site and describe vegetation and habitat. 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 field visits, biologists drove passable roads and walked “meandering transects” along hillsides and the alluvial wash in several places, walking the length of the most active channels in the alluvial fan and “meandering transects” along uplands, including



Source: USGS 7.5 min., Borrego Mtn. SE and Carrizo Mtn. NE Quads.

Legend

2002 Survey

1995 Survey

Figure 3.4-1
2002 Transect Locations
and 1995 Field Survey Locations

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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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.

SOURCE: Lilburn Corporation, 2003

Figure 3.4-2
Existing Photographs
US GYPSUM EXPANSION/MODERNIZATION PROJECT
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Photograph 3: Desert wash vegetation in foreground with barren gypsum outcrops in background.

Photograph 4: Hillside around gypsum outcrops with Creasote bush scrub.

Source: Lilburn Corporation

Figure 3.4-3
Existing Photographs
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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Photograph 5: Typical view of alluvial fan.

Photograph 6: Typical view of wash vegetation. SOURCE: Lilburn Corporation, 2003

Figure 3.4-4
Existing Photographs
US GYPSUM EXPANSION/MODERNIZATION PROJECT
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Photograph 7: Typical view of gypsum outcrop.

Photograph 8: Typical view of gypsum outcrop (foreground and background); met amorphic substrate (middle).

SOURCE: Lilburn Corporation, 2003

Figure 3.4-5
Existing Photographs
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both gypsum and metamorphic substrates. During field surveys, any plant and wildlife species were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations from standard field guides.

Four transects of approximately 1,000 feet were established in four different habitat types on the Project site. These were set up to survey for animals, but also characterized habitat types and plant species at the Quarry site. In Section 3.5, Wildlife, of this document, Figure 3.5-3, Flat Tailed Horned Lizard Occurrences, shows the locations of these transects. 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.

The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. 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. These soils present a poor substrate for vegetation.

Mountainsides are very steep (slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus (rock debris). Exposed ridgetops have thin soil overlying bedrock.

Undisturbed uplands on the site support desert shrubland of the creosote bush series, creosote bush-white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops are almost devoid of vegetation, and pygmy cedar was the only plant seen regularly on these soils during the 2002 surveys.

The alluvial wash also is generally covered by creosote bush and creosote bush-white bursage series. In the washes, biologists saw little or no ocotillo, instead these areas had a 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*). Annual plants and perennial herbs occur in these vegetation types, but they generally could not be identified with confidence due to very low rainfall in 2002.

Three special-status plant communities are reported in the area by the California Natural Diversity Data Base: desert fan palm oasis, mesquite bosque (woodland), and transmontane alkali marsh. None of these three communities occur on the Project site or in adjacent areas visited or viewed during these surveys. Approximately one mile east of the proposed Quarry #3 well site, the narrow-gauge rail line crosses an intermittent stream channel supporting mesquite bosque.

Annual plants and perennial herbs occur in these vegetation types and were identified in the 1995 survey but were generally absent or could not be identified with any certainty during the 2002 surveys due to very low precipitation in the previous 12 months prior to the surveys (see 1995 Biological Survey Report in Appendix C for a list of plants identified at the Quarry).

Special-Status Plants

Based on a review of the literature, 41 special-status plant species were identified as occurring or potentially occurring in the general region of the Quarry (CNDDB Search, June 2002). None of these are state- or federally-listed threatened or endangered species. During field surveys in March 2002 no special-status plants were observed onsite. However, very few annual plants germinated or flowered in 2002, very few perennial herbs put on growth in 2002, and most drought-deciduous shrubs did not put on leaves, presumably all due to the poor rainfall year. Therefore, no conclusion about presence or absence of special-status plants whose habitat occurs on the Project site could be made during the March 2002 survey. However, in the 1995 survey, under more favorable conditions, biologists found one sensitive plant species, winged cryptantha (*Cryptantha holoptera*) a CNPS List 4 species. This designation means the plant has limited distribution and is on the CNPS watch list. This annual cryptantha species has no formal state or federal status but has a state designation of S3.3 which means the plant occurs in the region and there are no current threats to its survival. Another sensitive plant species was thought to occur on the site, the elephant tree (*Bursera microphlla*).

During the 1995 site surveys, no elephant trees were found, although a previous survey in the 1970s had recorded 51 individuals growing at the Shoveler Annex. Based on the photograph included in that report, it is possible that the indigo bushes found in the area were mistaken for elephant trees when in their leafless summer conditions. There was no evidence of elephant trees at the Quarry site (including the Shoveler Annex) or that elephant trees have ever occurred at the Quarry.

Biologists conducting the 2002 field surveys of the Quarry site estimated a moderate or greater probability that any of the following special-status plants might occur on the site: Salton Sea milk vetch (*Astragalus lentiginosus* var. *borreganus*), Harwood's milk vetch (*Astragalus insularis* var. *harwoodii*), Ayenia (*Ayenia compacta*), Sand evening-primrose (*Camissonia arenaria*), Pierson's pincushion (*Chaenactis carphoclina* var. *piersonii*), spiny abrojo (*Condalia globosa* var. *pubescens*), winged cryptantha (*Cryptantha holoptera*), California ditaxis (*Ditaxis californica*), Alverson's foxtail cactus (*Escobaria vivipara* var. *alversonii*), pink velvet-mallow (*Horsfordia alata*), Newberry velvet-mallow (*Horsfordia newberryi*), Parish's desert-thorn (*Lycium parishii*), Coulter's lyrepod (*Lyrocarpa coulteri* var. *palmeri*), brown turbans (*Malperia tenuis*), hairy stickleaf (*Mentzelia hirsutissima*), slender-lobed four o'clock (*Mirabilis tenuiloba*), slender woolly-heads (*Nemacaulis denudata* var. *gracilis*), Wiggins's cholla (*Opuntia wigginii*), Thurber's pilostyles (*Penstemon thurberi*), Unicorn plant (*Proboscidea althaeifolia*), Orocopia sage (*Salvia greatae*), desert spike-moss (*Selaginella eremophila*), and Orcutt's woody aster (*Xylorhiza orcuttii*). None of these plants are federal- or state-listed threatened or endangered, or are candidates or proposed for listing.

Three of the plants that may be found on-site (Pierson's pincushion, Orocopia sage, and Orcutt's woody aster) are on the California Native Plant Society's List 1B (plants considered by CNPS to be 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 by CNPS to be rare, threatened or endangered in California but more common elsewhere in their ranges). Plants on CNPS's List 1B or 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California Fish and Game Code.

Plant Site and Water Supply Area

Three biological field surveys were conducted in 2002 for the Plant and related water and rail lines, by White and Leatherman BioServices. On April 23, 2002, biologists surveyed the rail line and the Plant by driving the length of the rail line on the adjacent access road, as well as driving around the Plant site to view that portion of the site that would be disturbed by the Project Action. The length of the water pipeline route was surveyed on June 19, 2002 and July 24, 2002 by driving adjacent to the proposed route. Biologists were able to effectively survey the water and rail line areas because of their linear nature and that the area of disturbance (water line) would be narrow and adjacent to the existing access road. No new disturbance is associated with the rail line.

Quarry Well Site - Water and Power Alignment

In 2001, two exploration holes were drilled in likely locations to encounter groundwater in order to replace the existing Quarry well that has declined in production since it was brought into use in 1993. The first hole was drilled outside the Quarry site on USG property near the narrow-gauge railroad line; it was completely dry. A second test hole (proposed Quarry Well #3) was also drilled on USG-owned property located about three miles east of the Quarry within the company owned railroad right-of-way in the southeast quarter of Section 16, Tract 49. Testing showed this proposed well could produce between 25 and 50 gallons per minute (gpm). Proposed Quarry Well #3 and its associated pipeline would allow USG to continue dust suppression activities at the Quarry, as mandated by the Imperial APCD utilizing this non-potable water source.

Conditions at the proposed Quarry Well #3 site and pipeline alignment are described as relatively stable sandy desert bajada supporting desert shrubland dominated by creosote bush. The site and pipeline corridor are generally located outside the blow sand area northwest of the sand dunes that characterize the habitat along the central portion of the narrow-gauge railroad right-of-way.

The proposed well site represents approximately 1/8 acre and the associated water pipeline, an additional 11 acres (30 feet wide by three miles). It is within the existing right-of-way and is already disturbed by the railroad tracks and the access road adjacent to the tracks. Likewise, the proposed water pipeline and power line (solar power may be used for the well, negating the need for a power line) between the well site and entrance to the Quarry site would be developed within the already disturbed access road adjacent to the tracks.

USG has estimated that the proposed well would produce approximately 26 acre-feet of water per year. A hydrology study was undertaken by Bookman-Edmonston 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. Section 3.5, Wildlife, includes a discussion of the findings of the hydrology study as it relates to wildlife.

Special-Status Plants

A review of the literature identified 51 special-status plant species occurring or potentially occurring in the general region of the Plant site, water line alignment or railroad alignment. 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 (west of the Plaster City Plant site), but is absent from the Project areas due to absence of any suitable habitat.

Three special-status plant communities are reported in the area by the CNDDB: 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.

No other plants known from the region are listed, proposed for listing, or are candidates for being listed as threatened or endangered. During field surveys no special-status plants were identified within the Project areas. However, very few annual plants germinated or flowered in 2001-2002 due to the lack of precipitation, very few perennial herbs put on growth during that time, and most drought-deciduous shrubs did not put on leaves, presumably all due to the extremely poor rainfall year. Therefore, presence or absence of special-status plants whose habitat occurs in these areas making up the Project site could not be determined.

Biologists completing the 2002 field surveys of the Plant site and related water line and railroad alignments estimated a moderate or greater probability that any of the following special-status plants might occur on the site: Salton Sea milk vetch (*Astragalus lentiginosus* var. *borreganus*), Harwood's milk vetch (*Astragalus insularis* var. *harwoodii*), Borrego milk vetch (*Astragalus lentiginosus* var. *borreganus*), Ayenia (*Ayenia compacta*), Sand evening-primrose (*Camissonia arenaria*), Pierson's pincushion (*Chaenactis carphoclina* var. *piersonii*), Arizona spurge (*Chamaesyce arizonica*) spiny abrojo (*Condalia globosa* var. *pubescens*), ribbed cryptantha (*Cryptantha costata*), winged cryptantha

(*Cryptantha holoptera*) California ditaxis (*Ditaxis californica*), glandular ditaxis (*Ditaxis clariana*) Alverson's foxtail cactus (*Escobaria vivipara* var. *alversonii*), pink velvet-mallow (*Horsfordia alata*), Newberry velvet-mallow (*Horsfordia newberryi*), Baja California ipomopsis (*Ipomopsis effusa*), slender leaved ipomopsis (*Ipomopsis tenuifolia*), Parish's desert-thorn (*Lycium parishii*), Coulter's lyrepod (*Lyrocarpa coulteri* var. *palmeri*), brown turbans (*Malperia tenuis*), hairy stickleaf (*Mentzelia hirsutissima*), slender woolly-heads (*Nemacaulis denudata* var. *gracilis*), Thurber's pilostyles (*Penstemon thurberi*), Unicorn plant (*Proboscidea althaeifolia*), Orocopia sage (*Salvia greatae*), and Orcutt's woody aster (*Xylorhiza orcuttii*). None of these plants are listed as threatened or endangered, or are a candidate 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).

3.4.3 Thresholds of Significance, Environmental Impacts and Mitigation Measures

This section evaluates the potential impacts of the Proposed Action on vegetation that may occur with continued mining into new areas at the Quarry, expansion/modernization of the Plant, replacement of the existing water line to the Plant, and development of a new well and water line to the Quarry. The focus of the evaluation is on unique, threatened or endangered species, on-site habitat, species distribution at the Plant and Quarry sites, and revegetation at the Quarry under the proposed revegetation plan.

3.4.3.1 Thresholds of Significance

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

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

3.4.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.4-1: Loss of Vegetation at Quarry

Increased activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.

Continued activities at the Quarry would result in the disturbance of an additional 845 acres for a total of 1,184 (151.8 acres are in Quarry 1B) acres of desert upland and wash habitat.

Undisturbed uplands at the Quarry support desert shrubland of the creosote bush series, creosote bush-white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush, white bursage, brittlebush, and pygmy cedar. Gypsum outcrops are almost devoid of vegetation, and pygmy cedar, indigo bush and sweetbush were the only plants seen regularly on these soils during field surveys in 1995. In the 2002 survey, only pygmy cedar was seen with any regularity.

The alluvial wash also is generally covered by creosote bush and creosote bush-white bursage series. Alluvial sites had little or no ocotillo, but had a higher occurrence of cheesebush and indigo bush. The larger braided channels also supported catclaw, smoke tree, and desert lavender. Annual plants and perennial herbs occurred in these vegetation types and were identified in the 1995 field survey, but were mostly absent in the 2002 survey.

No special-status plants were observed on the site, but dry conditions in 2002 prevented a conclusion of presence or absence for several species. However, in the 1995 survey, biologists found one CNPS List 4 species – the winged cryptantha. Based on habitat, geographic, and elevational ranges, biologists conclude that no listed threatened or endangered plants would be affected by the Proposed Action. None of the special-status plants which might occur on-site have formal status under state or federal Endangered Species Acts and adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Continued quarrying activities at the Quarry would not contribute to cumulative loss of desert shrublands throughout the region. Habitat that would be affected is not locally or regionally unique or sensitive and does not support plants 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 the adjacent Anza Borrego Desert State Park to the west and BLM-managed wilderness land to the east.

Revegetation Plan

The impact to vegetation at the Quarry site was found to be less than significant, therefore no mitigation measures are required. However, under SMARA, a revegetation plan must be prepared and implemented as part of a reclamation plan for an operating quarry.

USG is currently implementing a revegetation plan in the existing Quarry area 1A. The 1996 Revegetation Plan is included in Appendix C-3. Over the past several years, USG has recontoured portions of the completed Quarry areas within Quarry 1A. To establish a base for revegetation to occur, vertical walls were pushed down to create 1:1 to 2:1 slopes. The area was then allowed to remain undisturbed as a test of natural revegetation and plant growth. The revegetation effort is dependent on the infrequent precipitation that occurs over this arid region. Photographs 1 and 2, referenced above, show existing test plots at the Quarry which are dominated by pygmy cedar.

Revegetation of the disturbed Quarry areas would include both upland and wash environments. Revegetation would follow a series of steps that can be varied over the life of the operation, but are designed to produce tangible results. These steps 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 would 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 would not provide an adequate supply of seeds when needed. Therefore, seeds would be collected and stored by a contractor specializing in native plants.

The proposed revegetation plan would focus on preparing the surface of quarried areas and providing native seeds in a favorable condition to take advantage of the infrequent rains. Cheesebush, brittlebush, stiff-haired lotus, desert tobacco, Emory's desert mallow, fluff grass and big galleta grass are proposed for reintroduction at the Quarry because they 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.

The undisturbed portions of the Quarry sites and areas adjacent to the Quarry would provide the model for what should be achieved through the revegetation effort. The areas to be disturbed would also provide specimens for direct transplanting and the undisturbed areas would provide a source of seeds for the revegetation effort.

USG would salvage topsoil from the wash and stockpile this material for use in the revegetation effort. Topsoil would be salvaged because the majority of the plant roots and microorganisms are growing in that layer. Most desert soils have little topsoil development. Where there is no topsoil, the material in which the majority of the plant roots are growing is referred to as "growth media". Areas to be reclaimed will be covered with this material to provide a natural seed source and enhance broadcast seeding and transplanting. 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.

Because no special-status plants were observed at the Quarry, no significant impact to vegetation would occur. The revegetation plan required under SMARA would act as mitigation for any potentially significant impacts by revegetating disturbed areas of the Quarry with native plants. SMARA requires financial assurances that reclamation of the site will occur. Therefore, revegetation efforts at the Quarry, over time, would result in a site that is natural open space.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline

Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.

The proposed Quarry well No. 3 and associated pipeline to the Quarry would result in the temporary disturbance of approximately 11 acres located in the existing right-of-way for the USG narrow-gauge railroad.

No special-status plants were observed along the narrow-gauge railroad right-of-way, where the well and pipeline would be developed. Like the Quarry site, biologists concluded that based on habitat and geographic and elevational ranges, no listed threatened or endangered plant species would be affected by development of the well site and associated pipeline.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-3: Loss of Vegetation at Plant

Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.

The Plaster City Plant Expansion and Modernization resulted in the disturbance of 66 acres of land not previously disturbed.

Potential impacts related to vegetation at the Plant are less than significant because the 2002 biological field surveys of the Plant site found no listed threatened or endangered plants occurring on the Plant site. Several special-status species likely occur in the Project area but none of the special-status plants which could occur have formal status under state or federal Endangered Species Acts; adverse impacts would not meet CEQA criteria for mandatory findings of significance.

Expansion and modernization of the Plant site did not contribute to cumulative loss of desert shrublands in the region. Vegetation that would be affected 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 is not considered to be significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline

Disturbance at the proposed site of the replacement 10" water pipeline to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.

A new water line is proposed to be constructed adjacent and within the same right-of-way as the existing water line between the Ocotillo and the Plant.

No listed threatened or endangered plants occur within the existing water line right-of-way where the replacement water line will be constructed. No special-status plants were observed in the Project area, but dry conditions this year prevent a conclusion of presence or absence for several species. 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, a powerline, and near a designated OHV open area, including a designated OHV staging area. Also, based on habitat, geographic, and elevational ranges, biologists concluded that no listed threatened or endangered plants would be affected by the construction of the proposed water line.

No impacts to jurisdictional wetlands would result from the Proposed Action. A few drainage courses along the water line alignment 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.

Level of Significance Before Mitigation: Significant

Mitigation Measures:

Mitigation Measure 3.4-1

Prior to any new disturbances to ephemeral stream channels on the proposed water line alignment, USG shall contact the CDFG 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, respectively.

Level of Significance After Mitigation: Less than Significant

3.4.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.4-1: Loss of Vegetation at Quarry

Increased activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.

Under the No Action Alternative quarrying will not increase as outlined in the Proposed Action, but will continue at pre-project levels. This baseline level of activity will not result in increased cumulative loss of desert shrublands in the region.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline

Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.

Under the No Action Alternative disturbance associated with a new Quarry No. 3 well and pipeline would not occur, nor would there be any negative impacts on endangered or threatened plant species in the area.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-3: Loss of Vegetation at Plant

Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.

Under the No Action Alternative disturbance associated with the Plant upgrade and expansion would not occur, nor would there be any negative impacts on endangered or threatened plant species in the area.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline

Disturbance at the proposed site of the replacement 10" water pipeline alignment to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.

Under the No Action Alternative disturbance associated with the new water line alignment would not occur, therefore there would not be any negative impacts on endangered or threatened plant species in the area.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.4.3.4 Partial IID Water Supply Alternative

Impact 3.4-1: Loss of Vegetation at Quarry

Increased activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.

The Partial IID Water Supply Alternative would not change current activities at the Quarry, but because no special status plants were observed on the site, no significant impact to vegetation would occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline

Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.

The Partial IID Water Supply Alternative would not change activities associated with Quarry pipeline development as compared to the Proposed Action, therefore there would not be any negative impacts on plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-3: Loss of Vegetation at Plant

Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.

The Partial IID Water Supply Alternative would not change activities associated with the expansion or upgrade of the Plaster City Plant, therefore there would not be any negative impacts on endangered or threatened plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline

Disturbance at the proposed site of the replacement 10" water pipeline alignment to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.

The Partial IID Water Supply Alternative would still require the construction of a new waterline alignment from the Westside Main Canal. Impacts of this construction would be similar to that of the Proposed Action water supply pipeline.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measures 3.4-1a)

Level of Significance After Mitigation: Less than Significant

3.4.3.5 Full IID Water Supply Alternative

Impact 3.4-1: Loss of Vegetation at Quarry

Increased Quarry activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.

The Full IID Water Supply Alternative would not change current activities at the Quarry, but because no special status plants were observed on the site, no significant impact to vegetation would occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline

Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would not change activities associated with the Quarry pipeline development as compared to the Proposed Action, therefore there would not be any negative impacts on plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-3: Loss of Vegetation at Plant

Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would not change activities associated with the expansion and upgrade of the Plant, therefore there would not be any negative impacts on threatened or endangered plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline

Disturbance at the proposed site of the replacement 10" water line alignment to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would still require the construction of a new waterline alignment (canal). Impacts from this construction would be similar to those outlined in the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measures 3.4-1a)

Level of Significance After Mitigation: Less than Significant

3.4.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

3.5 WILDLIFE

3.5 WILDLIFE

3.5.1 Introduction

This section describes wildlife and the wildlife habitat at and in the vicinity of the Plaster City Plant and Quarry. In addition to the description of the local environment, this section includes a description of regional habitat for the purposes of assessing the potential direct and indirect impacts of the Proposed Action on wildlife. The description of the affected environment is based on studies and reports prepared for the Plant, as well as the draft Revegetation Plan for the Quarry. These are as follows:

- *Baseline Biological Survey of the United States Gypsum Company Proposed Expansion Areas, Imperial County, California*, June 1995, by Lilburn Corporation;
- *Revegetation Plan for the United States Gypsum Company Proposed Expansion Areas, Imperial County, California*, June 2002, by Lilburn Corporation;
- *Biological Technical Report, United States Gypsum Company Plaster City Quarry Site*; November 2002, Revised February 2005, by White and Leatherman BioServices; *Biological Technical Report*, *United States Gypsum Company Plaster City Plant*, January 2003, Revised February 2005, by White and Leatherman BioServices; and
- *Memorandum on the Hydrologic Impacts Attachment to the Biological Technical Report* by Bookman-Edmonston, September 2002. Note:

The 1995 Baseline Survey by Lilburn Corporation biologists was for portions of the Quarry only. Studies and reports used in the preparation of this section are included in Appendix C.

3.5.2 Affected Environment

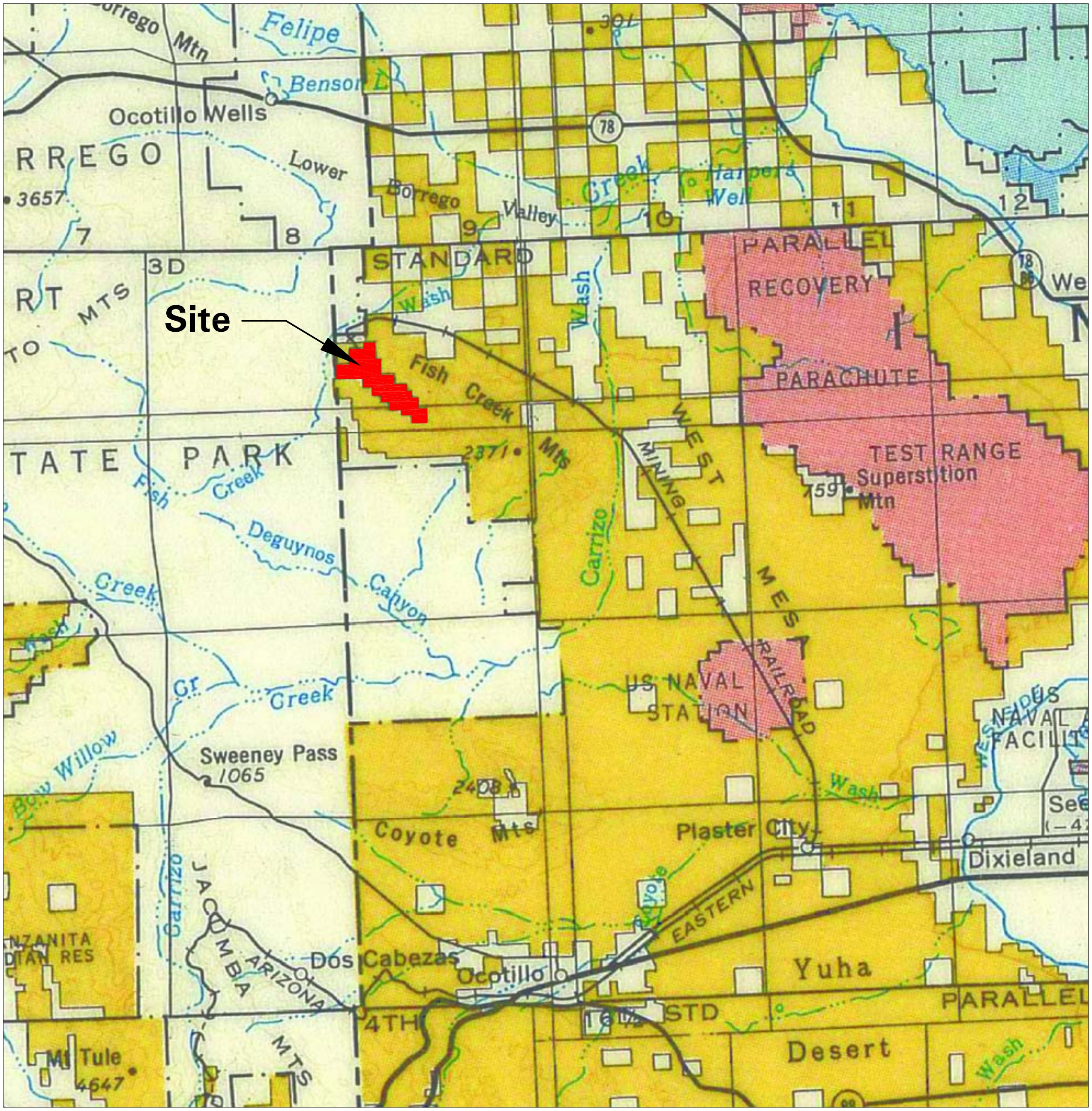
The Plant and Quarry are located in western Imperial County in the Colorado Desert, the California portion of the larger Sonora Desert which encompasses lands around the Gulf of California and the delta of the Colorado River, including northwestern Mexico, southwestern Arizona, southeastern California (US) and Baja California (Mexico). This is important since wildlife are not limited by political boundaries. 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 Plaster City Quarry and San Felipe Creek located approximately 11 miles northeast of the Quarry site.

Stormwater from the project site flows into an internal unnamed wash which drains to the northwest into Fish Creek Wash and ultimately into the Salton Sea.

Western Imperial County is characterized by the southerly reach of the Peninsular Range and related mountains including the Vallecito Mountains, Fish Creek Mountains and Coyote Mountains. Figure 1.0-1, Regional Location, shows the topography of western Imperial County. The Quarry site is located in the wash associated with the Fish Creek Mountains, southeast of the Fish Creek Wash, while the Plant site is located on the desert floor easterly of the Coyote Mountains and Coyote Wash. The existing eight-inch water pipeline associated with the Plaster City Plant originates at a water tank located just south of the I-8 freeway in Ocotillo. It crosses under the freeway and parallels Evan Hewes Highway to the north and east to the Plant. Along its entire length, the pipeline is in or near the existing road right-of-way. The proposed well and related pipeline to supply water to the Quarry will be located adjacent to the narrow-gauge rail line on USG-owned Property – and within 50 feet of the rail line along the existing right-of-way across public, private and state-owned land. Figure 2.0-1 in Chapter 2.0 – Project Description, shows the relationships between the various components of the project.

Despite its harsh environment, the Colorado Desert supports a diverse wildlife population, including reptiles, small mammals and the Peninsular bighorn sheep. Vegetation and habitats described in Section 3.4 provide habitat for numerous resident and migrant wildlife species including Peninsular bighorn sheep, desert pupfish, flat-tailed horned lizard and barefoot banded gecko.

The Western Imperial/Eastern San Diego counties area includes a number of active and passive uses that impact biological resources. These include the Anza Borrego Desert State Park (camping, hiking), off-highway vehicle recreation areas (Ocotillo Wells State Vehicular Recreation Area and Plaster City Open Area), the Navy Desert Test Range and Carrizo Impact Area, various mining operations, roads and railroads, and farming. The central portion of the County southeast of the Salton Sea to the international border comprises the Imperial Valley, an important agricultural area in the state. Figure 3.5-1, BLM El Centro Resource Area Boundaries, shows many of these areas.



SOURCE: Lilburn Corporation, 2003

- BLM Land
- National Forest
- State and Private Land
- Military Land

Figure 3.5-1
BLM El Centro Resource Area Boundaries
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

N

0 5 Miles

SCALE 1" = 5 Miles

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In addition, there are a number of sensitive areas also identified in the region. These include the Peninsular big-horned sheep critical habitat, the Fish Creek Wilderness Area and the West Mesa Management Area (flat-tailed horned lizard). Figure 3.5-2, Penisular Bighorn Sheep Critical Habitat and Flat Tailed Horned Lizard Management Area, shows these areas. Figure 3.5-3, Flat-Tailed Horned Lizard Occurrences, shows where the lizard occurs in relation to various components of the USG operation. As shown on these two maps, use areas identified on Figure 3.5-1 often overlap management or habitat areas. In addition to these areas, CDFG is currently reviewing a request from the Center for Biological Diversity to formally list the Western burrowing owls as threatened or endangered. The Imperial Valley area of the County is considered the most likely area to be identified as the owl habitat.

3.5.2.1 Wildlife Survey Methods

Quarry Site

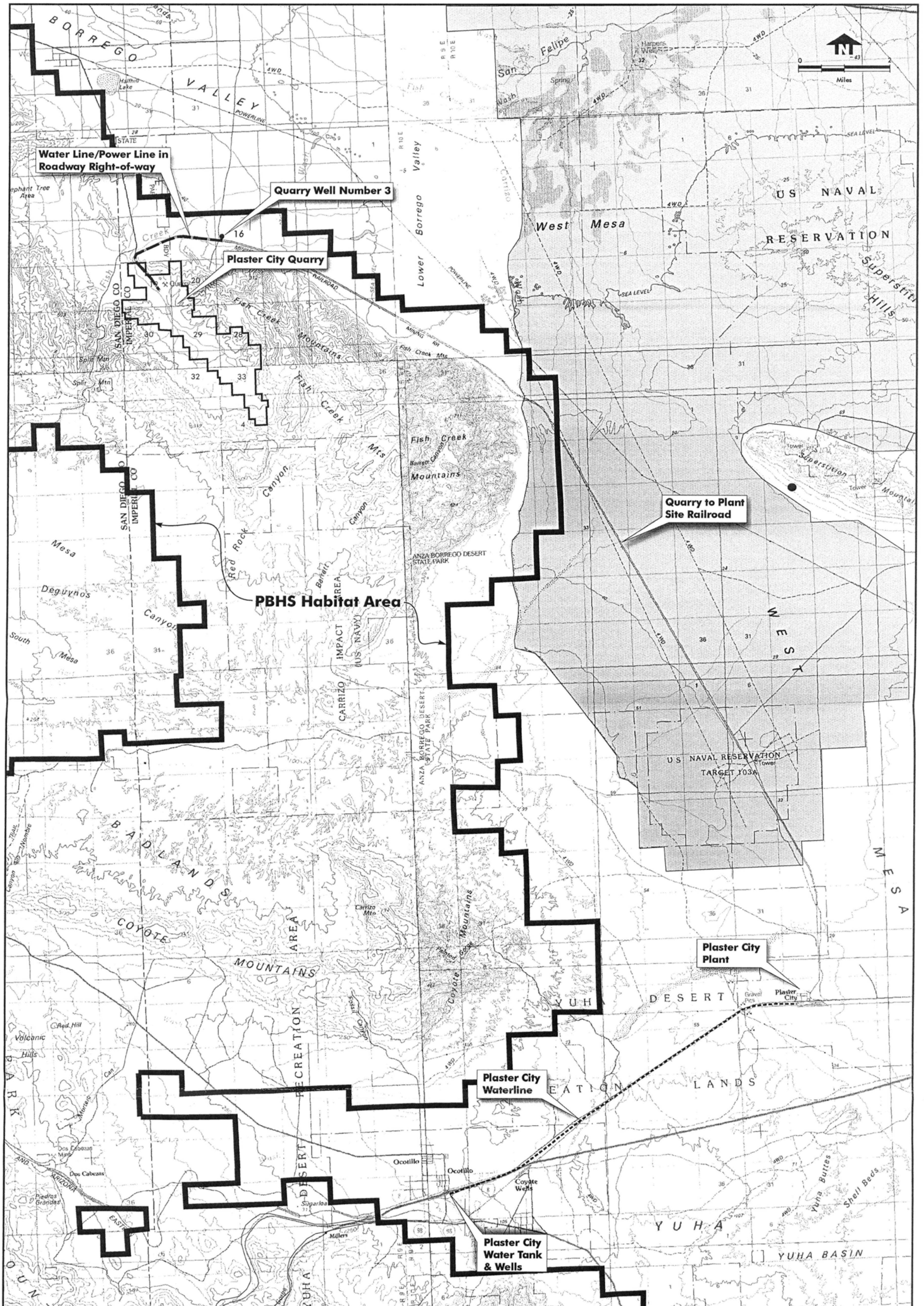
Two biological field surveys have been conducted for the Quarry site: the first by Lilburn Corporation in 1995, and the second by White and Leatherman BioServices, in 2002. The 1995 survey did not cover the entire site; Figure 3.4-1 in Section 3.4, Vegetation, shows the limits of that survey. Each survey is distinct in that although they were conducted in the spring of their respective years, they were conducted under different conditions. The 1995 survey was conducted in a year when precipitation was normal with previous years at or above normal. The 2002 survey was conducted in a year when approximately 1.8 inches of rain occurred in the previous 12 months and precipitation in previous years was at or below normal. Table 3.4-1 in Section 3.4, Vegetation, shows a comparison of precipitation for years 1991 through 2002 at the Anza Borrego State Park Headquarters and at the Fish Creek Mountains BLM remote weather station located just south of the Quarry operations. Annual precipitation at the Fish Creek Mountains is shown in parentheses. Years identified in bold represent years when field surveys were conducted.

The 1995 field survey of the Quarry site largely concentrated on the undisturbed Sonoran Creosote Bush Scrub and Desert Dry Wash microphyllous vegetation present in the wash channels and surrounding hillsides in the proposed new Quarry areas. The areas surveyed included representative portions of the wash, portions of the Shoveler Annex, and hillside areas in the southeast portion of the Quarry site. The surveys were conducted in support of a proposed revision to the existing reclamation plan that included incorporating the Shoveler Annex into the USG Quarry. A total of 120 acres of representative hillside, wash and drainage areas were surveyed. Surveys included transects within the undisturbed Sonoran Creosote Bush Scrub and Desert Dry Wash vegetation present in the wash and channels and surrounding hillsides in the southeasterly portion of the Quarry site as well as drainages in the Shoveler Annex area. This was a relatively normal year for rainfall so that the findings of the 1995 survey report are applicable to the proposed action because 1) the surveys were conducted in areas that are representative of the larger Quarry site; 2) rainfall in 1995 and previous years were normal to above normal; and 3) surveys were conducted at an optimal time of year – late spring. The area surveyed in 1995 is shown in Figure 3.4-1 in Section 3.4.

Methodology for conducting surveys of the Quarry site in 1995 consisted of reviewing the available literature for the region in order to identify any special status species of plants or animals from the area. Field surveys consisted of walking 30-foot wide transects in the drainages around Shoveler Annex and walking meandering transects in other areas during the four-day survey period (April 25-28, 1995). Weather conditions during these surveys were similar, generally hot (77 to 91^{o} F) and dry with slight to moderate winds (0-15 mph) by mid-afternoon.

A series of 30-foot transects were conducted on and in the drainages in the Shoveler Annex area. All observed plant and vertebrate species were recorded. In addition, 20, belt transects, approximately 150 by 3-foot, were conducted on the hillsides in Shoveler Annex and the hills in the southeast portion of the Quarry site. Belt transects were conducted in the undisturbed areas of the site in order to establish the density and diversity of vegetation. These are shown on Figure 3.4-1 in Section 3.4. During these transects all vertebrate species were noted and species were also identified through indirect sign (i.e. scat, track, nests, burrows, etc.). In addition to four days of daytime surveys, biologists spent two nights surveying for the barefoot gecko (*Coleonyx switaki*) by lantern either on foot or by vehicle. The barefoot gecko may also be referred to as the magic gecko.

Methods used in conducting the 2002 field surveys were to review available literature to identify special status animals, plants, and plant communities known from the project site and vicinity. Biologists also visited the Quarry site on January 17, 2002 for general reconnaissance, returning on February 8 and April 23, 2002 to document plants



Legend

- FTHL West Mesa Management Area
- PBHS Habitat Area

Figure 3.5-2
Penisular Bighorn Sheep Critical Habitat and Flat Tailed Horned Lizard Management Area

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

Source: Lilburn Corporation

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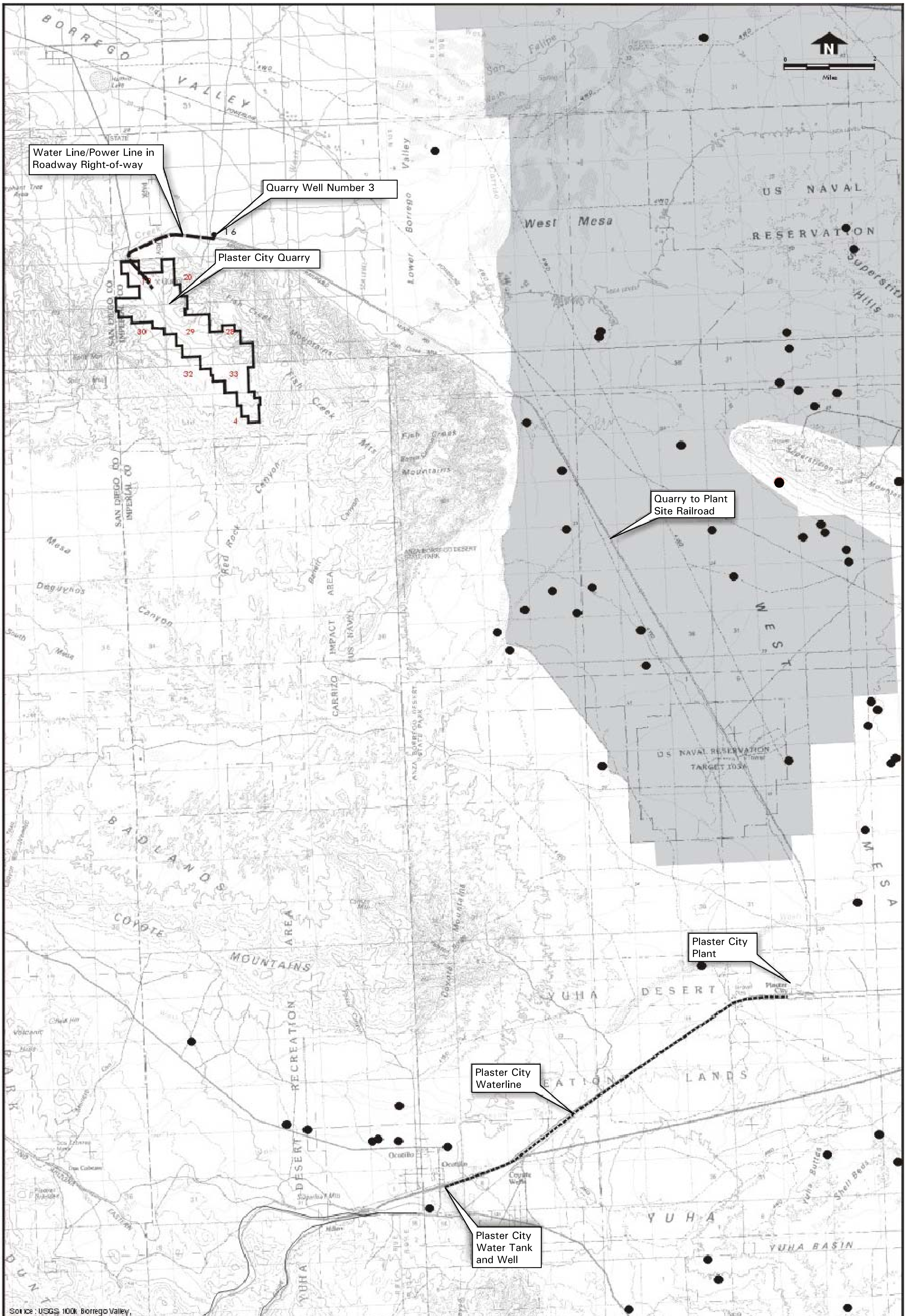

Source: Lilburn Corporation

Legend: ● - FTHL Recent Occurences

- Boundary of HTHL West Mesa Management Area

Figure 3.5-3
Flat Tailed Horned Lizard Occurrences

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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and animals occurring on the site and describe vegetation and habitat. Biologists returned between March 27 and 29 2002 to further document wildlife and wildlife signs 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, biologists drove passable roads and walked "meandering transects" along hillsides and the alluvial wash in several places. Figure 3.4-1 in Section 3.4 shows the general area where these surveys occurred. During the visits of March 27-29, a variety of techniques were used to document wildlife use of the site as explained in more detail below. During the final field visit (April 23), biologists 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.

The wildlife community at the Quarry 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 1,000 feet were established in four different habitat types on the Quarry site (see Figure 3.4.1 in Section 3.4 - Vegetation). 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 March 27 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 here would not provide accurate information of population density.

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 Bausch & 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 March 28, 2002. The primary intent of this transect was to search for bighorn sheep or their signs. 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 passable dirt roads in the project area were driven on the evening of March 27, 2002 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 of the White and Leatherman BioServices Report.

3.5.2.2 Wildlife Survey Results

Quarry Site

Existing vegetation at the Quarry site in conjunction with abiotic features such as soil type, climate, and 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 signs observed during both the 1995 and 2002 field surveys included species common to the open, xeric Colorado Desert. Table 3.5-1, Common Species Observed on U.S. Gypsum's Quarry 1995 and 2002, shows a list of vertebrates observed during the 1995 and 2002 surveys.

Because of the drought conditions in 2002, common wildlife species that occur or forage in desert shrubland throughout the region and so would likely also occur on the site, were not observed during the field surveys. These include secretive reptiles (e.g., most snakes), burrowing mammals, and uncommon wide-ranging species such as badger and golden eagle. Drought conditions in 2002 appear to have substantially reduced populations of species that otherwise would be expected to be common at the Quarry site as shown in the 1995 survey results. For example, the side-blotched lizard is a very common reptile throughout southern California, including the deserts. Not detecting this species on the project site in 2002 is extremely unusual, and suggests that populations are unusually low due to drought conditions, since the species was observed on site in 1995. Only one western whiptail, another common lizard, was observed in 2002 and no snakes were observed, although several species of lizard and snake were observed in the 1995 survey. 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 in 2002. Therefore, the conclusion is that under normal conditions, the Quarry site would support common wildlife species that occur or forage in desert shrubland throughout the region.

Rare, Threatened, Endangered, or Sensitive Species and Habitats

Based on literature reviews, biologists identified 27 special status animal species occurring or potentially occurring in the general region of the Quarry site (See Appendix C). Of these, four are state- or federally-listed threatened or endangered species – desert pupfish (*Cyprinodon macularius)*, desert tortoise (*gopherus agassizii)*, barefoot banded gecko (*Coleonyx switaki*), and peninsular bighorn sheep (*Ovis canadensis*) – and one, flat-tailed horned lizard (FTHL) (*Phrynosoma* mcallii), is a special status wildlife species protected by an interagency management agreement. The potential of occurrence for these species by group is described here.

TABLE 3.5-1
COMMON SPECIES OBSERVED ON U.S. GYPSUM'S QUARRY 1995 AND 2002

1995	
Reptiles	
desert banded gecko	*Coleonyz v. variegatus*
desert iguana	*Dipsosaurus dorsalis*
chuckwalla	*Sauromalus obesus*
*zebra-tailed lizard	*Callisaurus draconoides*
side-blotched lizard	*Uta stansburiana*
*western whiptail	*Cnemidophorus tigris*
spotted leaf-nosed snake	*Phyllorhynchus decurtatus*
sonoran gopher snake	*Pituophis melanoleucus affinis*
long-nosed snake	*Rhinocheilus lecontei*
western shovel-nosed snake	*Chionactis occipitalis*
sidewinder	*Crotalus cerastes*
Birds	
turkey vulture	*Cathartes aura*
white-throated swift	*Aeronautes saxatalis*
costa's hummingbird	*Calypte costae*
say's phoebe	*Sayornis saya*
northern rough-winged swallow	*Stelgidopteryx serripennis*
*black-throated sparrow	*Amphispiza bilineata*
white-crowned sparrow	*Zonotrichia leucophrys*
house finch	*Carpodacus mexicanus*
Mammals	
California myotis	*Myotis californicus*
*black-tailed jackrabbit	*Lepus californicus*
pocket mouse	*Perognathus* sp.
desert woodrat (nests)	*Neotoma lepida*
*coyote	*Canis latrans*
2002	
Reptiles	
No additional reptiles observed	
Birds	
red-tailed hawk	*Buteo jamaicensis*
mourning dove	*Zenaida macroura*
rock wren	*Salpinctes obsoletus*
loggerhead shrike	*Lanius ludovicianus*
black-tailed gnatcatcher	*Polioptila melanura*
Mammals	
white-tailed antelope squirrel	*Ammospermophilus leucarus*

*Species also observed in 2002.

Fish: Desert pupfish (*cyprinodon macularius*), a listed endangered species, has 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. According to the California Natural Diversity Data Base (CNDDB) the nearest location of desert pupfish is in San Felipe Creek, approximately 11 miles northeast of the Quarry site. 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. The desert pupfish is absent from the Quarry 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 in 2002. Chuckwalla sign (scat) was observed on rocky slopes southeast of the existing Quarry. During the 1995 survey, biologists did observe the chuckwalla at the Quarry site. As described previously, both surveys included day and night field work. Chuckwallas are widespread throughout the California deserts, but are generally not seen because they take shelter in crevices, rocky slopes and outcrops. They are considered a "special animal" by the CDF, but their CNDDB ranking, S4, indicates that they are "apparently secure" in California. The chuckwalla is not listed threatened or endangered, and is neither a candidate nor proposed for listing.

The barefoot banded gecko (sometimes referred to as the magic 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. It is listed as threatened under the California Endangered Species Act due to the destruction of crevice habitat by collectors. There are no CNDDB reports of barefoot banded gecko from the quads queried during the literature review, but suitable habitat occurs on and around the project site and its geographic range may extend into the area. The barefoot banded gecko was not observed at the Quarry site in 1995 or 2002 and biologists conducting the surveys concluded that there is a low probability that barefoot banded gecko could occur at the Quarry site. The common desert banded gecko (*Colenyx variegates*) was observed on numerous occasions during the 1995 survey.

Biologists concluded that the 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. The project site is about 15 miles south of this location, and about 35 miles southwest of the Chocolate Mountains where the nearest designated critical habitat is mapped. According to BLM biologists, tortoises have never been sighted in the region (Gavin Wright, e-mail communication July 11, 2003). No desert tortoise or sign attributable to desert tortoise was observed within the project site during either the 1995 or 2002 field surveys, however no focused desert tortoise survey was performed.

USFWS proposed listing the FTHL as a threatened species in 1993. At the time USFWS estimated that human activities including agriculture and urban development were responsible for the conversion of approximately 49 percent of the FTHL habitat. In 1997, an Interagency Coordinating Committee made up of representatives of federal, state and local agencies, prepared the FTHL Rangewide Management Strategy to provide guidance for conservation and management of sufficient habitat to maintain viable populations of FTHL. The Strategy Plan called for the establishment of five FTHL management areas – four in California and one in Arizona. Figure 3.5-2 shows the FTHL Management Areas located in Imperial County. The Strategy Plan stressed that land alteration outside management areas would not be restricted but that mitigation and compensation measures would be required.

The Strategy was revised in 2003 in response to the USFWS decision not to list the species. The decision was made because: 1) initial evidence suggested that the population of FTHL was declining, but more recent evidence showed no significant trends in lizard encounter rates; and 2) the protections offered by the Rangewide Strategy Plan. The Rangewide Management Strategy and conservation agreement for the FTHL remains in place; its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command (together, these agencies manage most of the area crossed by the narrow gauge rail and pipeline alignments).

According to the FTHL Rangewide Management Strategy (2003 revision), most records for FTHLs come from creosote-white bursage series of Sonoran desert scrub, a community associated with sandy flats and valleys that is often described as FTHL habitat. In addition, although records show that the species inhabits sandy areas, individuals have also been collected in the Yuha Basin and the Borrego Valley and on saltbush flats at the northeastern end of the Salton Sea. Individuals have also been sighted on gravelly soils in Anza-Borrego Desert State Park. In summary, the species has been recorded in several habitat types including sandy flats and hills, badlands, salt flats, and gravelly soils. Figure 3.5-1, Existing Photographs shows FTHL occurrences in the vicinity.

Dune invertebrates: Bureau of Land Management recognizes three invertebrates of the Algodones Dunes as species of "management concern": Carlson's dune beetle (*Anomala carlsoni*), Hardy's dune beetle (*A. hardyroum*), and Andrews's dune scarab beetle (*Pseudocotalpha andrewsi*). All three of these beetles are active as adult forms in late winter to early spring. During their activity season, they burrow in sand during the day and emerge to fly at night. To date, all three beetles are known only from the Algodones dunes system, well south of the Project area. Suitable habitat may occur in dunelands along the USG railroad alignment, but this is well north of their known geographic range, and there is only a low probability that they may occur there."

<u>Birds</u>: Two special status birds – black-tailed gnatcatcher (*Polioptila melanura*) and loggerhead shrike (*Lanius ludovicianus*) – were observed on-site during the 2002 field surveys, and suitable nesting habitat for at least one other species, 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. (For a list of these species see Appendix C) None of the birds occurring or potentially occurring on the site are listed, proposed for listing, or candidates for listing as 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 during the 2002 surveys. They are year-round residents, generally nesting in mesquite but also using desert wash and upland habitats. They are considered common in the lower Colorado River watershed (most of Arizona and easternmost California). Black-tailed gnatcatcher is on CDFG's list of Special Animals, but its CNDDB 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 during the 2002 surveys. 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; the loggerhead shrike is on CDFG's list of Special Animals, but its CNDDB 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.

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. 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 (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooreri*), merlin falcon (*Falco columbaris*), and prairie falcon (*Falco mexicanus*). 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, biologists concluded that none of these raptors nest within the area surveyed. In general, these species are considered "sensitive" during breeding season, though golden eagle, ferruginous hawk, and merlin are also considered sensitive during winter.

The Quarry site provides potential habitat for burrowing owls to breed on-site however these birds are generally uncommon in desert shrublands. The habitat is poor because of the high rock and cobble content, which makes it difficult to find suitable burrows to inhabit; burrowing owls modify and use burrows dug by other animals particularly ground squirrels. Burrows are scarce at the Quarry site, whereas they are more common in broad desert valleys where sandy loam soils are available, such as the Imperial Valley. In Imperial County, large populations of burrowing owls live in the agricultural areas of the Imperial Valley. According to the Center for Biological Diversity petition to CDFG to protect burrowing owls, "over 71 percent of California's breeding owls currently live in the margins of agricultural land in the Imperial Valley ... primarily nest[ing] in burrows in earthen irrigation channels…" (CBD, 2003). Neither burrowing owls nor burrows suitable for nesting were observed during field surveys in 1995 or 2002.

<u>Mammals</u>: Several special status bat species are likely to forage over the site and some are likely to roost or breed on-site. These include: pallid bat (*Antrozous pallidus*), California mastiff bat (*Eumops perotis californicus*), California leaf-nosed bat (*Macrotus*

californicus), pocketed free-tailed bat (*Nyctinomops femorosaccus*), spotted bat (*Euderma maculatum*), and Townsend's big-eared bat (*Plecotus townsendii pallescens*). In general, bat distributions and habits are poorly known. No caves, tunnels, or other potentially significant roosting sites were found anywhere on the Quarry site 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 by CDFG as species of special concern.

American badger is likely to occur on the Quarry site at least occasionally, but unlikely to live on the site year-round. 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 by CDFG as species of special concern. The CDFG status of 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. Their habitats include creosote bush (*Larrea tridentata*) 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; woodrats may also nest in rock crevices or burrows under boulders. In California, the woodrat is closely associated with patches of beavertail cactus (*Opuntia basilaris*) and mesquite (*Prosopis spp.*), and often digs burrows under mesquite trees. Colorado Valley woodrat is not listed or proposed for listing as threatened or endangered and is not regarded as a species of special concern by CDFG. Biologists during the 2002 surveys 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 no conclusion could be made whether some may have been nests of the Colorado Valley woodrat. No woodrats of either species were captured during the two nights of trapping in 2002, and population numbers are likely very low due to drought conditions. No woodrat nests were observed on the gypsum outcrops. During the 1995 survey common desert woodrat nests were observed at the Quarry site.

Peninsular bighorn sheep (*Ovis canadensis*) 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 feet 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). The Peninsular bighorn sheep is federally listed as an endangered species and is listed as threatened by the California Department of Fish and Game.

Peninsular 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 crucial components for bighorn habitat, providing a diversity of slopes and exposures for escape from predators, lambing, and shelter in both excessive heat and severe storms (USFWS 2000). 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. Peninsular 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. For example, Interstate 10 prevents the 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 USFWS and CDFG.

In 2001, the USFWS published a final rule designating critical habitat for the Peninsular bighorn sheep; the Quarry site is included within the critical habitat area (see Figure 3.5-2). As defined in the federal Endangered Species Act, critical habitat includes specific areas within and outside the geographic range occupied by a species at the time of its listing, which 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 fund, authorize, or carry out projects in consultation 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 Quarry site and adjacent mountains have no permanent or long-lasting seasonal water sources (based on field observations and absence of mapped springs or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn sheep population. Bighorn sheep using the adjacent ridgetop (perhaps during emigration between mountain ranges) could also wander onto the Quarry site. However, they would be more likely to keep to ridgetops to the south, southwest, and northeast rather than to travel across the Quarry site itself.

During 2002 field surveys biologists observed probable sign of Peninsular bighorn sheep along the ridgeline northeast of the project site, but not on the site itself. No signs were observed during the 1995 survey of the Quarry site. The sign observed in 2002 was scat (feces) which appeared to be more than one year old. Distinguishing bighorn sheep scat from deer scat cannot be done with certainty, but field biologists felt that the observed sign was better attributed to bighorn sheep 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. Biologists 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 in 2000 indicates several sightings in Imperial County in the area of the Fish Creek Mountains (the scale of the map precludes determination of exact locales).

Wildlife Movement Through the Quarry Site

In many regions, land development and linear structures such as roadways, railroads, and canals, have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations (including California gnatcatcher) become extinct when their habitat is fragmented by urban development.

The Quarry site is in an area that has not been significantly fragmented. Much of the surrounding land is either public open space managed by the 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. 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.

Quarry Well Site – Water Pipeline

The proposed site of Quarry Well No. 3 is located on USG property adjacent to the USG narrow gauge railroad right-of-way along the route between the Quarry and the Plant. Likewise the proposed pipeline to convey water and electric power supply from the well to the Quarry will be located within the existing right-of-way. Figure 2.0-1 in Chapter 2.0-1 shows the proposed location of these project components.

The proposed well site represents approximately 1/8 acre and the associated infrastructure represents an additional 11 acres (30-foot-wide construction area by 3 miles). The well site is within the existing right-of-way and is already disturbed by the railroad tracks and the access road adjacent to the tracks. Likewise, the proposed infrastructure (water pipeline and underground electric supply) between the well site and entrance to the Quarry site would be developed within the already disturbed access road adjacent to the tracks. The site and pipeline corridor are located outside the blow sand area northwest of the sand dunes that characterize the central portion of the narrow-gauge railroad right-of-way.

Common Wildlife Species Occurring at the Proposed Quarry Well Site – Pipeline Alignment

Common wildlife species likely to occur in the vicinity of the well site and along the pipeline alignment (existing rail line right-of-way) would be similar to those identified for the Quarry site (above) and the rail line (below).

Rare, Threatened, Endangered, or Sensitive Species and Habitats

Fish: As identified above, the desert pupfish is listed as an endangered species by both federal and state agencies. According to the CNDDB, the nearest location of desert pupfish is in San Felipe Creek, approximately 11 miles northeast of the Quarry site and approximately 7.6 miles from Fish Creek Spring and San Felipe Creek Spring. The desert pupfish is absent from the well site and pipeline alignment due to the absence of any perennial surface water. However, pumping at the new well may affect the pupfish if it can be determined that drawdown resulting from pumping affects the springs that support the pupfish habitat. Potential impacts associated with the well site are evaluated in Section 3.5.3 below.

Reptiles: As identified above, several special status reptile species are known from the general region. No protocol surveys were conducted for desert tortoise because the area is outside the known geographic range. However, the area does support other species such as the chuckwalla and the flat-tailed horned lizard (FTHL). Suitable habitat for FTHL occurs along the narrow-gauge railroad right-of-way between the Plant site and Quarry site. Figure 3.5-1 shows FTHL sightings in the vicinity of these sites. FTHL has been sighted along the rail line but not in the vicinity of the well site and pipeline corridor due to the lack of blowing sand in the vicinity.

Birds: As noted above, no special status birds were observed during field surveys but suitable nesting habitats for the species identified above occur throughout the area. There is also suitable foraging habitat for raptors in the vicinity.

Mammals: As noted above, Peninsular bighorn sheep may wander through the vicinity of the Quarry. This would include the narrow-gauge railroad right-of-way where the new well site and water pipeline alignment are being developed. Bats may also forage over the area although they would not likely roost. Badgers may also occasionally pass through.

Wildlife Movement Through the Vicinity of the Well Site and Pipeline Alignment

It is possible that bighorn sheep could rarely wander across the narrow-gauge railroad line to emigrate between the Fish Creek Mountains and other mountain ranges in the region. Other wildlife including large mammals such as coyotes, bobcats, mountain lion, etc., may also cross the railroad tracks since they are not a real barrier to larger mammals, though they would presumably avoid the tracks when trains are present.

Plant Site

Biologists surveyed the Plant site on April 23 and June 19, 2002. The Plant site is on the desert floor at about 100 feet in elevation where vegetation in the vicinity is desert shrubland dominated by creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and saltbush (*Atriplex spp.*). The Plant site is disturbed with typical industrial uses – industrial buildings, railroad tracks, paved driveways and parking lots, roads, utility lines, stockpiles and so forth. Expansion of the Plant facility would result in the use of approximately 66 additional acres. Of that 66 acres, 30 acres have been previously disturbed by existing industrial activities such as buildings, storage areas, parking or the rail line into the Plant. The remaining 36 acres would be disturbed by the Plant expansion project.

Wildlife and Wildlife Movement

Common wildlife species that occur in desert shrubland would likely occur in the vicinity of the Plant site, but were not observed during field surveys.

The vegetation and topography in the vicinity of the Plant site provide habitat for numerous resident and migrant wildlife species. The Plaster City Plant site is in an area that has not been significantly fragmented by land uses except around the Plant itself. There are no true barriers to wildlife movement in the immediate area, though roadways, the I-8 freeway and any other linear development such as the railroad line will probably have some effect on wildlife movement.

Rare, Threatened, Endangered, or Sensitive Species and Habitats

In their literature review, biologists identified 28 special status animal species occurring or potentially occurring in the general region of the Plant site. Of these, four are state- or federally-listed threatened or endangered species. These include wildlife listed at the Quarry site: desert pupfish, desert tortoise, barefoot banded gecko; and Peninsular bighorn sheep. These species are described above in the discussion of the Quarry site.

Fish: Biologists concluded that the desert pupfish is absent from the Plant site and vicinity due to the absence of any perennial surface water.

Reptiles: Several special status reptile species are known from the general region but none of these were noted or detected at the Plant site.

The desert tortoise, a state- and federally-listed threatened species, is unlikely to occur at the Plant site because the site is outside its geographic range. No desert tortoise, or sign attributable to desert tortoise, were observed in the project areas during field surveys for this report, however a focused desert tortoise survey was not performed.

The barefoot banded gecko was not observed at the Plant site and no habitat for this species occurs on site. Biologists concluded that barefoot banded gecko is absent from the project areas due to the absence of rocky outcrops and boulders at the Plaster City Plant site.

Flat-tailed horned lizards occur in sandy flats and valleys as well as badlands, salt flats, and gravelly soils – all conditions found in the Colorado Desert. Suitable habitat may occur at the Plant site. However, most of the site is highly disturbed so it is unlikely that FTHL inhabit the site.

Birds: No special status birds were observed during field surveys at the Plant site but as noted previously, suitable nesting habitats for three species (black-tailed gnatcatcher, loggerhead shrike, and LeConte's thrasher) occur throughout the area. Refer to the bird species in the discussion of Quarry Site above. Several other special status birds (none are listed however), especially raptors (including golden eagles and prairie falcons), are likely to occur during winter and/or migration.

There is potential habitat for burrowing owls to breed in the vicinity of the Plant site, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls, nor burrows suitable for nesting, were observed during field surveys at the Plant site.

<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 Plant site due to lack of habitat.

American badgers are 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.

No trapping for the Colorado Valley woodrat was conducted at the Plant site due to lack of habitat.

The Plant site is not in mountainous habitat and has no permanent or long-lasting seasonal water sources (based on biologists' field observations and the absence of mapped springs or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn population. Additionally, the Plant site is not within the mapped critical habitat for the sheep.

Narrow-Gauge Railroad Alignment

The existing narrow-gauge rail line originates in the Fish Creek Mountains near the Plaster City Quarry, at about 350 feet in elevation; the alignment takes a northwesterly direction from the Quarry for about one mile, then turns to the east and descends to just below sea level after about another five miles; it continues to the south-southeast, generally at about 100 feet above sea level to Plaster City. Figure 2.0-1 in Chapter 2.0 shows the location of the rail line, the Plaster City Plant, Plaster City Quarry, and the proposed new water line alignment.

Biologists from White and Leatherman BioServices drove the length of the railroad alignment between the Plaster City Plant and the Quarry on 23 April 2002, to document plant species and wildlife habitat occurring along the route.

The rail line runs along an existing right-of-way, crossing through desert shrubland similar to that found in the vicinity of the Plant site for several miles, although it also crosses stabilized and active blowsand areas. The rail line has been operated continuously since the 1920s. Some dense patches of mesquite (*Prosopis glandulosa*) occur adjacent to the rail line. Undisturbed uplands parallel to the rail line support desert shrubland of the creosote bush series, and creosote bush-white bursage series. 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 is dry desert wash woodland and, in addition to the creosote bush series includes such species as catclaw (*Acacia greggii*). 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 in 2002. No survey of the rail line occurred in 1995.

Similar to the Quarry site, the vegetation and habitats described in Section 3.4 – Vegetation, provide habitat for numerous resident and migrant wildlife species. Wildlife and wildlife sign observed during the 2002 field surveys included species common to the open, xeric Colorado Desert listed above. 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 surveys. These include secretive reptiles (e.g., most snakes), burrowing mammals, and uncommon wide-ranging species such as the badger and golden eagle.

The continued use of the railroad would not alter the existing rail alignment or affect any habitat that is located in areas parallel to the railroad. However, the expansion at the Plant would cause an increase in production at the Quarry. This would lead to an increase in train trips between the two sites. Increased train trips would not be a daily occurrence but over the course of a year would represent an 89.5 percent increase in train trips over existing conditions.

Wildlife and Wildlife Movement

Wildlife movement in the vicinity of the narrow-gauge railroad occurs infrequently. For example, the well site and water pipeline alignment within the rail right-of-way are not in mountainous habitat and have no permanent or long-lasting seasonal water sources and thus would not serve as habitat for a permanent bighorn sheep population. It is possible, however, that Peninsular bighorn sheep could rarely wander across the rail line to emigrate between the Fish Creek Mountains and other mountain ranges in the region. In fact, published data have shown only one such occurrence in the vicinity north or east of the narrow-gauge railroad (USFWS, 2001). Other mammals such as coyotes, bobcats, and mountain lions likely cross the rail line as it is not a barrier to movement of larger animals.

Rare, Threatened, Endangered or Sensitive Species and Habitats

Fish: The desert pupfish is absent from the vicinity of the rail line due to the absence of any perennial surface water.

Reptiles: Several special status species are known from the general region, but none were noted or detected within the vicinity of the narrow-gauge rail right-of-way. Biologists concluded that the desert tortoise is unlikely to occur because the site is outside its geographic range. The barefoot banded gecko is a rare species that occurs in massive rock outcrops and crevices in San Diego and Imperial Counties and southward into Baja, however, biologists concluded that this species was absent due to the lack of rocky outcrops along the rail line right-of-way.

Flat-tailed horned lizard (FTHL), is likely to occur along the rail line right-of-way as well as other habitat types. As shown on Figure 3.5-1, there have been several sightings near the alignment as it traverses the West Mesa FTHL Management Area.

Birds: No special status birds were observed during field surveys along the rail line alignment, but as noted above under the discussion of the Quarry site, suitable nesting habitat for black-tailed gnatcatcher, loggerhead shrike, and LeConte's thrasher occurs throughout the area. Several other special status birds, especially raptors are likely to occur during winter and/or migration. None of the birds occurring or potentially occurring in the project areas are listed, proposed for listing, or candidates for listing as threatened or endangered.

There is potential habitat for burrowing owls to breed in the vicinity along the rail line alignment, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls nor burrows suitable for nesting were observed during the field surveys.

Mammals: As noted above in the Quarry site discussion special status species are limited to the Peninsular big horn sheep. Probable sign was observed by biologists during the 2002 field surveys at the Quarry site along a ridgeline northeast of the site but not along the rail line.

The narrow-gauge rail line right-of-way is not in mountainous habitat and has no permanent or long-lasting seasonal water sources (based on field observations made by biologists during 2002 field surveys and the absence of mapped springs or perennial streams on USGS topographic maps), and thus would not serve as habitat for a permanent Peninsular bighorn sheep population. It is possible, however, that bighorn sheep could wander across the rail line to emigrate between the Fish Creek Mountains and other mountain ranges in the region. However, as discussed above, published data shows only one such occurrence north or east of the right-of-way.

Plaster City Plant Water Pipeline Alignment

The Plant water line is located nearly entirely beneath the desert floor. The existing eight-inch water line is within an established right-of-way. The pipeline crosses desert shrubland, patches of windblown sand and some intermittent drainages. The line originates at a small 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. Along its entire length, the water line is in or near the existing road right-of-way on the south side of the road. The eastern five miles of the water line alignment are at the boundary of the BLM's "Plaster City Open Area" for off-highway vehicles (OHVs), and a designated OHV staging area is located on the north side of Evan Hewes Highway west of the Plant (see Figure 3.5-1). There is little native vegetation along the waterline 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 the designated OHV staging area.

Wildlife and Wildlife Movement

Common wildlife species in desert shrubland could be found along parts of the waterline route where native vegetation does occur. However the area is marginally vegetated due to the number of urban uses adjacent to the waterline, including roads, railroads, and disturbance associated with activities at the Plant site. Although the area is marginally vegetated, wildlife could move through and around the vicinity of the waterline.

Rare, Threatened, Endangered or Sensitive Species and Habitats

Biologists examined the alignment of the waterline on June 19, 2002 to document plant and wildlife habitat and again on July 24, 2002 to evaluate habitat for FTHL. In addition to driving the length of the waterline four times, biologists repeatedly drove over an unpaved road parallel to Evan Hewes Highway along a portion that appeared to provide potential habitat for the flat-tailed horned lizard. They also walked transects in the same area surveying for FTHL.

Fish: Desert pupfish are absent from the area due to the absence of any perennial surface water.

Reptiles: Several special status species are known from the general region, but none were noted or detected within the vicinity of the Ocotillo to Plaster City waterline. Biologists concluded that the desert tortoise is unlikely to occur because the site is outside its geographic range. The barefoot banded gecko is a rare species that occurs in massive rock outcrops and crevices in San Diego and Imperial Counties and southward into Baja, however, biologists concluded that this species was absent due to the lack of rocky outcrops along the water line right-of-way.

During focused surveys (White & Leatherman Bioservices walked linear parallel transects along the proposed water pipeline route. A total of four transects, spaced at ca. 30-foot intervals, along all potential habitat within the western ca. 2.5 miles of the proposed pipeline alignment. A total of 6 person-hours were spent walking the transects) for FTHL along this part of the waterline route, biologists found no active lizards or scat, and concluded that FTHL are absent from the Plant site and water line route due largely to the existing disturbance.

Birds: No special status birds were observed during field surveys along the waterline alignment, but as noted above under the discussion of the Quarry site, suitable nesting habitat for the black-tailed gnatcatcher, the loggerhead shrike, and LeConte's thrasher occurs throughout the area. Several other special status birds, especially raptors are likely to occur during winter and/or migration. None of the birds occurring or potentially occurring in the project areas are listed, proposed for listing, or a candidate for listing as threatened or endangered.

There is potential habitat for burrowing owls to breed in the vicinity along the water line alignment, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls nor burrows suitable for nesting were observed during the field surveys.

Mammals: Several special status bats are likely to forage over the area but there is a low probability that any would roost or breed in the vicinity of the Plant site or waterline because no appropriate roosting sites were found during field work.

American badgers are uncommon in desert shrublands and the absence of water makes it unlikely that the species would be in the area of the Plant site and water line alignment.

The Colorado desert woodrat is unlikely to be found in the vicinity of the Plant site or waterline alignment due to minimal suitable habitat and because the area is at the western margin of its geographic range.

The waterline alignment is not in mountainous habitat and there is no permanent or seasonal water supply for bighorn sheep. The waterline alignment does not occur within the designated critical habitat for the Peninsular bighorn sheep.

3.5.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

Impacts to wildlife include both direct and indirect impacts. Direct impacts include temporary or permanent loss of habitat or individuals resulting from quarrying, stockpiling of overburden, development of infrastructure such as railroads, additional structures, and development of a new well and pipeline. Direct impacts also include habitat degradation, fragmentation or modification.

Indirect impacts are the result of secondary changes to wildlife beyond the area of direct impacts. Indirect impacts on wildlife may include fugitive dust created by quarrying activities, noise, night lighting, and increased mortality due to displacement of individuals.

3.5.3.1 Thresholds of Significance

This section evaluates the potential impacts of the Proposed Action on wildlife that may occur with continued mining into new areas at the Quarry, expansion of the Plant, replacement of the existing water pipeline to the Plant, and development of a new well and water pipeline to the Quarry. The focus of the evaluation is on threatened or endangered species or special status species on or in the vicinity of any of the project components.

The proposed project would have a significant impact on wildlife if it would result in:

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

3.5.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.5-1: Loss of Wildlife at Quarry

Increased activity at the Quarry could disturb additional desert upland and wash habitats possibly having a negative impact on wildlife in the area.

Continued Quarry activities at the Quarry would result in the disturbance of an additional 845 acres for a total of 1,184 (151.8 acres are in Quarry 1B) acres of desert upland and wash habitat on the 2,048 acre site.

Fish

Desert pupfish do not occur on the Quarry site, but do occur in San Felipe Creek, about 11 miles northeast of the site. The San Felipe Creek watershed is extensive, draining many square miles of the Borrego Valley and Anza-Borrego Desert State Park.

Bookman–Edmonston evaluated the potential surface hydrologic impacts of the proposed continuation of activities at the Quarry on the pupfish population located on San Felipe Creek (see Appendix C-4). Figure 3.5-4 shows the total drainage area of the pupfish, approximately 965,388 acres extending from the Santa Rosa Mountains on the north to below the US-Mexican border on the south. By contrast, the Quarry drainage area is approximately 7,800 acres and the

Quarry site is 2,048 acres. Hydrologists have calculated that the proposed new 845-acre Quarry area represents approximately 0.09 percent of the drainage area above the pupfish population in the San Felipe Creek watershed. USG intends to divert intermittent surface water flows in the projected areas of disturbance, therefore the only impact the expansion may have on the area's hydrology would be surface flow caused by precipitation. Table 3.5-2, Calculated Volumes and Their Respective Contribution to Overall Surface Flow, illustrates the calculated volumes and their respective contribution to the overall surface flow. The Quarry expansion (845 acres) accounts for about 0.05 percent of the total volume attributed to precipitation within the Pupfish's drainage area.

TABLE 3.5-2
CALCULATED VOLUMES AND THEIR RESPECTIVE CONTRIBUTION TO OVERALL SURFACE FLOW

Area Description	Area (acres)	Annual Average Precipitation (inches)[1]	Volume (acre-ft)	% of Total Volume
San Felipe Creek Drainage Area above Pupfish 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

[1]Fire and Resource Assessment Program, California Department of Forestry and Fire Protection, July 23, 2000

Figure 3.5-5 shows the isohyetal map of the pupfish watershed area as generated from an existing isohyetal map of the entire state. The isohyetal lines of precipitation, measured in inches, were averaged between 1900 and 1960. The values in Table 3.5-3, Calculated Drawdown After 20 Years of Pumping at the Proposed Quarry Well, were computed using Figure 3.5-5. According to the California Department of Forestry and Fire Protection, approximately 90 percent of the Quarry receives an average annual precipitation of 4.5 inches; the remaining 10 percent receives 3.5 inches. Note: this amount of precipitation is based on the isohyetal map (a statistical representation of several data points) and does not use actual precipitation amounts collected at the on-site station (one data point), which show varying amounts of rainfall each year. As shown in Table 3.5-2, even if activities in the new Quarry areas were to prevent all rainfall from either recharging the groundwater basin or contributing to surface flows the impact on surface water and groundwater is negligible. Therefore, any impacts that might occur on the Quarry site would be negligible by comparison with other watershed processes, and are not likely to have meaningful adverse impacts on the pupfish.

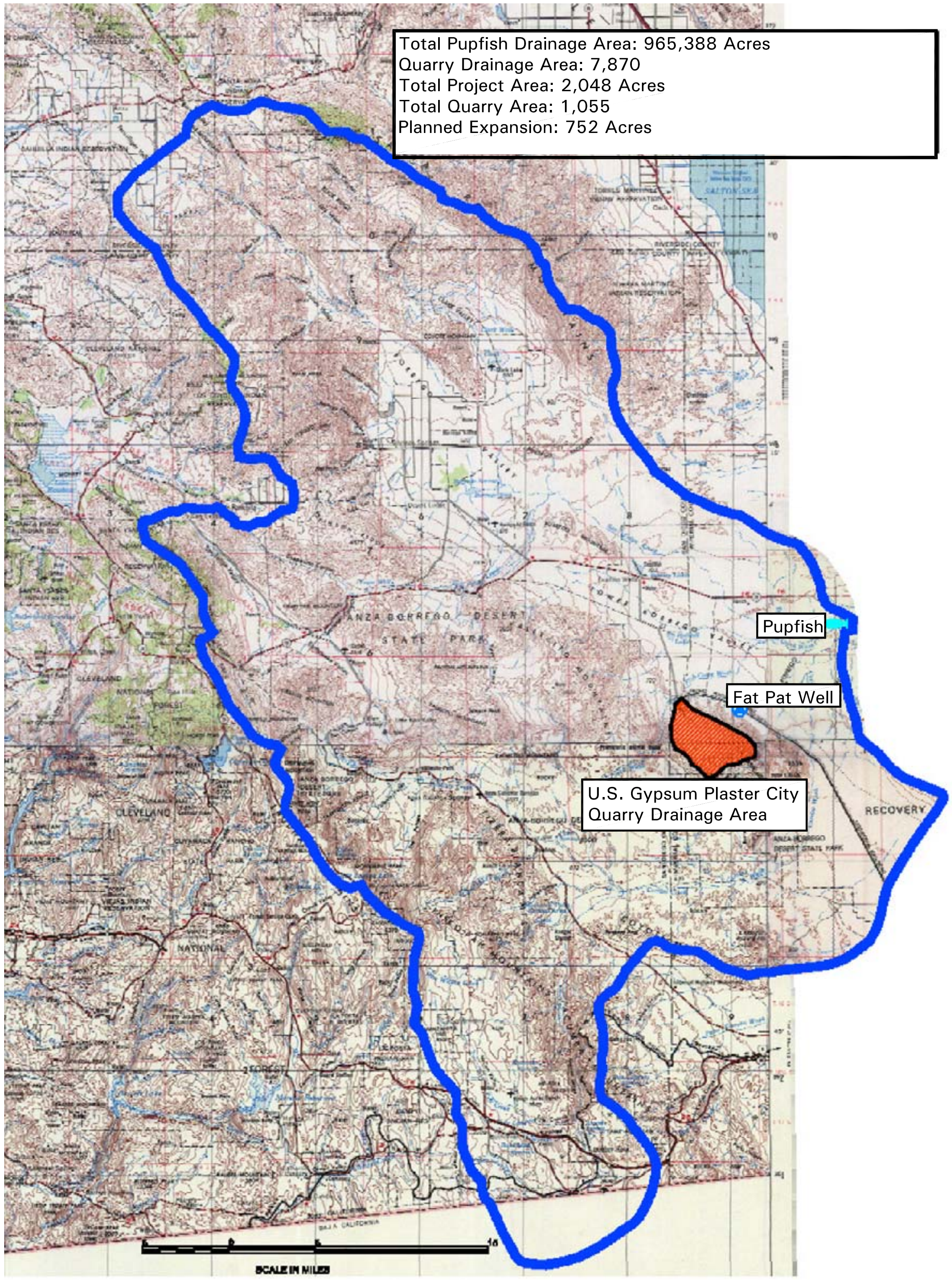
Birds

Special status species of birds, loggerhead shrike, and black-tailed gnatcatcher have been observed at the Quarry site. Depending on Quarry design, occupied habitat and perhaps individual shrikes or gnatcatchers could be lost due to Quarry area development, although none of the species have formal status under state or federal Endangered Species Acts. In addition, several species of special status raptors (although not observed during field surveys of the Quarry site) could use the site seasonally for foraging. USG typically removes brush during the winter. USG currently conducts an annual biological survey of the site prior to the stripping season to avoid impacts to these species.

Reptiles

Common species observed at the Quarry site either in 1995 or 2002 include the zebra-tailed lizard, the western whiptail, and the side-blotched lizard. Special status reptile species are known from the general region and at least one of these, the common chuckwalla, was directly observed at the Quarry during the 1995 survey and indirectly observed (i.e., scat) during surveys in 2002. Biologists concluded that the desert tortoise is unlikely to occur at the Quarry because the site is not within its geographic range.

The barefoot banded gecko was not observed at the Quarry site in 1995 or 2002 although suitable habitat does occur on-site. The common desert banded gecko (*Colenyx variegates*) was observed on numerous occasions during the 1995 survey. Likewise, FTHL was not observed at the Quarry site during field surveys.



Source: Bookman–Edmonston

Figure 3.5-4
Total Drainage Area for the Desert Pupfish
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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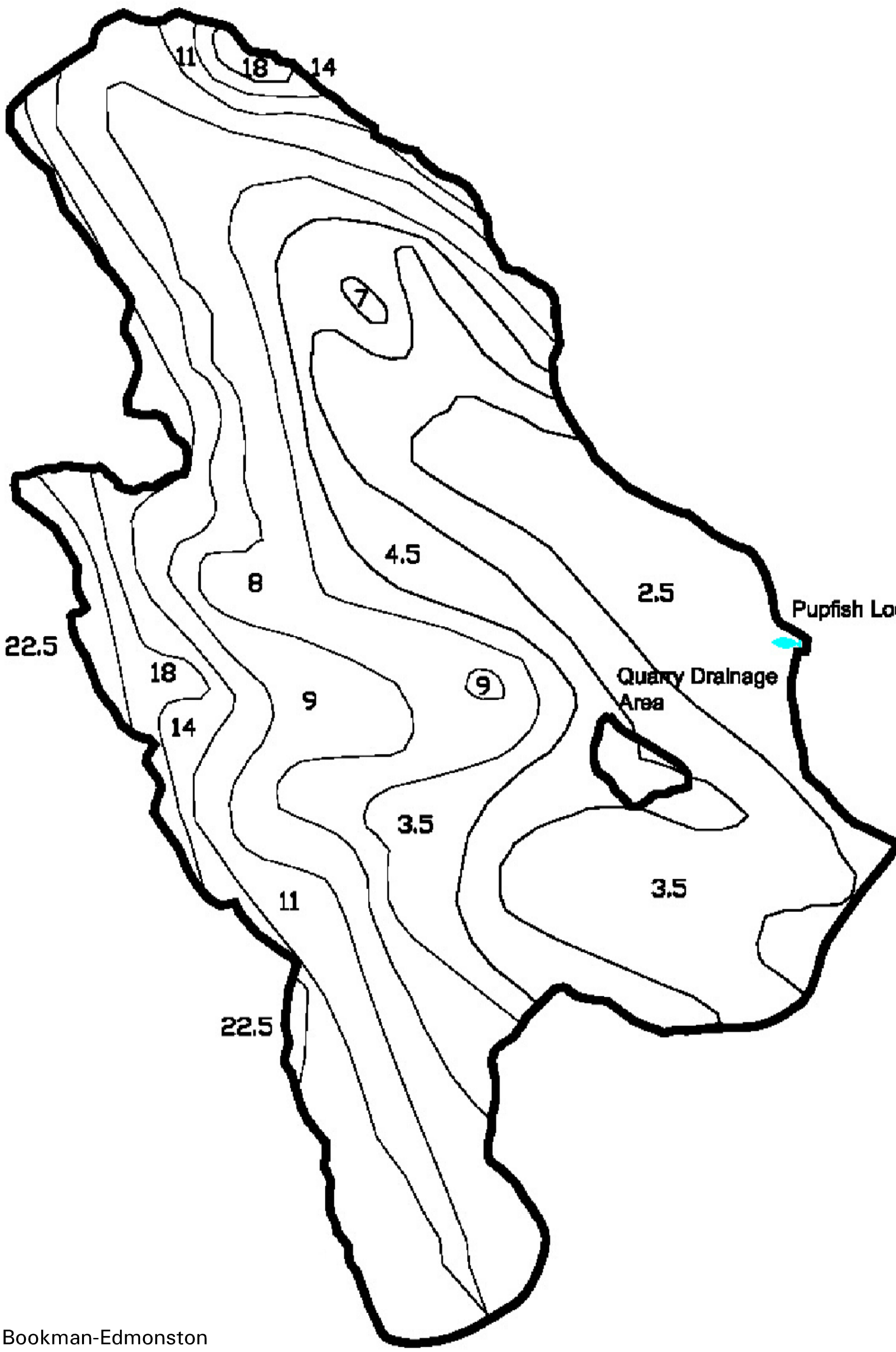
Average Annual Precipitation
(measured in inches)



SOURCE: Bookman-Edmonston

Figure 3.5-5
Isohyetal Map for the Desert Pupfish Watershed Area
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

0 10 Miles

SCALE 1" = 10 Miles

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Secretive nocturnal reptiles (e.g., most snakes) were not observed at the Plant, the Quarry or pipeline alignment. Many snake species occur in Imperial County, but they are difficult to detect except by driving roads at night during their activity seasons. None of these species is listed, proposed for listing, or a candidate for listing as threatened or endangered, and none is managed as a sensitive species by the BLM.

Anticipated impacts to most sensitive species occurring or potentially occurring on the site would not be substantial. Quarry development would result in the loss of habitat for reptile species as well as the loss of some individuals. However, USG intends to develop a total of 1,184 acres (339 currently disturbed, 845 proposed) of the 2,048-acre Quarry site. The remaining 864 acres would continue to be undisturbed and includes both upland and alluvial habitats.

Suitable habitat for FTHL (windblown sand) occurs in places along the rail line, the Plaster City water line, and the proposed Quarry water line/well. Survey protocol guidelines (Foreman 1997, Appendix 7) require the conclusion that FTHL are "present" for sites within 2 miles of known occurrences where suitable habitat is contiguous between the project site and the known habitat. Sandy habitat along the western 2.5 miles of the water line alignment is within 2 miles of a known flat-tailed horned lizard occurrence near Ocotillo (Map 6), and therefore should be considered "occupied" habitat.

Mammals

Several special status bats could roost or forage on the Quarry site. These species have no formal status under state or federal Endangered Species Acts. In general, bat distributions and habits are poorly known. No caves, tunnels, or other significant roosting sites were found anywhere on the Quarry site during field surveys, but steep mountain slopes composed of metamorphic rock provide crevices suitable for some of these bats. None of these species are listed or proposed for listing as threatened or endangered, but all are regarded as species of special concern by CDFG. USG intends to develop Quarry areas up to 1,184 acres of the site (339 acres of existing disturbance and 845 acres of new disturbance). The remaining 864 acres would remain undisturbed and represents both upland and alluvial habitats. Some of this undisturbed acreage occurs in upland areas where bats may roost.

The American badger is likely to occur on the Quarry site at least occasionally, but unlikely to live on the site year-round. Quarry development would not directly affect this species.

As stated previously, during the 2002 surveys of the Quarry site biologists 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 rather than the Colorado Valley woodrat because they were not associated with beavertail cactus or mesquite. However, no conclusion could be made as to whether some were nests of the Colorado Valley woodrat. No woodrats of either species were captured during the two nights of trapping in 2002, and population numbers are likely very low due to drought conditions. No woodrat nests were observed on the gypsum deposits. During the 1995 survey common desert woodrat nests were observed at the Quarry site.

Quarry development in the wash could affect the woodrat, however, the 864 acres of the site that are not intended to be disturbed by Quarry development include alluvial soils that provide habitat for the woodrat. Therefore impacts to the woodrat would be less than significant. In addition, because the woodrat is not listed by either state or federal agencies, impacts are not considered to be significant.

Quarry development would neither directly affect regularly occupied Peninsular bighorn sheep habitat nor substantially affect bighorn sheep movement through the area, since much of the surrounding area is open space associated with Anza Borrego Desert State Park and preferred travel habitats (i.e., ridgetops) are largely off-site to the northeast, south, and southwest. However, it could affect sheep's use of the adjacent ridges, particularly because the project area is within designated critical habitat for bighorn sheep.

The loss of 845 acres to quarrying activities would result in the loss of foraging habitat for wildlife species such as bats. This is a short term impact that would be adverse but is not a permanent impact since reclamation, including recontouring and revegetation of slopes in areas where gypsum has been depleted, would be ongoing. A revegetation program is presently underway in Quarry area 1A (see

Section 3.4 – Vegetation). Similar efforts would be undertaken in other areas of the site as quarrying activities cease.

Quarry activities would be conducted on the gypsum outcrops and also in the wash area. Quarrying exposed gypsum from outcrops allows USG to directly extract material. As quarrying enters the wash areas, alluvial material would be excavated and stockpiled as a berm to create a levee the length of the Quarry areas in the wash. Fugitive dust could result in habitat degradation. Impact 3.6.1 in Section 3.6 discusses fugitive dust emissions and includes a number of requirements USG must adhere to according to air quality permits. In addition, a number of mitigation measures, beyond permit requirements have been identified. These include limiting vehicle speeds, washing and vacuuming paved roads to prevent dust accumulation, and using dust suppressants on unpaved haul roads. Implementation of permit requirements and mitigation measures would reduce fugitive dust emissions to less than significant levels.

Level of Significance Before Mitigation: Significant

Mitigation Measures:

Mitigation Measure 3.5-1a

<u>Revegetation</u>: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.

Mitigation Measure 3.5-1b

<u>Phasing of Quarry development and closure</u>: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.

Mitigation Measure 3.5-1c

Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.

Mitigation Measure 3.5-1d

Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the USFWS that will: (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

Mitigation Measure 3.5-1e

Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.

Mitigation Measure 3.5-1f

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

Level of Significance After Mitigation: Less than Significant

Impact 3.5-2: Loss of Wildlife at Well Site and Pipeline

Construction of a new water well and pipeline to the Quarry could disturb additional acres of desert habitat possibly causing a negative impact on wildlife in the area. For example, mammals and birds may be impacted by surface disturbance resulting from construction and the desert pupfish may be impacted by adverse affects of well pumping (drawdown from groundwater supply).

Development of a new water well and new water pipeline to the Quarry site would result in the temporary disturbance of approximately 11 acres located in the existing right-of-way for the USG narrow-gauge rail line.

The proposed new water well to provide a source of water for dust suppression at the Quarry would be developed on approximately 1/8 acre site located within the existing right-of-way of the rail line to the Quarry. The site is located in the southeast quarter of Section 16 T12S, R10E, approximately three miles from the entrance of the Quarry. A water pipeline would be constructed from the well site to the Quarry in a trench approximately two feet wide and three feet deep. The construction footprint would be a linear strip 30 feet wide for the three-mile length. The trench alignment would be adjacent to the existing rail line within areas already disturbed by the rail line and related access easement. No staging area would be required for this component of the Project due to the short distance between the proposed well site and the Quarry.

Fish

The proposed well could produce approximately 26 AF/yr (about 23,000 gpm). A hydrology study was undertaken by Bookman-Edmonston 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.

After reviewing the data and reports provided, hydrologists concluded that the planned pumping of the new Quarry well would have no affect on the discharge of San Felipe Creek and Fish Creek Springs, and hence on the desert pupfish habitat. The new well site 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. Based on hydrologists observations, it is most likely 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 they are correct, then 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 Quarry well site located over seven miles to the southwest.

In order to evaluate the possible direct effect of pumping on spring flow, a Theis solution was applied. In applying the Theis solution hydrologists assumed unrestricted hydrologic communication between the well site and the springs. Also, hydrologists concluded that a barrier to this hydrologic communication may exist because of the location and possible effects of the San Jacinto Fault. (See Appendix C-5).

In applying the Theis solution, it was assumed that the well would be pumped continuously at rate of 26 AF/yr for 20 years. An average transmissivity of 50,000 gpd/ft and a storativity of 0.2 was also assumed. Table 3.5-3 illustrates: 1) the calculated drawdown that would result at increasing distances from the well after 20 years of pumping; and 2) the calculated drawdown resulting from pumping the 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).

TABLE 3.5-3
CALCULATED DRAWDOWN AFTER 20 YEARS OF PUMPING AT THE PROPOSED QUARRY WELL

Distance From Quarry 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

Source: Bookman-Edmonston Memorandum, October 31, 2002.

Presence of San Jacinto Fault

The San Jacinto Fault lies between the well site and the springs. Transverse movement along bedrock faults can result in reduced transmissivity of the overlying alluvial system across the fault zone. Such reduction in transmissivity is primarily due to partial or complete juxtaposition of aquifers and aquitards, and to ductile shearing of 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 pumping at the new Quarry well 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.

According to the U. S. Geological Survey Professional Paper 486-K, 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.

The Quarry No. 3 well site is located in the southern portion of the Fish Creek Wash alluvial fan. Observations indicate that the Fish Creek drainage system plays an insignificant role in potential contribution to underflow. Therefore, the pumping of the well would have a less than significant impact on discharge from the San Felipe Creek and Fish Creek Springs.

Birds

Impacts associated with construction of the well and associated pipeline would be temporary. In addition, construction would occur in previously disturbed areas along the existing narrow-gauge rail line. Therefore, no significant impacts to bird species would occur with development of the new Quarry well and water pipeline.

Reptiles

According to BLM biologists, FTHL have been observed basking on the rails of the narrow-gauge rail line. But because the new Quarry No. 3 well and associated pipeline would require excavation and construction, there is a potential for FTHL to be impacted although the potential would be temporary and would cease once construction is completed. After that, maintenance of the well would be intermittent and would not occur any more often than with current maintenance of the rail line. However, as shown in Figure 3.5-3, no FTHL have been sighted within the vicinity of the proposed well site. It is unlikely that FTHL would be affected.

The BLM and other cooperating agencies have implemented a FTHL Rangewide Management Strategy (2003 Revision) that would minimize adverse impacts and mitigate for residual impacts throughout the FTHL's geographic range. According to the Strategy's "Compensation Formula" (Appendix 4), "the goal of compensation is to make a project's net effect neutral or positive to the flat-tailed horned lizard."

Mammals

The Quarry No. 3 well site and water pipeline alignment within the narrow-gauge rail right-of-way are not in mountainous habitat and have no permanent or long-lasting seasonal water sources and thus would not serve as habitat for a permanent bighorn sheep 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. Impacts associated with construction of the well and pipeline would be temporary and would not effect the movement of mammals in the vicinity. Impacts on mammals and their movement in the region would be temporary.

Summary

Potentially significant impacts associated with the development of the new Quarry No. 3 well and pipeline are limited to short-term construction impacts. Direct impacts to wildlife would be temporary, and limited to habitat effects of development of the well and underground infrastructure.

Ongoing operation of the Quarry No. 3 well would require periodic maintenance, however, this would be similar to periodic maintenance of the existing narrow-gauge rail line.

Indirect impacts associated with water well development include startle effects related to noise and human activity, habitat degradation from fugitive dust, or soil contamination from equipment fluids during well drilling and pipeline installation. Due to the short-term nature and limited extent of the water well and pipeline construction, indirect impacts would not be considered significant.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.5-2

> *<u>FTHL Rangewide Management Strategy:</u> USG will comply with the FTHL Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.*

Level of Significance After Mitigation: Less than Significant

Impact 3.5-3: Loss of Wildlife at Plant

Expansion and modernization of the Plant could disturb additional acreage of desert habitat, possibly causing a negative impact on wildlife at the Plant site.

Plaster City Plant Expansion/Modernization would result in the disturbance of 66 acres of land not previously disturbed at the Plant.

Fish

Biologists concluded that desert pupfish are absent from the Plant and vicinity due to the lack of any perennial surface water.

Birds

No special status birds were observed during field surveys at the Plant and none are likely to occur due to ongoing industrial activities and lack of suitable habitat on-site.

There is potential habitat for burrowing owls to breed in the vicinity of the Plant, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls, nor burrows suitable for nesting, were observed during field surveys at the Plant.

Reptiles

The barefoot banded gecko was not observed at the Plant and no habitat for this species occurs in the area. Biologists concluded that the barefoot banded gecko is absent from the project areas due to the lack of rocky outcrops and boulders at the Plant.

The desert tortoise, a state- and federally-listed threatened species, is unlikely to occur at the Plant site because the site is outside its geographic range. No desert tortoise or attributable sign were observed in the project areas during field surveys for this report, although a focused desert tortoise survey was not performed.

Mammals

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 Plant site due to lack of habitat.

The 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.

No trapping for the Colorado Valley woodrat was conducted at the Plant site due to lack of habitat.

The Plant site is not in mountainous habitat and has no permanent or long-lasting seasonal water sources (based on biologists' field observations and the absence of mapped or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn population. Additionally, the Plant site is not located in critical habitat for the bighorn sheep.

Due to the highly disturbed nature of the Plant site no sensitive species were observed or are likely to occur at the Plant. Expanded Plant 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, also tend to reduce wildlife dispersal across the site. Surrounding undeveloped desert land would continue to provide adequate travel routes around the existing and proposed Quarry operations. Therefore, no significant impacts would occur and no mitigation measures are required.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-4: Loss of Wildlife at 10" Replacement Pipeline

Construction of a replacement waterline for the Plant expansion and modernization could disturb additional habitat in the area thereby having a possible negative effect on local wildlife.

The Plant Expansion/Modernization would result in a replacement water pipeline constructed adjacent to and within the same right-of-way as the existing water pipeline between Ocotillo and the Plant.

The water pipeline is located nearly entirely below the desert floor. The existing eight-inch water pipeline 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. The line originates at a small 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 of Plaster City. Along its entire length, the water pipeline is in or near the existing road right-of-way on the south side of the road. The eastern five miles of the water pipeline alignment are at the boundary of the BLM's "Plaster City Open Area" for off-highway vehicles (OHVs), and a designated OHV staging area located on the north side of Evan Hewes Highway west of the Plant. The water pipeline crosses intermittent drainageways at several points. The water pipeline is within an established right of way, and also crosses through desert shrubland, near washes and small patches of windblown sand. The water pipeline crosses intermittent drainageways at several points.

Fish

Biologists concluded that desert pupfish are absent from both the Plant and Quarry sites and vicinity due to the absence of any perennial surface water.

Birds

No special status birds were observed during field surveys along the water pipeline route. There is little native vegetation to provide habitat along the water pipeline's route due to its location alongside a well-traveled highway, parallel to a railway line and a powerline, and largely within a designated OHV open area, including a designated OHV staging area. Construction of the 10" replacement water pipeline to the Plant site may cause minimal temporary impacts.

There is potential habitat for burrowing owls to breed in the vicinity of the Plant site, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls, nor burrows suitable for nesting, were observed during field surveys at the Plant site.

Reptiles

Several special status species are known from the general region, but none were noted or detected within the vicinity of the water line alignment. No suitable habitat was found at the Plant or along most of the water pipeline's length, though about three miles at the western end of the alignment appeared to provide marginally suitable habitat.

During focused surveys along this part of the water pipeline route, FTHL were not detected along the water pipeline route, but could cross the pipeline route. Figure 3.5-1 shows historic and recent sightings of FTHL in the vicinity of the Plant site. As shown, FTHL have not been sighted along the proposed route.

Biologists concluded that the desert tortoise is unlikely to occur because the site is outside its geographic range. The barefoot banded gecko is absent from the area due to the lack of rocky outcrops along the alignment.

Mammals

Several special status bat species are likely to forage over the region, however there is a low probability that any would roost or breed at the Plant site due to lack of habitat.

The 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.

No trapping for the Colorado Valley woodrat was conducted at the Plant site due to lack of habitat.

The water pipeline alignment is not in mountainous habitat and has no permanent or long-lasting seasonal water sources (based on biologist's 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. Additionally, the Plant is not located in critical habitat for the bighorn sheep.

No impacts to jurisdictional wetlands would result from the replacement of the water line. A few drainage courses along the alignment 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.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-5: Loss of Wildlife Along Railroad Right-of-Way

Expansion and modernization of the Plant could result in increased annual train trips between the Quarry and the Plant, possibly causing a negative impact on wildlife in the area.

The Plaster City Plant Expansion/modernization would not result in the construction of a new rail line, however, it would result in additional train trips between the Quarry and the Plant.

The rail line is located entirely along an existing right-of-way, crossing through similar vegetation along much of its length, though it crosses stabilized and active blowsand along several miles of its length. Some dense patches of mesquite (*Prosopis glandulosa*) occur adjacent to the rail line. The rail line crosses intermittent drainageways at several points. The increase in annual train trips from 950 trains to 1,800 trains translates to an increase from three to five train trips daily. Numbers of trains per day would vary depending on daily production but would not exceed the maximum of five trains per day. An additional two trains per day would increase the likelihood that wildlife species would be impacted.

Fish

Biologists concluded that desert pupfish are currently absent along the railroad right-of-way due to the lack of any perennial surface water.

Birds

No special status birds were observed during field surveys at the Plant site and none are likely to occur due to ongoing industrial activities and lack of suitable habitat on-site.

There is potential habitat for burrowing owls to breed in the vicinity of the Plant site, though burrowing owls are generally uncommon in desert shrublands. Neither burrowing owls, nor burrows suitable for nesting, were observed during field surveys at the Plant site.

Reptiles

FTHL, a species proposed for federal listing as threatened reportedly occurs in windblown sand along the narrow gauge rail line. FTHL have been observed basking on the rail line (G. Wright, BLM El Centro, personal communication). Presumably, increase train traffic would proportionally increase lizard mortality (if it occurs) along the rail line. According to the interagency working group on FTHL lizards (2003 Revision), "flat-tailed horned lizards are less likely to be run over on railroads [than on highways]." There has been no documentation of FTHL mortality on rail lines. Biologists who conducted field surveys for the Proposed Action expressed uncertainty whether FTHL avoid train impacts by leaving the rails when they detect vibrations caused by approaching trains, though it seems likely that they would.

No direct loss of FTHL habitat along the narrow-gauge rail line would occur, though increase rail traffic would indirectly affect habitat. Biologists were unaware of any 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 (2003 Revision) to minimize adverse impacts and mitigate for residual impacts throughout the species' geographic range. According to the Strategy's Compensation Formula" (Appendix 6), "the goal of compensation is to make a project's net effect neutral or positive to the flat-tailed horned lizard." Thus, this and future projects which may affect their habitat would be mitigated below a level of significance.

Expanded operation of the existing narrow-gauge rail line could cause increased mortality to FTHL (though the likelihood of this is unknown) and ongoing maintenance may have an adverse impact on their populations or habitat.

Mammals

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 Plant site due to lack of habitat.

The 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.

No trapping for the Colorado Valley woodrat was conducted at the Plant site due to lack of habitat.

The Plant site is not in mountainous habitat and has no permanent or long-lasting seasonal water sources (based on biologists' field observations and the absence of mapped or perennial streams on USGS topographic maps) and thus would not serve as habitat for a permanent bighorn population. Additionally, the Plant site is not located in critical habitat for the bighorn sheep.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.5.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.5-1: Loss of Wildlife at Quarry

Increased activity at the Quarry could disturb additional desert upland and wash habitats possibly having a negative impact on wildlife in the area.

Under the No Action Alternative, while activities at the Quarry would not increase, they would continue at pre-project levels. This baseline level of activity would not increase negative impacts on wildlife.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-2: Loss of Wildlife at Well Site and Pipeline

Construction of a new water well and new water pipeline to the Quarry could disturb additional acres of desert habitat possibly causing a negative impact on wildlife in the area. For example, mammals and birds may be impacted by surface disturbance resulting from construction.

Under the No Action Alternative, the new well and water pipeline would not be constructed, and no related wildlife impacts would occur.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.5-2)

Level of Significance After Mitigation: Less than Significant

Impact 3.5-3: Loss of Wildlife at Plant

Expansion and modernization of the Plant could disturb additional acreage of desert habitat, possibly causing a negative impact on wildlife at the Plant site.

Under the No Action Alternative no upgrade and expansion of the Plant would occur, nor would there be related wildlife impacts.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-4: Loss of Wildlife at 10" Replacement Pipeline

Construction of a replacement waterline for the Plant expansion and modernization could disturb additional habitat in the area thereby having a possible negative effect on local wildlife.

Under the No Action Alternative the new Plaster City Plant water pipeline would not be constructed, and no negative effects on local wildlife would occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-5: Loss of Wildlife Along Railroad Right-of-Way

Upgrade and expansion of the Plaster City Plant could result in increased annual train trips between the Quarry and the Plant, possibly causing a negative impact on wildlife in the area.

Under the No Action Alternative, there will be no increase in daily train trips along the existing railroad right-of-way. Therefore, no negative impacts on wildlife could occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.5.3.4 Partial IID Water Supply Alternative

Impact 3.5-1: Loss of Wildlife at Quarry

Increased activity at the Quarry could disturb additional desert upland and wash habitats possibly having a negative impact on wildlife in the area.

The Partial IID Water Supply Alternative would not change activities at the Quarry, as compared to the Proposed Action. Impacts associated with disturbance of upland and wash habitats would therefore be identical.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as for the Proposed Action (See Mitigation Measures 3.5-1a-f)

Level of Significance After Mitigation: Less than Significant

Impact 3.5-2: Loss of Wildlife at Well Site and Pipeline

Construction of a new water well and new water pipeline to the Quarry could disturb additional acres of desert habitat possibly causing a negative impact on wildlife in the area. For example, mammals and birds may be impacted by surface disturbance resulting from construction.

The Partial IID Water Supply Alternative would not change activities at the Quarry, as compared to the Proposed Action. Impacts associated with construction of a new water well and pipeline would therefore be identical.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-3: Loss of Wildlife at Plant

Expansion and modernization of the Plant could disturb additional acreage of desert habitat, possibly causing a negative impact on wildlife at the Plant site.

The Partial IID Water Supply Alternative would not change activities at the Quarry, as compared to the Proposed Action. Impacts associated with disturbance of desert habitat would therefore be identical, and, as discussed above, limited, due to the highly disturbed nature of the Plant site, and absence of species of concern.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-4: Loss of Wildlife at 10” Replacement Pipeline

Construction of a replacement waterline for the Plant expansion and modernization could disturb additional habitat in the area thereby having a possible negative effect on local wildlife.

The Partial IID Water Supply Alternative would not change activities at the Quarry, as compared to the Proposed Action. Impacts associated with disturbance of desert habitat would therefore be identical.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-5: Loss of Wildlife at Railroad Right-of-Way

Upgrade and expansion of the Plaster City Plant could result in increased annual train trips between the Quarry and the Plant, possibly causing a negative impact on wildlife in the area.

The Plaster City Plant Upgrade and Expansion would not result in the construction of a new rail line, however, it would result in additional annual train trips between the Quarry and the Plant.

The rail line is located entirely along an existing right-of-way, crossing through similar vegetation along much of its length, though it crosses stabilized and active blowsand along several miles of its length. Some dense patches of mesquite (*Prosopis glandulosa*) occur adjacent to the rail line. The rail line crosses intermittent drainageways at several points. The increase in annual train trips from 950 trains to 1,800 trains translate to an increase from three to five daily train trips. Numbers of trains per day would vary depending on daily production but would not exceed the maximum of five trains per day. An additional two trains per day would increase the likelihood that wildlife species would be impacted.

FTHL, a species proposed for federal listing as threatened reportedly occurs in windblown sand along the narrow gauge rail line. FTHL have been observed basking on the rail line (G. Wright, BLM El Centro, personal communication). Presumably, increase train traffic would proportionally increase lizard mortality (if it occurs) along the rail line. According to the interagency working group on FTHL lizards (2003 Revision), "flat-tailed horned lizards are less likely to be run over on railroads [than on highways]." There has been no documentation of FTHL mortality on rail lines. Biologists who conducted field surveys for the Proposed Action expressed uncertainty whether FTHL avoid train impacts by leaving the rails when they detect vibrations caused by approaching trains, though it seems likely that they would.

No direct loss of FTHL habitat along the narrow-gauge rail line would occur, though increase rail traffic would indirectly affect habitat. Biologists were unaware of any 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 (2003 Revision) to minimize adverse impacts and mitigate for residual impacts throughout the species' geographic range. According to the Strategy's Compensation Formula" (Appendix 6), "the goal of compensation is to make a project's net effect neutral or positive to the flat-tailed horned lizard." Thus, this and future projects which may affect their habitat would be mitigated below a level of significance.

Expanded operation of the existing narrow-gauge rail line could cause increased mortality to FTHL (though the likelihood of this is unknown) and ongoing maintenance may have an adverse impact on their populations or habitat.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.5.3.5 Full IID Water Supply Alternative

Impact 3.5-1: Loss of Wildlife at Quarry

Increased activity at the Quarry could disturb additional desert upland and wash habitats possibly having a negative impact on wildlife in the area.

The Full IID Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Impacts associated with disturbance of upland and wash habitats would therefore be identical.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Action (see Mitigation Measures 3.5-1a-f)

Level of Significance After Mitigation: Less than Significant

Impact 3.5-2: Loss of Wildlife at Well Site and Pipeline

Construction of a new water well and new water pipeline to the Quarry could disturb additional acres of desert habitat possibly causing a negative impact on wildlife in the area. For example, mammals and birds may be impacted by surface disturbance resulting from construction.

The Full IID Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Impacts associated with construction of a new water well and pipeline would therefore be identical.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.5-2)

Level of Significance After Mitigation: Less than Significant

Impact 3.5-3: Loss of Wildlife at Plant

Expansion and modernization of the Plant could disturb additional acreage of desert habitat, possibly causing a negative impact on wildlife at the Plant site.

The Full IID Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Impacts associated with disturbance of desert habitat would therefore be identical, and, as discussed above, limited, due to the highly disturbed nature of the Plant site, and absence of species of concern.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-4: Loss of Wildlife at 10” Replacement Pipeline

Construction of a replacement waterline for the Plant expansion and modernization could disturb additional habitat in the area thereby having a possible negative effect on local wildlife.

The Full IID Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Impacts associated with disturbance of desert habitat would therefore be identical, and, as for the Proposed Action, limited, due to the absence of species of concern.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.5-5: Loss of Wildlife Along Railroad Right-of-Way

Expansion and modernization of the Plant could result in increased annual train trips between the Quarry and the Plant, possibly causing a negative impact on wildlife in the area.

The Plaster City Expansion/Modernization would not result in the construction of a new rail line, however, it would result in additional train trips between the Quarry and the Plant.

The rail line is located entirely along an existing right-of-way, crossing through similar vegetation along much of its length, though it crosses stabilized and active blowsand along several miles of its length. Some dense patches of mesquite (*Prosopis glandulosa*) occur adjacent to the rail line. The rail line crosses intermittent drainageways at several points. The increase in annual train trips from 950 trains to 1,800 trains translate to an increase from three to five daily train trips. Numbers of trains per day would vary depending on daily production but would not exceed the maximum of five trains per day. An additional two trains per day would increase the likelihood that wildlife species would be impacted.

FTHL, a species proposed for federal listing as threatened reportedly occurs in windblown sand along the narrow gauge rail line. FTHL have been observed basking on the rail line (G. Wright, BLM El Centro, personal communication). Presumably, increase train traffic would proportionally increase lizard mortality (if it occurs) along the rail line. According to the interagency working group on FTHL lizards (2003 Revision), "flat-tailed horned lizards are less likely to be run over on railroads [than on highways]." There has been no documentation of FTHL mortality on rail lines. Biologists who conducted field surveys for the Proposed Action expressed uncertainty whether FTHL avoid train impacts by leaving the rails when they detect vibrations caused by approaching trains, though it seems likely that they would.

No direct loss of FTHL habitat along the narrow-gauge rail line would occur, though increase rail traffic would indirectly affect habitat. Biologists were unaware of any 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 (2003 Revision) to minimize adverse impacts and mitigate for residual impacts throughout the species' geographic range. According to the Strategy's Compensation Formula" (Appendix 6), "the goal of compensation is to make a project's net effect neutral or positive to the flat-tailed horned lizard." Thus, this and future projects which may affect their habitat would be mitigated below a level of significance.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.5.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

3.6 AIR QUALITY

3.6 AIR QUALITY

3.6.1 Introduction

This section discusses impacts on local and regional air quality from USG's Plant and Quarry modernization/expansion project. The section begins with a description of local meteorology, air quality and regulatory setting followed by an assessment of the environmental consequences and mitigation measures.

3.6.2 Affected Environment

3.6.2.1 Climate and Meteorology

The Project is located in the southwest and west central part of Imperial County within the Colorado Desert. The climate at the Quarry and the Plaster City Plant is characterized by very hot summers and mild winters with low humidity and low precipitation. Annual average rainfall in El Centro, the County seat is around three inches and it occurs mostly during the winter months with a smaller amount during the summer monsoon-like period. From July through August, it is not uncommon for localized thunderstorms to drop several inches of rain in just a few hours causing flash flooding. The BLM maintains a weather data station in the Fish Creek Mountains in the southwesterly portion of the Quarry site. Average annual precipitation for the years 1991 through 2001 at the Fish Creek Mountains BLM Station was 3.74 inches.

In the winter, daily temperatures can range from the low 30s°F to the upper 70s°F, while in the summer, daily temperatures can range from the low 70s°F to over 110°F degrees. Diurnal temperature changes can be extreme as well.

The hot, dry conditions are a result of a large semi-permanent high pressure area or zone that dominates the Imperial Valley and the presence of the coastal mountains. The high pressure blocks most storms except during the winter when the pressure is the weakest and tends to shift to the south. The coastal mountains block moist air from entering the valley resulting in hot temperatures during the summer and dry weather year round.

Climatological wind data reported at El Centro Naval Air Station indicates relatively strong winds throughout the year with highest wind speeds during the spring. The mean annual wind speed is 8.8 miles per hour (mph). This relatively high wind speed ensures good atmospheric mixing and dispersion of air emissions but also causes blowing sand and dust from the desert. The high winds also limit atmospheric stagnation that prevent the formation of thermal inversions and the accumulation of air pollutants.

The wind directions vary seasonally. During the fall and winter, winds are primarily from the west or northwest with average speeds of 9 mph. Winds shift to south and southeast during the summer with average speeds of 8.5 mph. Annually, the predominant wind direction is from the west or southwest.

In summary, the climate can be described as hot, dry, and relatively windy. The winds show a bi-modal distribution. During the fall and winter, they blow from the west and southwest while during the summer, they blow primarily from the southeast.

3.6.2.2 Local Air Quality

Local air quality is evaluated in terms of U.S. and California ambient (outside) air quality standards. The Federal Clean Air Act (CAA) of 1970, as amended, was established in an effort to assure that acceptable levels of air quality are maintained in all areas of the United States. Pursuant to the CAA, the EPA is responsible for setting national standards, monitoring and enforcement of air quality levels. The primary air quality standards are based upon health-related exposure limits and are referred to as National Ambient Air Quality Standards (NAAQS). The primary NAAQS establish maximum allowable concentrations of specific pollutants in the atmosphere and characterize the amount of exposure deemed safe for the public. EPA also is charged with setting secondary standards to protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings. Pursuant to the CAA, the EPA establishes national air quality standards for six air pollutants. These so called “criteria” air pollutants are listed below with a brief description:

- Ozone (O_3) – A toxic gas that irritates the lungs and damages materials and vegetation. It is formed by reactions between nitrogen oxides and reactive hydrocarbons. Data summarized in Table 3.6-1 indicate that levels of ozone occasionally exceed state standards and rarely exceed federal standards in the Salton Sea Air Basin (SSAB).
- Nitrogen dioxide (NO_2) – A gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicles, power plants, refineries, and other

TABLE 3.6-1
REPORTED AIR QUALITY POLLUTANT CONCENTRATIONS AS MONITORED AT NEAREST IMPERIAL COUNTY MONITORING STATIONS

Pollutant	California Standard	Federal Primary Standard	Yr	Maximum Concentration[1]		Days (samples) State/Federal Standards Exceeded	
				Westmor-land	El Centro	Westmor-land	El Centro
Carbon Monoxide (CO)	20 ppm 1-hour avg.	35 ppm 1-hour avg.	1997	NM	3.7	NM	0 / 0
			1998		3.5		0 / 0
			1999		MSG		MSG
			2000		MSG		MSG
			2001		7.1		0 / 0
Ozone (O_3)	0.09 ppm 1-hour avg.	0.12 ppm 1-hour avg.	1997	MSG	0.13	MSG	29/2
			1998	0.12	0.13	10/0	12/1
			1999	0.145	0.14	24/10	9/2
			2000	MSG	MSG	MSG	MSG
			2001	0.105	0.135	1/0	13/2
Particulate matter (PM_{10})[2]	50 µg/m^3 24-hr. avg.	150 µg/m^3 24-hr. avg.	1997	213	120	72/7	54/0
			1998	81	90	49/0	46/0
			1999	130	92	102/0	108/0
			2000	250	180	126/13	114/6
			2001	647	383	155/6	104/0
				Calexico (Ethel St.)		**Calexico (Ethel St.)**	
Nitrogen Dioxide (NO_2)	0.25 ppm 1-hour avg.	0.053 ppm Annual avg.	1997	0.128	NM	0	
			1998	0.257		1	
			1999	0.286		1	
			2000	0.192		0	
			2001	NA		NA	
Sulfur Dioxide (SO_2)	0.25 ppm 1-hour avg.	0.14 ppm 24-hr. avg.	1997	0.015	NM	0	
			1998	0.009		0	
			1999	0.018		0	
			2000	0.009		0	
			2001	NA		NA	
Lead (Pb)	1.5 µg/m^3 30-day avg.	1.5 µg/m^3 per quarter	Not Measured				

Source: California Air Resources Board (CARB), 2003

Notes: [1] Max. concentration over same period as California Standard;

[2] PM_{10} measured every six days or 60-61 days per year. Days of exceedances calculated by multiplying actual days of exceedances by 6.

NM: Not Measured at this station.
NA: Not Available
MSG: Missing data
ppm: Parts Per Million
µg/m^3: Micrograms Per Cubic Meter
AAM: Average Annual Mean
PM_{10}: Particulate Matter less than 10 microns in diameter

industrial operations). NO_2 is monitored and controlled with other nitrogen oxides under the general designation NO_x. NO_x reactions and other pollutants contribute to ozone generation and visibility-reducing photochemical smog.

- Carbon Monoxide (CO) – A gas that interferes with the transfer of oxygen to the brain. It is produced almost entirely from internal combustion engines. Peak levels of CO occur in winter and are highest where there is heavy traffic. Regional monitoring data indicate that CO levels are not a concern in the project area.
- Particulate Matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Particles 10 microns or less in diameter are defined as "respirable particulate matter" or "PM_{10}". Fine particles are 2.5 microns or less in diameter ($PM_{2.5}$) and can contribute significantly to regional haze and reduction of visibility in California. PM_{10} consists of extremely small suspended particles that can lodge in lungs contributing to respiratory problems. PM_{10} arises from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, construction operations, and windstorms. PM_{10} scatters light and can reduce visibility. PM_{10} poses a health hazard alone or in combination with other pollutants. PM_{10} levels exceed the state ambient air quality standards but only occasionally exceed Federal standards in the project area.
- Fine Particulate Matter ($PM_{2.5}$) – Extremely small suspended particles 2.5 microns in diameter and arises primarily from combustion sources. A new annual standard of 12 $\mu g/m^3$ was approved by the CARB in June 2002.
- Sulfur Dioxide (SO_2) – A gas that can irritate lungs in high concentration. It also dissolves in atmospheric moisture then precipitates out as acid rain. Excess SO_2 emissions are associated with projects such as power plants that burn large quantities of coal.
- Lead (Pb) – Inhaled airborne lead is a factor in heavy metal poisoning. This leads to neurological damage and it impairs mental development in children. Airborne lead has decreased dramatically with the elimination of lead as a gasoline additive, but it is still a factor in some specific industrial processes. Lead emissions are not measured at area pollution monitoring stations and are not an issue with the Proposed Action.

The NAAQS are two-tiered: primary standards to protect public health and secondary standards to protect degradation to the environment (e.g., visibility, damage to vegetation and property).

Under the federal CAA, state and local authorities have primary responsibility for assuring that their respective regions are in attainment of, or have a verifiable plan to attain, the NAAQS. The CAA also provides state and local agencies the authority to promulgate more stringent ambient air quality standards, which is the case in California. Under the California Clean Air Act (CCAA) the more stringent California ambient air quality standards (CAAQS) are set (see Table 3.6-2). Enforcement is delegated to the CARB and local and regional Air Quality Management Districts. This project is in the Salton Sea Air Basin (SSAB) under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD).

Areas that violate the standard at least once during the past three years are designated as having nonattainment status. The determination of attainment or nonattainment status is determined by the CARB on the basis of air monitoring data. CARB maintains the designation listings of all the air basins and counties in the state. Imperial County is designated as nonattainment status for both Federal and State standards for ozone and PM_{10}. On August 4, 2004, the EPA signed a final rule to reclassify Imperial County from a moderate to a serious PM_{10} nonattainment area and found that the County failed to meet the December 31, 2001 deadline for serious areas to attain the standard. The ICAPCD will be required to prepare a PM_{10} Attainment Plan within one year to demonstrate that PM10 emissions will be reduced by 5% per year until the standard is attained. The Attainment Plan would include all "Best Available Control Measures" (BACM) to limit dust emissions in the basin.

The other pollutants with Federal and State standards, carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, lead, and hydrogen sulfides, are either in attainment status or "unclassified." The "unclassified" designation is defined as pollutant data that is incomplete and do not support a designation of attainment or nonattainment (CARB 2002).

The CARB operates two monitoring stations in the Calexico area and the ICAPCD operates five sites in the County, generally located in cities in order to monitor the air near the population. The monitoring stations and the air pollutants monitored are shown on Figure 3.6-1 and in Table 3.6-3. There are no monitoring stations located near either Project site. The Quarry is located in an isolated canyon surrounded by natural open space. The Plant is located in a rural area with isolated houses adjacent to County Road 80. The nearest air monitoring station to the Quarry is at Westmorland, approximately 25 miles east of the Quarry, surrounded by urban and agricultural uses. The nearest monitoring station to the Plant is in El Centro, approximately 17 miles east and downwind of the site, within the middle of El Centro. Air monitoring data for the

TABLE 3.6-2
CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[b]	National Standards[a]	
			Primary[c]	*Secondary*[d]
Ozone (O_3)	1 Hour 8 Hour	0.09 ppm ---	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Carbon Monoxide (CO)	8 Hour 1 Hour	9.0 ppm 20 ppm	9 ppm 35 ppm	--- ---
Nitrogen Dioxide (NO_2)	1 Year 1 Hour	--- 0.25 ppm	0.053 ppm ---	0.053 ppm ---
Sulfur Dioxide (SO_2)	1 Year 24 Hour 3 Hour 1 Hour	--- 0.04 ppm --- 0.25 ppm	0.03 ppm 0.14 ppm --- ---	--- --- 0.5 ppm ---
Respirable Particulate Matter (PM_{10})	24 Hour 1 Year	50 μg/cu meter 20 μg/cu meter[f]	150 μg/cu meter 50 μg/cu meter	150 μg/cu meter 50 μg/cu meter
Fine Particulate Matter ($PM_{2.5}$)	24 hour 1 Year	--- 12 μg/cu meter[f]	65 μg/cu meter 15 μg/cu meter	65 μg/cu meter 15 μg/cu meter
Sulfates	24 Hour	25 μg/cu meter	None	None
Lead (Pb)	30 Day 1 Quarter	1.5 μg/cu meter ---	--- 1.5 μg/cu meter	--- 1.5 μg/cu meter
Hydrogen Sulfide	1 Hour	0.03 ppm	None	None
Vinyl Chloride	24 Hour	0.01 ppm	None	None
Visibility Reducing Particulates	8 Hour	See Note e.	None	None

Notes:

a. Federal standards, other than O_3, and those based on annual averages or arithmetic means, are not to be exceeded more than once per year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentration above the standard is equal to or less than one.

b. California standards for O_3, CO, SO_2 (1 Hr and 24 Hr), NO_2, PM_{10} and visibility reducing particulates are values not to be exceeded. The standards for sulfates, lead, hydrogen sulfide and vinyl chloride are not to be equaled or exceeded.

c. Federal Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

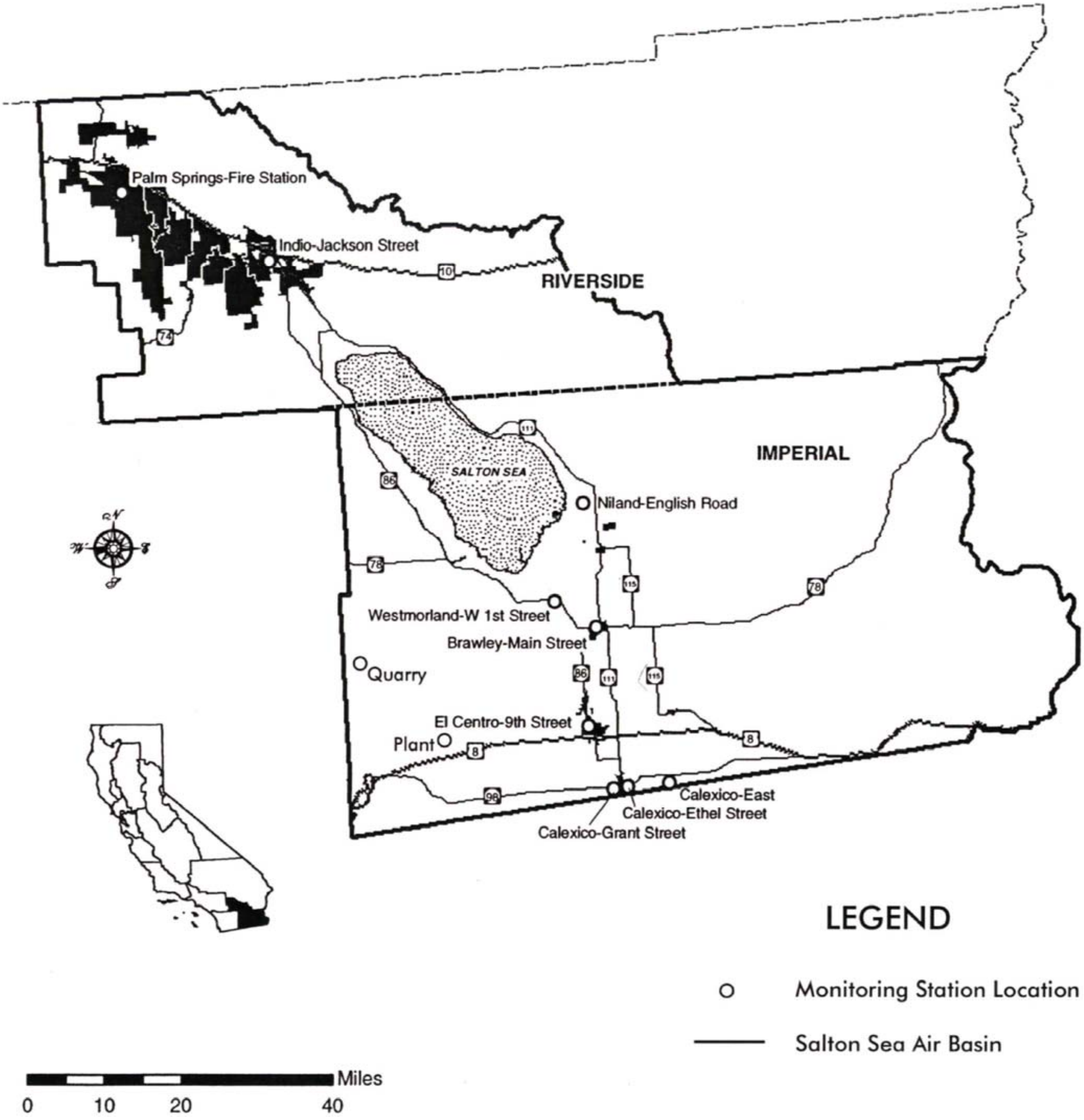
d. Federal Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse health effects of a pollutant.

e. Insufficient amount to produce an extinction coefficient of 0.23 per km due to particulates when relative humidity is less than 70%.

PPM = parts per million by volume

μg/cu meter = micrograms per cubic meter

Source: California Air Resources Board, 2003



Source: Imperial County Pollution Control District

Figure 3.6-1
Location Map of County Air Quality Monitoring Stations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

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TABLE 3.6-3
IMPERIAL COUNTY
AIR POLLUTANT MONITORING DATA

Station	Ozone	NO_2	PM_{10}	SO_2	CO
Calexico – East[1]	X	X	X	X	X
Calexico – Ethel St.[1]	X	X	X	X	X
Calexico – Grant St.	X	-	X	-	-
El Centro 9th Street	X	-	X	-	X
Brawley – Main St.	X	-	X	-	-
Niland, English Road	X	-	X	-	-
Westmorland – West 1st Street	X	-	X	-	-

Notes:
X = Air pollutant measurements recorded
1 = Operated by the California Air Resources Board
Source: CARB, 2003.

past five years for these two stations are listed in Table 3.6-3. The table also includes data from the Calexico east station for nitrogen dioxide and sulfur dioxide, as El Centro and Westmorland do not record these pollutants. The Calexico station is impacted by pollutants from Mexicali.

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

3.6.2.3 Regulatory Overview

The air quality regulations and programs governing this project are discussed below. The applicable regulations are:

- Federal Regulations and Requirements
- State Regulations and Programs
- Imperial County Rules, Regulations and Attainment Plan

The federal requirements relate to compliance with NAAQS, New Source Review (NSR), Prevention of Significant Deterioration (PSD), Title V permit program and New Source Performance Standards (NSPS). The authority for implementing and enforcing these regulations (except for PSD) has been delegated to Imperial County Air Pollution Control District (ICAPCD). The EPA plays an oversight role through their regional office (Region 9, San Francisco). A summary of the federal and state regulations and the permit status of USG Plant and Quarry operations are presented in Table 3.6-4.

State regulations require that counties meet CAAQS at the earliest practicable date and the air toxics "Hot Spots" act that requires certain sources to inventory the emission rates of toxic air pollutants. In some cases, the facilities are required to prepare health risk assessments. The authority for implementing and enforcing these regulations has been delegated to the ICAPCD. The state plays an oversight role.

In addition to the federal and state requirements, projects in Imperial County are subject to local regulations. Imperial County has been given the authority by the state to:

- Develop plans (an "Attainment Plan") to meet federal and state ambient air quality standards;
- Implement a permit program to issue construction and operating permits for stationary sources;
- Enforce regulations covering stationary sources; and
- Develop various programs to reduce air pollution in the County.

Two of these issues are relevant to the Proposed Action: the Attainment Plan and implementation of a permit program. These are discussed below.

Currently, the Imperial County's Air Quality Attainment Plan (AQAP) is a subsection of the County's General Plan. The AQAP requires that County-wide emissions of non-attainment pollutants be reduced by 5 percent per year in order to demonstrate reasonable further progress. As discussed above, the EPA signed a final rule to reclassify Imperial County from a moderate to a serious PM_{10} nonattainment area and that the County failed to meet the December 31, 2001 deadline for serious areas to attain the standard. The ICAPCD will be required to prepare a PM_{10} Attainment Plan within one year to demonstrate that PM10 emissions will be reduced by 5% per year until the standard is attained. The Attainment Plan would have to include all BACM to limit dust emissions in the basin.

TABLE 3.6-4
SUMMARY OF FEDERAL AND STATE AIR QUALITY REGULATIONS AND PROJECT STATUS

Law or Regulation	Requirement	Permitting Agency	Permit or Approval	Permit Status
FEDERAL				
Clean Air Act, US Title 22 Sections 7470-7491; Prevention of Significant Deterioration (PSD) Program 40 CFR 52	Requires project review and facility permitting for new and modified major sources greater than 250 TPY for criteria pollutants.	EPA	Project is not subject to PSD review because facility emits less than 250 TPY of any attainment pollutant.	PSD permit not required.
CAA Section 7501 (New Source review)	Requires new and modified sources to obtain permits for those pollutants that exceed NAAQS	ICAPCD with EPA oversight.	Authority to Construct Permit	Facility did obtain the ATC permit
CAA Section 711 (New Source Performance Standards)	Establishes national standards of performance of new and modified stationary sources	ICAPCD with EPA oversight.	Authority to Construct Permit	Facility did obtain the ATC permit
CAA Section 7661 (Title V Permit Program)	Establishes a federal operating permit program for major stationary sources.	ICAPCD with EPA oversight.		Facility submitted application in 6/96, received in 8/04
CAA Section 112; National Emission Standards for Hazardous Air Pollutants (NESHAP)	Establishes emissions limits for hazardous air pollutants from certain source categories	ICAPCD with EPA oversight.	Authority to Construct Permit	No applicable NESHAP
Conformity Regulations 40 CFR 51, Subpart W	Comply with federal actions related to state implementation plan	ICAPCD with EPA oversight.	Authority to Construct Permit	Agency approval was obtained before start of construction.
STATE				
Health and Safety Code Section 44300 to 44384 (Toxics "Hot Spots" Act)	Requires preparation of biennial updating of hazardous emissions from the facility and if necessary, preparation of risk assessments	ICAPCD with CARB oversight.	Permit not required	"Hot Spots" emissions report submitted in May 2002

The General Plan requires compliance with the Surface Mining and Reclamation Act of 1975 and the need to preserve open spaces within Imperial County. The General Plan specifically acknowledges the existence of gypsum reserves and the need to provide processed gypsum products to serve the growing Southern California market.

The Proposed Action would comply with the General Plan by employing Best Available Control Technology (BACT) and by offsetting emissions from closure of an older board manufacturing line, paving Quarry roads, covering rock storage areas, covering transfer points, and adding dust collection pick-up points as well as purchasing offsite Emission Reduction Credits (ERCs), as required by local rules.

The ICAPCD's permit program consists of prohibitory rules as well as specific requirements for reducing air pollutant emissions including the following:

- Use of BACT including low NO_x burners, fabric filter dust collectors, flue gas recirculation, and storage and conveyor enclosures;
- Limiting throughput of material or flow rates;
- Providing offsets and/or ERCs;
- Limiting criteria pollutant emissions; and
- Limiting visibility-reducing emissions (opacity).

These requirements are summarized in Table 3.6-5, Summary of Local Air Quality Regulations.

3.6.2.4 Project Description for the Air Quality Assessment

The Proposed Action incorporates the recent expansion/modernization at both the Quarry and the Plant. The Quarry provides the raw gypsum to the Plant, where it is manufactured into gypsum wallboard and other gypsum products. To meet current and future demand for wallboard and related products, USG replaced an older, less efficient wallboard production line (Line No. 2) with a new state-of-the-art high-speed production line of 800 million square feet per year (Line No. 3) in 2000. The replaced production line had been in operation since 1957.

In addition, USG may install a 14.4 MW natural gas-fired turbine and electrical cogenerator unit in the southwest portion of the Plant. The gas turbine will be fully enclosed in a 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. The natural gas would be delivered through the existing pipeline. Daily commercial electrical power consumption would be eliminated. Backup power would be provided by IID.

TABLE 3.6-5
SUMMARY OF LOCAL AIR QUALITY REGULATIONS

Law or Regulation	Requirement	Permitting Agency	Permit or Approval
ICAPCD Rule 201 – Permits Required	Requires Authority To Construct and Permits To Operate	ICAPCD	Authority to Construct Permit and Permits To Operate
ICAPCD Rule 207 – New Source Review for New and Modified Stationary Sources	Requires pre-construction review including use of BACT, emission offsets and air quality impact analysis	ICAPCD with CARB oversight	Authority to Construct Permit and Permits To Operate
ICAPCD Rule 900 – Title V Operating Permits	Implement and issue federal operating permit requirements as per CAA Part 70.	ICAPCD with CARB oversight	Authority to Construct Permits and Permits To Operate
ICAPCD Rule 400 – Fuel Burning Equipment	Limits emissions of NO, sulfur and combustion contaminants	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 401 – Opacity of Emissions	Limits opacity of emissions to a maximum of Ringlemann No. 1 for periods greater than 3 minutes	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 403 – Quantity of Emissions	Limits emissions of air contaminants from any single emissions unit	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 404 – Particulate Matter Emissions	Limits on emissions of particulate matter	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 405 – Sulfur Compound Emissions	Limits sulfur dioxide emissions to maximum of 2,000 ppm by volume	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 406 – Specific Contaminants	Limits on combustion particulates	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 407 – Nuisances	Prohibits emissions that cause odors, affect public health, safety, etc.	ICAPCD with CARB oversight	Prohibitory rule – no permit required
ICAPCD Rule 216 – Construction or Re-construction of Major Sources that Emit Hazardous Air Pollutants	Required BACT for toxic air pollutants for major sources	ICAPCD with CARB oversight	Authority to Construct Permits and Permits To Operate
ICAPCD Rule 800 – Fugitive Dust Requirements for Control of PM_{10}	Requires Reasonably Available Control Measures (RACM) for PM_{10}	ICAPCD	Exempt under 800.E.2 because requirements for PM_{10} control are included in existing permits
ICAPCD Rule 925 – General Conformity	Compliance with federally approved State Implementation Plan	ICAPCD with EPA oversight	Authority to Construct Permit

Source: ICAPCD; USG 2003

Note: Recent EPA reclassification will require ICAPCD to revise current Rule 800 to incorporate BACM.

The cogeneration unit is estimated to consume 1,116,000 MMBtu/year and would reduce gas usage in the No. 3 kiln by 617,580 MMBtu/year. This would increase total gas usage by approximately 500,000 MMBtu/year. The emissions after BACT from the increased amount of natural gas consumed by the cogeneration unit would be mostly offset by the reduction in the emissions from the kiln burner.

The Quarry is located approximately 26 miles northwest of the Plant. The Quarry operations are designed to quarry, crush, screen, transport and ship material via narrow-gauge rail to the Plant for finish processing as well as produce raw gypsum products for agricultural and cement manufacturing uses. Quarry production will increase from approximately 1.13 million TPY to 1.92 million TPY with the Plant modernization/expansion.

Gypsum is quarried using conventional drilling and blasting techniques. The raw gypsum is loaded into 60-ton off-highway haul trucks and is hauled to the primary crusher. It is dumped directly into the rock feeder and screen, fed into a jaw crusher, conveyed to a primary screen, fed into a secondary crusher and crushed. 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 Plaster City Plant. The train consists of up to 25 bottom dump hopper cars (45-ton capacity) and pre-project made an average of 950 trips between the Quarry and the Plant each year. With permitted production, the number of train trips could reach 1,800 train trips annually. This number of trains is assuming a maximum of 5 trains per day.

Crushing, screening, and loading operations are conducted within enclosed structures with baghouses and dust collectors filtering dust from pick-up points on the process equipment to minimize fugitive dust emissions. Additional enclosures and updated dust collectors are part of the proposed project and are discussed below. A vacuum truck and water truck are used onsite to reduce fugitive dust and spilled material.

3.6.2.5 Plaster City Plant and Quarry Permit Summary

The operations, controls, and changes to the Plant and Quarry facilities are summarized below with a listing of existing permits included in Appendix D1. Conditions of Approval for Permit #2834C are included as Appendix D2 as it incorporates conditions from Permit #s 2834, 2834A, and 2834B.

October 18, 1998 – Application from USG for Permit #2834

USG submitted the initial application for this Project to the ICAPCD to construct the new No. 3 board line and remove the No. 2 line. The primary raw material is natural gypsum extracted from the existing quarry. Production of natural gypsum at the Quarry would be increased from approximately 1.13 million to 1.92 million tons.

The original scope for the No. 3 line installation included the following:

1. The new finished product warehouse integrated with the existing finished product warehouse.
2. Approximately 490,000 square feet of building erected.
3. The existing No. 2 production line decommissioned and disassembled after startup of the new production line.
4. Two new heated roller mill and kettle systems utilized to grind and calcine the natural gypsum rock; MBR Kettles and Mini-Kettles with low NO_x burners (BACT). [Note that these facilities were changed over to the Claudius Peterson (CP) System prior to construction under Permit #2834A discussed below].
5. Gypsum rock supply stockpiled in a new covered and partially enclosed storage structure.
6. The existing rock storage shed, laminating operations, and "Midland warehouse" razed.
7. Improved rail-loading facilities installed to allow rail delivery of raw materials and shipments of finished goods.
8. The supplier of power (Imperial Irrigation District) upgraded its power transmission lines and site substation capacities to meet the incremental electrical load requirement created by the new facility.
9. The existing Union Pacific Railroad line was relocated to accommodate the new facility.
10. A pulse jet bag house style dust collector was installed at the Quarry for the venting of the train loading system.
11. Pulse jet bag house style dust collectors used at the crusher and rock shed to minimize airborne emissions reducing stack emissions from 0.015 grains per cubic foot of gas to no more than 0.01 grains per cubic foot of gas.

USG was required to obtain NO_x offset credits. The Plant would have to offset 62.7 tons per year (TPY) of NO_x according to this initial permit (after applying the certified offset credits for the No. 2 line removal). It was also proposed to install low NO_x burners on the existing No. 6 kettle to offset NO_x increases.

PM_{10} emission offsets were achieved by controlling fugitive PM_{10} emissions at the Quarry with additional paving. USG paved 0.3 miles of the Quarry road to achieve a PM_{10} reduction of 88.76 TPY. Additional dust control was constructed with an enclosed rock storage building and for the train tunnel, which reduces PM_{10} by 84.1 TPY. Finally the permit showed that there were previous unused Quarry paving credits (for the first mile paved), which were 171.19 TPY.

May 18, 1999 – Approval from APCD for Permit #2834

USG received an Authority to Construct (ATC) from the ICAPCD that authorized the expanded/modernized Plant to be constructed and operated in compliance with the project description and operating parameters of the applications dated October 19, 1998 (with its supporting documentation and supplemental materials) and the modifications described in it. General Conditions of Approval included:

- Project NO_x increases of 53.17 TPY shall be fully offset by 61.2 TPY from ERCs (1.2 times increase).
- Compliance with BACT for emission units listed in approval.
- Total NO_x and CO emissions from the point sources at Plaster City shall be less than 150 TPY and 268 TPY, respectively.
- Stack emissions from dust collectors shall be adequately sized to emit no more than 0.01 grains per cubic foot of gas.
- Quarry equipment previously permitted under Permit #1168B was now incorporated into this permit.
- Open storage of gypsum rock at Plant prohibited. Gypsum rock shall be stored in an enclosed building.
- At Quarry, USG paved access road for distance of 0.4 miles from Agri facility to railroad crossing.
- At Quarry, USG shall pave haul road when unpaved distance reaches 0.25 miles.
- At Quarry, USG shall maintain and prevent surface dust accumulation on paved roads.

August 27, 1999 – Application from USG for Permit #2834 A

Application requested to modify the existing permit #2834, by replacing the MBR kettles, roller mills, and storage containers with the Claudius Peters Mill (CP Mill), which is a more efficient process.

An increase of 25.9 MMBTU/hr capacity was needed for the kiln, 6 MMBTU/hr for CP Mill, and 1 MMBTU/hr for an LP air heater. A total heat-input increase of 32.9 MMBTU/hr resulted. The emissions for this modification showed a net decrease of 2.34 TPY PM_{10} and 4.93 TPY NO_x emissions due to the recirculation of combustion gas and an overall lower exhaust flow rate. No change in CO emissions resulted from the Line No. 3 emissions inventory. Slight increases in VOC emissions and sulfur dioxide emissions at 0.79 and 0.086 TPY, respectively, would occur.

The resulting NO_x reduction eliminated the need to retrofit the No. 6 Kettle with a low NO_x burner. The new amount of NO_x offsets was revised to 64.84 TPY (with the 1.2 factor) and USG purchased 65.14 TPY of NO_x offsets from Goldfield Mining Corporation (Goldfield).

November 16, 1999 – Approval from APCD for Permit #2834 A

USG received the final approved ATC from the ICAPCD that authorized the Plant to be constructed with modifications and operated in compliance with the project description and operating parameters of the applications dated October 19, 1998 and equipment changes dated from August 27, 1999. General Conditions of Approval included:

- NO_x emission increases listed as 54.18 TPY, which at a 1.2 ratio requires 64.84 TPY to be fully offset.
- ERCs of 65.14 tons were purchased from Goldfield.
- Includes the CP Mill equipment, removes two planned kettles and associated equipment, adds an LP Air Heater, and increases the Kiln Burners.
- The total NO_x and CO emissions from point sources at Plaster City shall be less than 151 TPY and 268 TPY, respectively.

February 28, 2000 – Application from USG for Permit #2834 B

Application was a request to modify the existing permit #2834 A, by changing the crushing, screening, and conveying equipment at the Quarry. USG surrendered the permit for its existing crushing, screening, and conveying equipment. The old equipment was rated at 450 TPH, while the new equipment is rated at 700 TPH. The new crushing and screening building was constructed southwest of the existing crushing and screening building. The new equipment is as follows:

1. Coarse gypsum bin with rock breaker
2. Inclined apron feeder
3. Vibrating grizzly screen
4. Primary jaw crusher
5. Inclined belt conveyor CV-1
6. Inclined belt conveyor CV-2
7. Double deck vibrating screen
8. Secondary crusher
9. Inclined belt conveyor CV-3
10. Belt scale
11. New shuttle conveyor for the Quarry rock shed

The equipment remaining in service are the existing Quarry Agri manufacturing equipment and North dust collector, which now serves the Quarry rock shed. The new equipment is more fully enclosed than the equipment being replaced. In particular, the new crushing facility will have the mine trucks end dump into a new hopper enclosed on three sides and covered by a roof. A dust collection point will be installed at the backside of the dump truck "room" to help collect fugitive dust. Quarry material will be screened prior to being dumped into the new crusher so that feed 11 inches in size or smaller will not pass through the crusher. All transfer points including the jaw crusher inlet and outlet are required to be enclosed and dust collection pick-up points must be attached to the ducts that lead to a centralized dust collector. The new crushing building must be fully enclosed. In addition, the train loading tunnel was extended from six to eight bays and a dust collection system was installed. As such, overall emissions will decrease even with an increase in production.

May 2, 2000 – Approval from APCD for Permit #2834 B

The facility shall be constructed to operate in compliance with the project description and operating parameters of the applications dated October 19, 1998, August 27, 1999, and February 28, 2000 and the modifications described in them.

- The project NO_x emission increases will be 54.18 TPY, which must be fully offset.

- The total NO_x and CO emissions from point sources at Plaster City shall be less than 151 TPY and 268 TPY, respectively.

April 11, 2000 – Application from USG for Permit #2834 C

This application was a request to modify permit #2834B to include stucco distribution improvements. There were two new emission points:

1. The West receiving silo bin vent dust collector
2. The East receiving silo bin vent dust collector

The emissions of PM_{10} are estimated to increase by a total of 5.48 TPY, which are offset by the decreases in PM_{10} of the No. 3 line and the Quarry improvements.

September 6, 2000 – Approval from APCD for Permit #2834 C

The facility shall be constructed to operate in compliance with the project description and operating parameters of the applications dated October 19, 1998, August 27, 2999, February 28, 2000, and April 11, 2000 and the modifications described therein. Conditions of Approval for Permit #2834C are included as Appendix D2 as it incorporates conditions from Permit #s 2834, 2834A, and 2834B.

3.6.2.6 Project Emissions Sources

There are five main sources of the Proposed Action that would release air emissions:

1. Quarry and Processing Activities at the Plaster City Quarry
2. Construction and Operation of the Quarry Well and Water Supply Pipeline
3. Operation of the expanded/modernized Plaster City Plant with No. 3 Line
4. Construction and Operation of the Plaster City Plant Water Pipeline
5. Narrow Gauge Locomotive Emissions Due to Increased Quarry Production
6. Mobile source emissions (from trucks and locomotives)

Potential air emissions attributable to pre-project and post-project activities are estimated using data from USG that has been submitted to the ICAPCD as part of the permit applications and air quality assessment and the Title V report prepared by USG in 2001 and submitted to the EPA. Calculations used standard methodologies, emission factors, and equations formulated by the following: EPA in AP-42 with updates, CARB, ICAPCD, South Coast Air Quality Management District (SCAQMD) as published in their "CEQA Air Quality Handbook", and the Mojave Desert Air Quality Management District as published in their "Emissions Inventory Guidance for Mineral Handling and Processing Industries." Calculations and assumptions used to estimate potential air pollutant emissions are documented in the Air Quality Emissions Inventory tables included in Appendix D3.

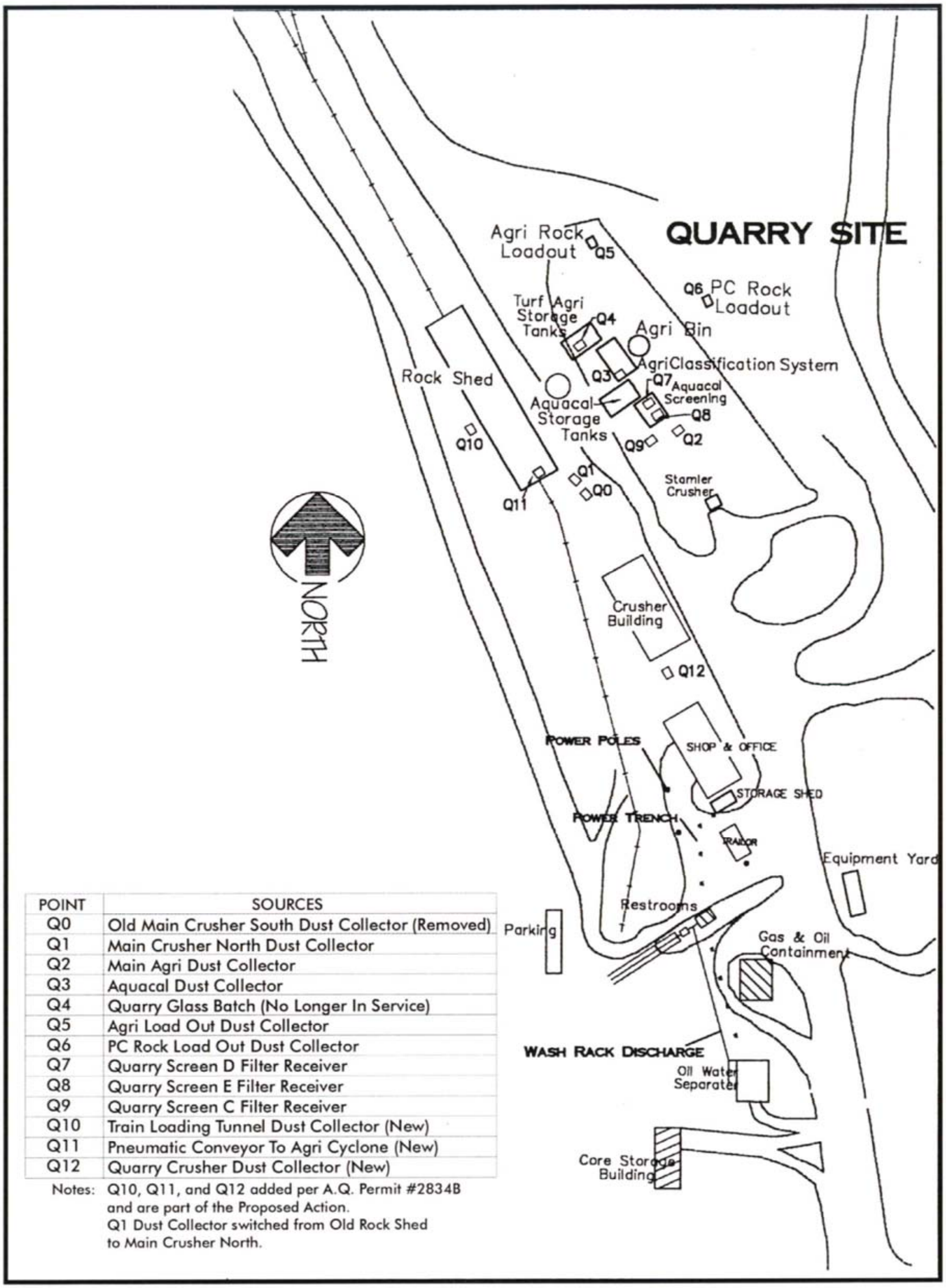
The Potential To Emit (PTE) from pre-project and the post-project stationary sources permitted through the ICAPCD are estimated. The PTE is the maximum capacity to emit a regulated air pollutant based on a worst cast of operating equipment 24 hours per day, 365 days per year or 8,760 hours per year. The PTE is used in the air permitting review to compare worst-case emissions. The fugitive dust emissions and mobile source quarry emissions from actual and proposed operations for the pre-project and the post-project are also included.

The project description has defined the existing conditions or pre-project to be prior to the installation of the No. 3 Line or 1998. The Proposed Action is defined as the post-project or the conditions after the installation of the No. 3 Line.

3.6.2.7 Quarrying and Quarry Processing Operations

The excavation operations onsite are scheduled to extend for approximately 80 years. Emissions associated with the Quarry operations include stationary sources, fugitive dust sources, and mobile sources. Commercial electric power would be used for all Plant operations. Quarry production will increase from approximately 1.13 million TPY to 1.92 million TPY with the Plant expansion.

Stationary Emissions. The gypsum crushing and screening plant operations remained similar to the pre-project except for the equipment listed under Permit #2824B which primarily included a new Quarry main crusher (replacing an old one), additional enclosures, and dust collectors. The pre-project and the Proposed Action include the following stationary sources at the Quarry as shown on Figure 3.6-2 and listed in Table 3.6-6. Figure 3.6-3 is a flow chart that shows the main components of the Quarry's crushing, screening, and loading facility with dust collectors and enclosures. The new post-project system is described under Permit #2348B above. In general at the crushing and screening facility, the haul trucks end dump into a new hopper enclosed on three sides and covered by a roof. A dust collection point was installed at the backside of the dump truck "room" to help collect fugitive dust. This activity was previously open with no windscreen or dust collection. Quarry material will be screened prior to being



Source: U.S. Gypsum Company

Figure 3.6-2
Stationary Sources at Quarry Crushing Plant
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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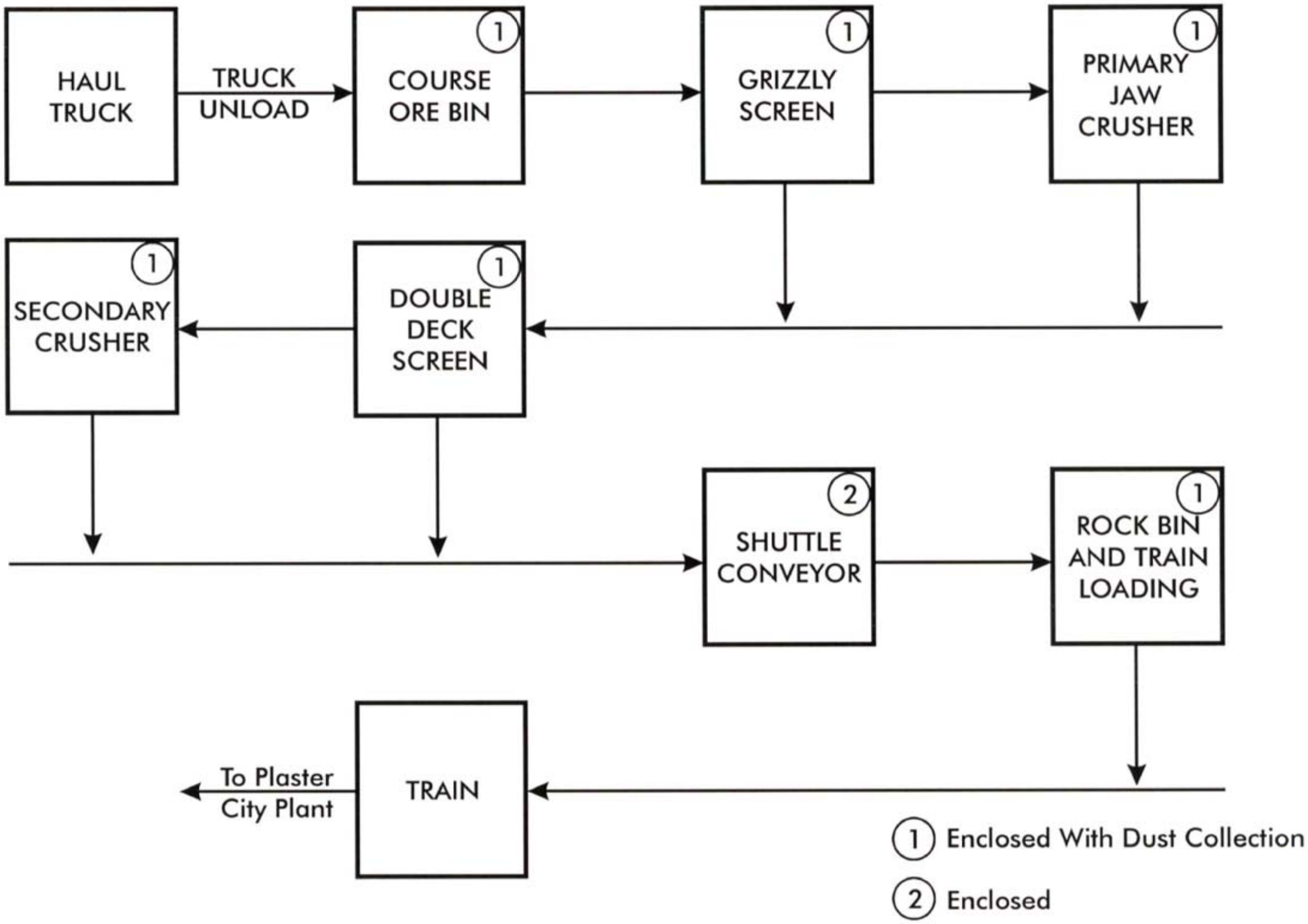

Source: U.S. Gypsum Company

Figure 3.6-3
Quarry Crusher and Loading Flow Chart
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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TABLE 3.6-6
QUARRY STATIONARY SOURCES
ESTIMATED PM_{10} EMISSIONS
PRE-PROJECT AND POST-PROJECT OPERATIONS
(BASED ON 24 HOURS/DAY; 365 DAYS/YEAR)
(TONS PER YEAR)

Stationary Sources At Quarry	Pre-Project	Post-Project	Changes
Quarry Crusher	9.39	12.39	+3.00
Rock Shed	7.51	7.51	0
Agri Plant	5.63	5.63	0
Aquacal Plant	5.63	5.63	0
Glass Batch	5.63	Removed	-5.63
Agri Loadout	1.88	1.88	0
Rock Loadout	1.31	1.31	0
Train Loading Tunnel	0[2]	2.57	0
Pneumatic Conveyor to Agri	New	0.82	+0.82
Quarry Screens (C, D, E) Filters	1.35	1.35	0
Old Fugitive Emissions[1] Enclosed and/or vented to dust collectors with new facility	70.06	17.9	-52.16
Emission Totals	**108.36**	**56.99**	**-51.40**

Source: USG, 2003 – Air Quality Permits; Title V Report, 2001.
Notes: 1 – Includes fugitive plant emissions which are or will be enclosed and/or vented into dust collectors.
2 – Pre-Proposed Action emissions for the train tunnel are included under Old Fugitive Plant Emissions.

dumped into the new enclosed crusher so that feed 11 inches in size or smaller will not pass through the primary crusher. This reduces the primary crusher throughput by 45 percent. All conveyors and transfer points including the jaw crusher inlet and outlet will be enclosed and dust collection pick-up points will be attached to the ducts that lead to centralized dust collectors. The crushing building will be fully enclosed and a dust collector was added to the train loading tunnel inlet and outlet to control fugitive dust during train car loading. The tunnel in the past was uncontrolled until the quarry expansion allowed an ICAPCD review and permit action.

For gypsum processing, stationary source emissions are based on maximum expected daily and annual throughput or PTE. The estimated pre-project and post-project PM_{10} emissions are listed in Table 3.6-6. The last row of this table lists the old fugitive plant emissions from previously open sources that are now enclosed and/or vented to dust collectors. With these additional dust control measures, the estimated emissions for maximum operations are expected to decrease by about 51 TPY.

Mobile Equipment Emissions. Vehicle and heavy-duty equipment exhaust emissions constitute this category, which includes onsite vehicles, haul and water trucks, dozers, loaders, graders, etc. The Quarry operation uses two loaders and a dozer to excavate gypsum rock loosened by blasting and four 60-ton haul trucks transport material to the main crusher and to the Agri plant. Emissions from this equipment are dependent upon the Quarry production rates and the distance these materials must be hauled to the crushing facility. The proposed quarry activity occurs 10 to 14 hours per day.

The typical equipment used onsite and hours of operations are listed in Table 1 in Appendix D3. Engine exhaust emissions from onsite mobile sources were estimated using typical equipment onsite, emission factors from SCAQMD and CARB sources, and project data regarding hours of operation. Mobile equipment exhaust emissions are estimated for the pre-project and post-project operations in Tables 3 and 4 in Appendix D3 and summarized in Table 3.6-12.

Fugitive Emissions. This category includes fugitive dust generated by quarry activity including drilling, blasting, mining and loading of material, and equipment/vehicle travel on a combination of unpaved and paved haul roads. A variety of technologies to control onsite fugitive dust emissions are and will be implemented.

Excavations: Fugitive dust results from drilling, blasting, dozing, and loading of gypsum. Due to the size of the property site, dust and exhaust emissions from excavations would tend to settle onsite and not affect offsite areas.

Fugitive dust from mining and loading of gypsum materials were estimated using the following: (1) emission factors published by EPA in "AP-42 Compilation of Air Pollutant Emission Factors," (EPA with updates through 2002) and in the SCAQMD's CEQA Air Quality Handbook (SCAQMD, 1993); (2) the Quarry equipment inventory; (3) project data regarding hours of operation; (4) meteorological data; and (5) information provided by USG regarding quarry silt (3.45 percent). The moisture content of the roadbed and quarried materials is assumed very dry (lowest level allowed, 0.25 percent) to show emissions without control.

Travel on Paved and Unpaved Roads: Emissions were estimated using AP-42 for paved and unpaved roads and an estimated average vehicle speed of 15 mph. Round trip haul distance was estimated at 2.5 miles with 35-ton haul trucks for the pre-project. One mile of the haul road is paved and 0.25 miles is unpaved. The average round trip distance for the post-project is 2.9 miles based on the reserves and distances to each phase. Permit #2834C requires that as the haul road is extended to more distant phases that no more than 0.25 miles of the haul road can be unpaved. Therefore, it is assumed for emission calculations that 1.2 miles of the future road would be paved and 0.25 miles unpaved (1.45 miles one way or 2.9 miles round trip). The haul trucks were replaced in 2000 and 2001 with 60-ton haul trucks, thereby maintaining a similar number of truck trips (88 per day) from the quarry to the crusher for pre-project and post-project.

Typical required fugitive dust control techniques (currently utilized) include water spraying roads, limiting vehicle speeds to 15 mph, paving the haul road and the Agri Plant road as required by permit conditions, and using soil stabilizers (such as magnesium chloride) on sections of roads and around the plant. These are estimated to reduce potential haul road emissions by approximately 50 percent. Mitigation measures recommending additional applications of water and chemical stabilizers on the new lengths of the haul roads in sufficient quantity and frequency to maintain a stabilized surface and water sweeping and vacuuming of the paved haul and access roads are expected to result in approximately 80 percent control of road dust emissions. Soil stabilizers would also be utilized in the plant areas to reduce PM_{10}.

Onsite fugitive dust emissions for quarry activities, haul road dust, and access road dust are estimated for the pre-project and post-project operations and are listed in Table 3.6-7 and summarized with all Quarry emissions in Table 3.6-12. Assumptions, data, and calculations are included in Appendix D3, Tables 6, 7, and 8.

Table 3.6-7 shows that fugitive emissions from quarry activities increase along with the increase in quarry production with little opportunity for reduction. The estimated dust from the haul and access roads is substantially lower with implementation of additional dust control measures. The overall change in dust emissions is slightly more with the post-project.

TABLE 3.6-7
QUARRY FUGITIVE DUST SOURCES
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
Drilling		0.45	0.77	+0.32
Blasting	Increase from 25 to 48 blasts/year	52.4	76.8	+24.4
Excavations/Dozing	8 hours/day	48.76	48.76	0
Loading (4 loaders)	Increase from 40 to 48 hours/day	20.34	34.55	+14.21
Fugitives Subtotal		**121.95**	**160.88**	**+38.93**
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 Subtotal		**92.88**	**58.05**	**-34.83**
Fugitive Emission Totals		**214.83**	**218.93**	**+4.10**

Source: USG, 2003: Background material and assumptions; see Appendix D3, Tables 6, 7, and 8.
Notes: 1 – Pre-Project road dust controls measures estimated at 50%.
2 – Post-project road dust control/mitigation estimated at 80% with additional dust palliatives, watering and/or vacuuming.

***On-site Vehicle Exhaust and Road Dust Emissions*.** Twenty-six ton trailer highway trucks pick-up crushed gypsum for cement production and other uses and access the site via State Highway 78 and Split Mountain Road. Currently approximately 30 trucks pick up material onsite daily based on 250 days per year. There is no change in this number expected with the proposed project. In addition, it is estimated that 20 employee and six miscellaneous trips are made daily. The onsite travel distance is approximately two miles round trip on an unpaved and graveled road that is water sprayed as needed to reduce dust.

Transport truck and employee vehicle exhausts were estimated based on vehicle miles traveled onsite at an estimated speed of 15 mph utilizing California model EMFAC2000 for emission factors. These emissions are estimated for the pre-project and post-project operations in Appendix D3 and summarized in Table 3.6-12 in Section 3.6.3. Dust from the access road is included Table 3.6-7.

3.6.2.8 Construction and Operation of the Quarry Water Supply Pipeline

Proposed Quarry Well No. 3 and its associated water pipeline would allow USG to continue dust suppression activities at the Quarry, as mandated by ICAPCD permit conditions, utilizing this new water source. The proposed well site represents approximately 1/8 acre on USG property and the associated water pipeline and power line would require a construction in an alignment 30-foot wide by approximately three miles long to the onsite Quarry water tank. The alignment would be within the existing right-of-way already disturbed by the railroad tracks and the access road adjacent to the tracks.

The construction of the water pipeline would require approximately ten weeks and would typically utilize backhoes, a trencher, grader, dozer, and dump, as well as supply and water trucks. About 1,500 feet of trench, about one acre, would be active at any one time. Three acres are assumed active for the dust emissions with 50% control with water spraying. Daily and total pipeline construction emissions are shown in Table 3.6-8. There would be negligible operational emissions associated with its operation and maintenance.

TABLE 3.6-8
PLASTER CITY QUARRY AND PLANT WATER PIPELINE
CONSTRUCTION EMISSIONS ESTIMATES

	CO	NO_x	PM_{10}	SO_x	VOC
Daily Construction Emissions (Pounds/Day)	22.0	70.4	74.5	6.9	8.5
Quarry Pipeline (50 days of construction) (in tons)	0.55	1.76	1.86	0.17	0.21
Plant Pipeline (100 days of construction) (in tons)	1.10	3.52	3.73	0.35	0.43
Thresholds of Significance (tons/year)	**25**	**25**	**25**	**25**	**25**
Significant for either pipeline?	**No**	**No**	**No**	**No**	**No**

Note that this table also includes emission estimates for the Plant pipeline since daily construction emissions are expected to be similar for either project. The length of construction is roughly double for the longer Plant pipeline.

3.6.2.9 Plaster City Plant Operations

Stationary Source Emissions. The Plant expansion/modernization involved the construction and operation of a new wallboard line (Line No. 3). Once this Plant was operational, one of the existing manufacturing lines (Line No. 2) was shut down. Emissions from the pre-project and post-project operations of the Plant have been estimated on the basis of permits issued to the facility through 2000 that were discussed above. Figure 3.6-4 is a detailed map of the Plant showing the removed and added point emissions sources.

In addition, USG may install a 14.4 MW natural gas-fired turbine and electrical cogeneration unit on the west side of the Plant (refer to Figure 3.6-4). 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. Emissions based on the reduction of the heat required of the No. 3 kiln, which burns at a higher emission rate compared to the cogeneration unit emissions with BACT, are included in Table 3.6-9. Detailed emission calculations for the cogeneration unit and the emissions reduction for the No. 3 kiln are included in Appendix D3, Table 9.

TABLE 3.6-9
PLASTER CITY PLANT STATIONARY SOURCES
AIR EMISSIONS ESTIMATES
POTENTIAL TO EMIT (TONS PER YEAR)

Operation	CO	NO_x	PM_{10}	SO_x	VOC
Pre-Project (1998)	171.45	99.86	11.40[1] 138.87[2] 105.1[3]	0.72	10.29
Post-Project (2002)	266.93	142.57	21.46[1] 177.54[2] 21.0[3]	1.46	15.12
Post-Project with Cogen	260.68	143.95	Negligible Change	1.46	17.49
Change (between 1998 and Post-Project with Cogen)	**+89.23**	**+44.09**	**-35.37**	**+0.74**	**+7.20**
Emission Reduction Credits	---	-65.14	---	---	---
Net Emissions	**+89.23**	**-21.05**	**-35.37**	**+0.74**	**+7.20**

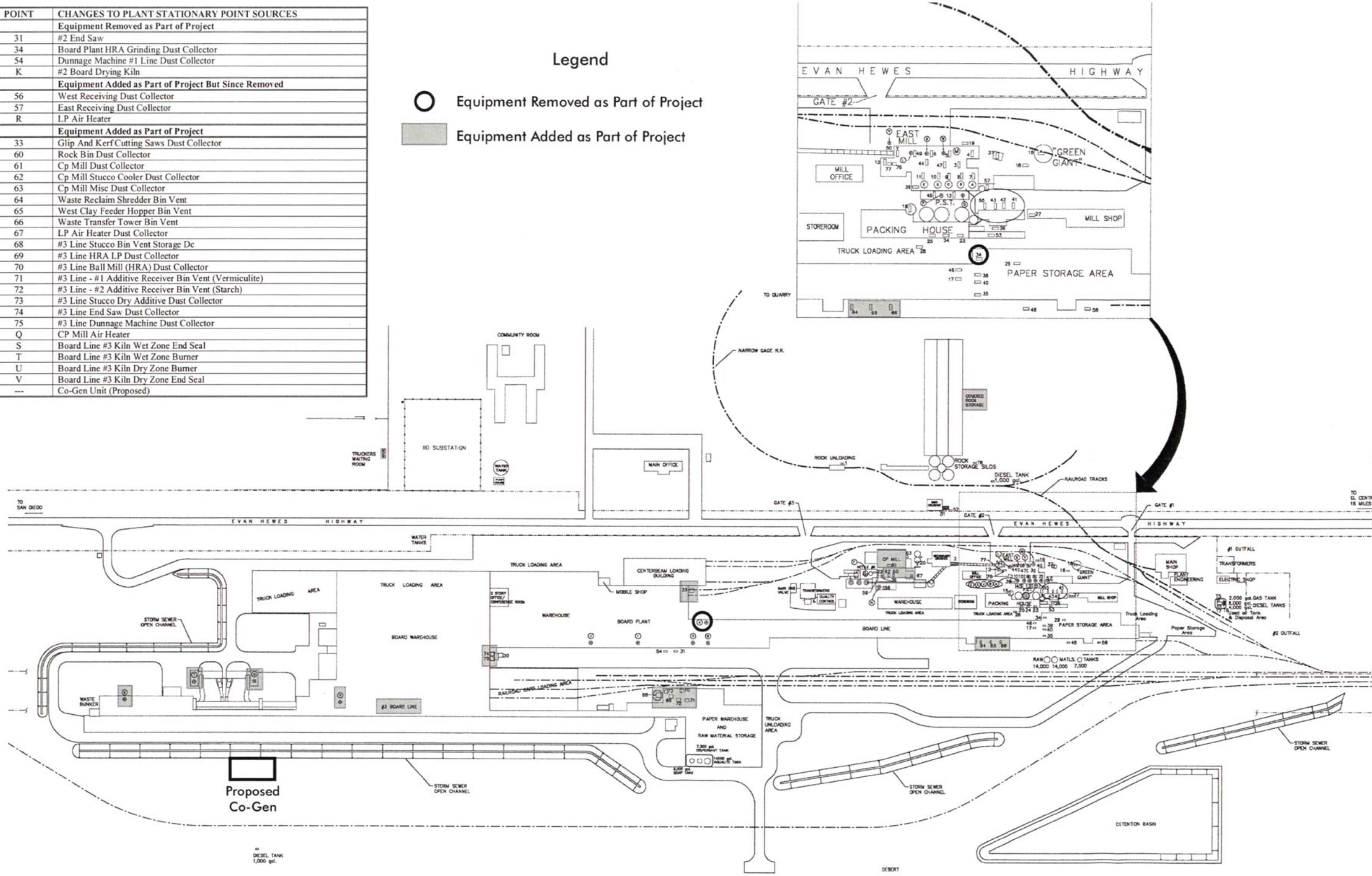
Source: USG, 2003; Air Quality Permits, Title V Report, 2001.
Notes: 1 – Combustion sources of PM_{10}
2 – Point Sources of PM_{10}
3 – Rock Storage Area source of PM_{10}

POINT	CHANGES TO PLANT STATIONARY POINT SOURCES
	Equipment Removed as Part of Project
31	#2 End Saw
34	Board Plant HRA Grinding Dust Collector
54	Dunnage Machine #1 Line Dust Collector
K	#2 Board Drying Kiln
	Equipment Added as Part of Project But Since Removed
56	West Receiving Dust Collector
57	East Receiving Dust Collector
R	LP Air Heater
	Equipment Added as Part of Project
33	Glip And Kerf Cutting Saws Dust Collector
60	Rock Bin Dust Collector
61	Cp Mill Dust Collector
62	Cp Mill Stucco Cooler Dust Collector
63	Cp Mill Misc Dust Collector
64	Waste Reclaim Shredder Bin Vent
65	West Clay Feeder Hopper Bin Vent
66	Waste Transfer Tower Bin Vent
67	LP Air Heater Dust Collector
68	#3 Line Stucco Bin Vent Storage Dc
69	#3 Line HRA LP Dust Collector
70	#3 Line Ball Mill (HRA) Dust Collector
71	#3 Line - #1 Additive Receiver Bin Vent (Vermiculite)
72	#3 Line - #2 Additive Receiver Bin Vent (Starch)
73	#3 Line Stucco Dry Additive Dust Collector
74	#3 Line End Saw Dust Collector
75	#3 Line Dunnage Machine Dust Collector
Q	CP Mill Air Heater
S	Board Line #3 Kiln Wet Zone End Seal
T	Board Line #3 Kiln Wet Zone Burner
U	Board Line #3 Kiln Dry Zone Burner
V	Board Line #3 Kiln Dry Zone End Seal
---	Co-Gen Unit (Proposed)

Legend

Equipment Removed as Part of Project

Equipment Added as Part of Project



Source: U.S. Gypsum Company

Figure 3.6-4
Stationary Sources at Plaster City Plant
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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The processing of the raw gypsum to manufacture wallboard involves rock crushing, milling, calcining/drying, cutting, material handling and storage. In order to produce gypsum wallboard, sized gypsum rock is crushed in a heated roller mill and conveyed to a second roller mill for additional grinding. The ground material is fed to kettle calciners, where it is heated to remove chemically bound water to form stucco. In the kettle calciners, gypsum is indirectly heated by hot combustion gas passing through flues in the kettle.

The stucco product is mixed with dry additives, water, soap foam, accelerators, and shredded paper in a mixer at the head of the board line. The slurry is then spread between two paper sheets. As the board travels the length of the conveying line, the stucco combines with the water in the slurry to form solid gypsum resulting in a rigid board. The board is rough cut to length and enters a multi-deck kiln dryer where it is dried by direct contact with hot combustion gases. The dried board is then conveyed to a sawing area where it is trimmed and bundled for shipment.

Emissions from milling and conveying operations consist of particulates and these are controlled by use of enclosures, pulse jet dust collectors, and fabric filters. Emissions from drying and calcining consist of gaseous emissions consisting mainly of NO_x and CO with trace amounts of particulate, sulfur dioxide and volatile organic compounds. The largest sources of gaseous emissions are the drying kiln and the integrated mill. The later includes the flash calcining unit. The post-project kiln has four (4) low NO_x burners with a total rating of 226 million BTUs per hour (MMBtu/hr). Combustion exhaust is released through a single stack. The integrated mill has an 86-MMBtu/hr natural gas fired burner with flue gas recirculation.

With the potential installation of the cogeneration unit as described, the amount of heat required by the No. 3 kiln would be reduced by approximately by 70.5 MMBtu/hr to 155.5 MMBtu/hr. The proposed cogeneration unit would use 127.4 MMBtu/hr increasing total gas use by 56.9 MMBtu/hour. However, the emission factors for the cogeneration unit are less per MMBtu burned for NO_x and CO due to the application of BACT and the recirculation of the heat exhaust into the kiln. This results in emissions from the increased amount of natural gas consumed by the cogeneration unit to be mostly offset by the reduction in the emissions from the kiln. NO_x emissions would increase by approximately 1.38 TPY and VOC emissions would increase by 3.91 TPY. CO, PM_{10}, SO_x emissions would decrease by 6.25 TPY, 3.17 TPY, and 0.19 TPY, respectively.

In addition, as part of the Proposed Action, the gypsum rock storage area was enclosed to reduce wind-blown dust from the open rock stockpile, reducing PM_{10} by over 84 TPY.

A summary of emissions from the pre-project, post-project, and post-project with cogeneration operations is listed in Table 3.6-9, Plaster City Plant, Stationary Sources Emissions. Substantial increases are estimated for NO_x and CO while PM_{10} emissions decrease due to the enclosure of the previously open rock storage area. NO_x emissions are offset by purchased ERCs as discussed in Section 3.6.3 below.

<u>Mobile Source Emissions.</u> Vehicle and equipment exhaust emissions, both onsite and offsite, constitute this category, which includes exhaust from forklifts, highway vehicles, locomotives, various utility trucks, vacuum and water trucks, and a backhoe. The Plant operation principally uses forklifts to move and load wallboard. Though the Plant operates 24 hours per day, 365 days per year, offsite rail and truck shipping occurs only five days per week.

The typical equipment used onsite for the pre-project and post-project are listed in Tables 10 and 11 in Appendix D3. Engine exhaust emissions from onsite mobile sources were estimated using typical equipment onsite, hours of operations, and emission factors from SCAQMD and CARB sources.

Offsite mobile source emissions include the change in trucking and rail usage between the pre-project and post-project operations from the Plant. The pre-project shipping operations at the Plant included shipping of board, packing material, raw material, and crushed rock. The packing material and rock operations are now shut down. Based on shipping records from 1998 and 2004, the total number of trucks increased on average from approximately 98 trucks per day in 1998 to 120 trucks per day in 2004 or an increase of 22 trucks per day. The majority of these trucks travel west on I-8 to San Diego and the Los Angeles areas while approximately 20 percent travel east and minor numbers north and south. Offsite truck emissions were estimated utilizing truck emission factors from CARB's EMFAC 2002 model in the year 2005 and miles driven within the basin. These emissions are included in Table 3.6-10 below as Offsite Mobile Emissions.

Shipments are also made via rail cars. Approximately 121 rail cars were shipped per week or 24 per day in 1998. The number of rail cars has decreased to 100 per week or 20 per day in 2004 due primarily to the shutdown of rock shipping and a reduction of stucco shipping. Rail cars are picked up and empty cars dropped off daily by a

TABLE 3.6-10
PLASTER CITY PLANT
ESTIMATED AIR POLLUTANT EMISSIONS
PRE-PROJECT AND POST-PROJECT OPERATIONS (WITH COGEN)
(BASED ON 24 HOURS/DAY; 365 DAYS/YEAR)
(TONS PER YEAR)

	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project
	NO_x		CO		SOx		PM_{10}		VOC	
SOURCE										
Stationary Sources	99.86	132.79	171.45	244.18	0.72	1.46	150.27	199.00	10.29	13.58
Cogenerator	---	11.16	---	13.50	---	Negl	---	Negl	---	3.91
Plant Mobile Equipment	23.45	36.02	13.98	20.73	4.41	6.88	3.05	4.24	2.56	3.99
Rock Storage Dust	---	---	---	---	---	---	105.1	21.0	---	---
Offsite Mobile Vehicles	20.29	24.65	15.13	18.38	0.18	0.22	0.67	0.81	2.13	2.59
Emission Totals	**143.60**	**204.62**	**200.56**	**296.79**	**5.31**	**8.56**	**259.09**	**225.05**	**14.98**	**24.07**
Emission Change	**+61.02 (-4.12 with ERCs of 65.14)**		**+96.23**		**+3.25**		**-34.04**		**+9.09**	
CEQA Thresholds	**25**		**25**		**25**		**25**		**25**	
Significant?	**No**		**Yes**		**No**		**No**		**No**	

commercial rail company. These cars are moved onsite by a switch engine that operates approximately 3 to 4 hours per day. Based on the slight decrease in the rail cars now being shipped compared to 1998, it is determined that there is no substantial change to air quality emissions from the shipping of material by rail.

Emissions for the pre-project and post-project operations for Plant operations are summarized in Table 3.6-10.

Fugitive Dust Emissions. The major source of fugitive dust at the Plant site was the open rock storage area. The open storage of gypsum rock was discontinued and rock is now stored in an enclosed building (see Permit #2834C). Dust emissions from the building cannot exceed 15-percent opacity exceeding 3 minutes in any one hour. Pre-project and post-project emission reductions of 84 tons per year of PM_{10} or 80 percent are shown in Table 3.6-9.

Other storage areas and the reclaiming operations are required to control opacity so as not to exceed 20 percent for more that 3 minutes in any hour.

3.6.2.10 Construction and Operation of a Replacement Water Pipeline to Plaster City Plant

USG plans to replace the existing eight-inch water pipeline that transports water from its well field near Ocotillo approximately 8.5 miles west of the Plant within an established right-of-way. The water pipeline originates at a well field just south of the I-8 freeway in Ocotillo, crosses beneath the freeway, and parallels Evan Hewes Highway to the north and east to Plaster City. The water pipeline is in or near the existing road right-of-way on the south side of the road. 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 power line.

The construction of the pipeline would require approximately 20 weeks of construction and would utilize backhoes, a trencher, grader, dozer, and dump, supply, and water trucks. About 1,500 feet of trench or about one acre would be active at any one time. Construction emissions for the construction of this line would be similar on a daily basis as the Quarry water pipeline and are shown in Table 3.6-8. There would be negligible operational emissions associated with its operation and maintenance.

3.6.2.11 Train and Locomotive Operations

USG transports gypsum from the Quarry to the Plant via a private narrow-gauge railroad line which has been in operation since the 1920s. Pre-project (1998) estimates used a typical train that consisted of up to 24 bottom dump hopper cars (though the average number of cars per train trip was about 20) with a 49.5-ton capacity per car (based on rock size), or 1,188 tons of rock per train. The pre-project number of train trips per year was between 913 based on maximum loads and 1,200 based on the annual average. The planned number of train trips under the air quality permit was 1,577 train trips per year. With added production, the post–project train trips may increase up to 1,800 annually assuming a maximum of 5 trains per day, 365 days per year. The rock capacity per car and train is estimated at 25 cars with 45-tons, or 1,125 tons of rock per train. Post-project fuel usage for the locomotives is estimated at 75 gallons per round trip.

The Plaster City Plant has two Bombardier 110-ton locomotives, both are Model DL535-E, narrow-gauge, single cab locomotives built in1982. Emissions for the locomotives are estimated for the pre-project and post-project in Table 3.6-11 based on fuel consumed and emission factors from U.S. EPA Office of Mobile Sources, "Technical Highlights – Emission Factors for Locomotives EPA420-F-051", December 1998 (refer to Appendix D3 –Table 2). Emission increases are listed for comparison with pre-project conditions, the air quality permitted emissions, and the post-project.

TABLE 3.6-11
TRAIN LOCOMOTIVE
ESTIMATED AIR POLLUTANT EMISSIONS
(TONS/YEAR)

	CO	NO_x	PM	SO_x	VOC –HC
Emission Factors[1] (lbs./1,000 gallons diesel)	59	595	15	57[2]	22
Pre-Project (90,000 gallons)	2.65	26.77	0.67	2.56	0.99
Post-Project (AQ permitted with NO_x offsets) (118,275 gallons)	3.48	35.11	0.89	3.36	1.30
Post-Project (135,000 gallons)	3.98	40.16	1.01	3.85	1.49
Increase (Pre-Project and Post-Project)	1.33	13.46	0.34	1.29	0.50
Increase(AQ permitted and Post-Project)	0.5	5.05	0.12	0.49	0.19
Thresholds of Significance	**25**	**25**	**25**	**25**	**25**
Significant?	**No**	**No**	**No**	**No**	**No**

Source: USG, 2003: see Appendix D1, Table 2 for operating data.
Notes: 1 – Emission factors source: U.S. EPA Office of Mobile Sources, Technical Highlights – Emission Factors for Locomotives EPA420-F-051, December 1998
2 – SOx emission factor based on AP-42 – Volume II: Mobile Sources

3.6.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

This section discusses the air quality impacts associated with the post-project Quarry and Plant expansion (post-No. 3 Line operations or 2002 with the proposed cogeneration unit) as compared to the existing pre-No. 3 Line operations or pre-project (1998). Emissions for the Quarry and Plant as estimated in the section above are summarized and compared to thresholds of significance for each site and then cumulatively.

3.6.3.1 Thresholds of Significance

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

- Causes or makes worse a violation of an ambient air quality standard (ICAPCD Rule 207C.5.b1);
- Interferes or delays with the attainment of any ambient air quality standard;
- Conflicts with implementation of any applicable air quality plans of the ICAPCD;
- Results in a cumulatively considerable net increase in ozone and PM_{10} which the Salton Sea Air Basin is in nonattainment;
- Causes sensitive receptors to be exposed to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.

To determine if a Project may significantly impact the ambient air quality, the ICAPCD utilizes the following net daily emissions increases as CEQA thresholds of significance. These amounts are from Rule 207C.2.a. and b. for offset requirements for a new or modified stationary source. If the potential emissions exceed these thresholds, then the project may have a significant air quality impact and requires permitting and a complete air quality analysis through the New or Modified Source Review. Note that per Rule C.2.g, offsets for CO emissions shall not be required if an applicant demonstrates to the satisfaction of the ICAPCD, pursuant to Rule 207F with respect to air quality modeling, that CO ambient air quality standards will not be violated and the CO emission increases will not cause or contribute to a violation of ambient air quality standards. If the modeling demonstrates the above, then potential impacts are considered to be less than significant for CO emissions.

- Carbon Monoxide (CO)	137 lbs/day or	25 tons/year
- Nitrogen Dioxide (NO_2)	137 lbs/day or	25 tons/year
- Particulate Matter (PM_{10})	137 lbs/day or	25 tons/year
- Sulfur Dioxide (SO_2)	137 lbs/day or	25 tons/year
- Reactive Organic Gases (ROG or VOC)	137 lbs/day or	25 tons/year

The impact of the Proposed Action on air quality is based on estimating the air pollutant emissions caused by the Quarry and Plant modernization/expansion and comparing them to the emissions at the two sites prior to the modernization/expansion. The post-project activities have been reviewed by the ICAPCD and received Permits to Operate (PTOs). Conditions of the PTOs incorporate BACT and other pollutant reduction measures including additional onsite control equipment and offsite ERCs. These reductions are included in the net emissions listed.

The changes in emissions are then compared with the significant emissions thresholds and standards above. This assessment depends on the project description, the estimated production rates provided by USG, onsite equipment and vehicles, and the number of trucks and trains transporting material per day.

In addition, the location of adjacent or nearby sensitive receptors is important to determine the potential exposure of people to emissions. The surrounding area is generally vacant, rural desert land with no sensitive receptors located within ¼ mile of the Plant site. Air quality modeling for the Plant emissions as required by the ICAPCD was conducted for potential NO_x and CO impacts offsite and modeling results are presented.

Quarry Emissions Summary

The total Quarry emissions and the net emissions increases between pre-project and post-project Quarry operations are summarized and evaluated in Table 3.6-12. Net emission increases are compared with the significant emission thresholds discussed above. Data presented in Table 3.6-12 indicates that Quarry air emissions associated with the post-project increased for all criteria pollutants except for PM_{10}. The increases for the criteria pollutants other than PM_{10} are directly related to the increased hours of mobile equipment in the quarrying and hauling of gypsum. None of these increases are greater than the ICAPCD established CEQA significance thresholds of 25 TPY.

3.6.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.6-1: Increased PM_{10} and/or Dust Emissions at Quarry

Increased quarrying and processing of gypsum at the Quarry could result in increases in PM_{10} or dust emissions, which may exceed standards of significance.

Data presented in Table 3.6-12 indicates that PM_{10} emissions decreased by over 45 tons due to the additional controls designed and constructed for the crushing, screening, and loading facility, paving of portions of the haul roads, and improved road dust control. Therefore, the post-project operations with lower PM_{10} emissions are a beneficial impact to the local air quality despite the increase in gypsum production.

TABLE 3.6-12
USG QUARRY
ESTIMATED AIR POLLUTANT EMISSIONS
PRE-PROJECT AND POST-PROJECT OPERATIONS
(BASED ON 24 HOURS/DAY; 365 DAYS/YEAR)
(TONS PER YEAR)

	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project	Pre-Project	Post-Project
	NO_x		CO		SO_x		PM_{10}		VOC	
SOURCE										
Stationary Sources	---	---	---	---	---	---	108.36	56.99	---	---
Quarry/Plant Mobile Equipment	57.75	69.23	22.11	26.44	6.04	7.21	6.02	7.34	4.03	4.88
Haul/Access Roads	---	---	---	---	---	---	92.88	58.05	---	---
Fugitive Dust Plus Blasting Emissions	0.03	0.05	0.11	0.18	---	---	121.95	160.88	---	---
Onsite Vehicles	0.29	0.29	0.55	0.55	---	---	0.02	0.02	0.06	0.06
Emission Totals	**58.07**	**69.57**	**22.77**	**27.17**	**6.04**	**7.21**	**329.23**	**283.28**	**4.09**	**4.94**
Emission Change	**+11.50**		**+4.40**		**+1.17**		**-45.95**		**+0.85**	
CEQA Thresholds	**25**		**25**		**25**		**25**		**25**	
Significant?	**No**		**No**		**No**		**No**		**No**	

Project Design Features. The Quarry and Quarry processing facilities are operated under air quality Permit #2834C as discussed in Section 3.6.2 above and included in Appendix D2. This permit was approved in September 2000 and is renewed annually. It includes designated BACT controls, emissions limitations, fugitive dust control, performance testing, control equipment operation, monitoring requirements, and reporting requirements. Specific conditions and measures to limit and monitor the expected dust emissions are summarized below and listed by the condition number:

- B.1. (and C.4.d) All belt conveyors, transfer points, or any emission control units shall be enclosed and emissions shall not exceed 7 percent opacity, as determined using EPA Method 9.
- B.4. Dust collectors shall be adequately sized to emit no more than 0.01 grains /cubic feet at standard conditions and emissions shall not exceed 7 percent opacity.
- C.3.a. USG shall asphalt or cement pave the access road from the Agri facility to the Split Mountain Railroad crossing (approximately 0.4 miles)

- C.3.b. USG shall asphalt or cement pave the unpaved distance of the haul road when the (unpaved) road distance reaches 0.25 mile +/-10 percent.
- C.3.c. USG shall maintain and prevent surface dust accumulation on paved roads.
- C.4.a. Fugitive dust from processing areas shall not exceed 20 percent opacity for a period aggregating more than 3 minutes in any one hour.
- C.4.b. Fugitive dust from facility access roads near and around crusher and rock storage and Agri facility shall be conditioned to minimize dust.
- C.4.e. Truck end dump hopper shall be enclosed on three sides and covered by a roof with a dust collection.
- D.1. USG shall submit a source test plan for approval by the APCD containing test methods for particulates, CO, and NO_x and a schedule for source testing. (Source testing and ICAPCD inspections onsite conducted in 2001 and 2002 for the Quarry and the Plant equipment are listed in Appendix D5.)

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required (the project's design features, permit conditions and ICAPCD Rules limit emissions)

Impact 3.6-2: Increased Exhaust Emissions at Quarry

Increased production of gypsum at the Quarry could result in increases in exhaust emissions from mobile equipment, which may exceed thresholds of significance.

Data presented in Table 3.6-12 indicates that the net emission change for criteria pollutants does not exceed the CEQA thresholds of significance and therefore is not considered a significant impact. There are no stationary combustion sources at the Quarry site as the crushing, screening, and load-out facilities utilize electric power. NO_x emissions related to the increased use of mobile equipment onsite amount to nearly 12 TPY, below the CEQA threshold of 25 TPY.

Mobile pollutant sources are regulated at the state level by CARB, not through the ICAPCD or local counties and cities. Diesel truck exhaust has been the focus of recent studies. The CARB recently approved a comprehensive Diesel Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel PM emissions and the associated health risk by 75 percent in 2010 and 85 percent or more by 2020. Measures to reduce diesel emissions will include:

- More stringent emission standards for new diesel fueled engines and vehicles;
- Retrofitting existing engines with particulate traps;
- Require low sulfur content in diesel fuel (note that the ICAPCD Rule 405-B.5.b requires the use of low sulfur diesel fuel which is distributed County-wide by diesel fuel suppliers and used by USG for its mobile equipment); and
- Evaluate alternatives for diesel-fueled engines and vehicles.

Mitigation for diesel emissions from equipment and trucks are embedded in the compliance for all diesel fueled engines, trucks, and equipment with the statewide CARB Diesel Reduction Plan. These measures will be implemented by CARB in phases with new rules imposed on existing and new diesel-fueled engines.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: The following mitigation measures are recommended to further limit exhaust emissions from mobile equipment:

Mitigation Measure 3.6-1a

USG shall ensure all equipment is maintained and tuned according to manufacturers specifications.

Mitigation Measure 3.6-1b

USG shall schedule production activities to minimize daily equipment operations and idling trucks.

Mitigation Measure 3.6-1c

USG shall comply with all existing and future CARB and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra low sulfur diesel fuel; and (4) use of alternative fuels or equipment.

Level of Significance After Mitigation: Less than Significant

Impact 3.6-3: Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline

Construction of the Quarry pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

Emissions from the construction of the pipeline are considered short-term as the construction period is expected to last approximately 10 weeks. Total estimated emissions for the 10-week period are shown in Table 3.6-8. None of the emissions totals exceed the standards of significance. No significant impacts are expected.

Standard construction measures to reduce dust would be utilized including the utilization of a water truck onsite to control dust in disturbed areas.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-4: Increased Combustion Emissions at Plant

Increased production of wallboard at the Plant would result in increases in combustion emissions from stationary sources including the potential cogeneration system and mobile equipment, which may exceed standards of significance.

Data presented in Table 3.6-10 indicates that the net emissions of SO_x and VOC increased by amounts less than the significance levels and therefore are not considered significant impacts. The PM_{10} emissions have a net decrease due to the additional controls designed and constructed for the facility and principally due to the enclosure of the rock storage area. Therefore, the post-project operations with respect to PM_{10} emissions would actually be a beneficial impact to the local air quality. Assessments for NO_x and CO are discussed below.

Project Design Features. The Plant facilities are operated under air quality Permit #2834C as discussed in Section 3.6.2 above and included in Appendix D2. This permit was approved in September 2000 and is renewed annually. It includes designated BACT controls, flue gas recirculation, emissions limitations, fugitive dust control, performance testing, control equipment operation, monitoring requirements, and reporting requirements. BACT for the kiln and roller mill burners are low NO_x burners (30 ppm) and NO_x limitations as specified in Tables 1 and 2 in Permit #2834C. Specific conditions and measures to limit and monitor the expected criteria pollutant emissions are summarized below and listed by the condition number:

- B.3. Total NO_x and CO emissions from point sources at Plaster City shall be less than 151 TPY and 268 TPY, respectively.
- B.5. The Emission Units listed in Table 2 (of the permit) shall not exceed the NO_x emission rates and PM_{10} grain loading set forth in Table 2 (of the permit).
- D.1. USG shall submit a source test plan for approval including a schedule for source testing for all combustion sources covered under this ATC. (Source testing and ICAPCD inspections conducted in 2001 and 2002 for the Plant are listed in Appendix D5.)

The USG air quality application for the Plant expansion/modernization was assessed by the ICAPCD. This assessment found that the NO_x and CO emissions exceeded Rule 207 emissions thresholds of 25 TPY and required additional analysis and/or offsets. Permit #2834C determined that the stationary project NO_x increases would be 54.18 tons, which must be fully offset by ERCs authorized pursuant to Rule 207 at a ratio of 1.2 ERCs to 1 unit of increase (Condition #A.2). USG purchased 65.14 tons of verified ERCs from Goldfield to comply with this condition.

The potential installation of the cogeneration unit would require permitting through the ICAPCD.

Rule 207- C.2.g states that "offsets for carbon monoxide emissions from sources located in attainment areas shall not be required if the applicant demonstrates to the satisfaction of the Air Pollution Control Officer, pursuant to Part F of this regulation (207), that carbon monoxide Ambient Air Quality Standards are not violated in the areas to be affected, and the carbon monoxide emission increases will not cause or contribute to a violation of Ambient Air Quality Standards." Therefore, USG contracted with Trinity Consultants to conduct an air dispersion modeling analysis to demonstrate that CO and NO_2 (for NO_x) emissions from the proposed sources will not cause or contribute to a violation to any applicable National Ambient Air or California Ambient Air standards. The modeling analysis report is included in Appendix D4.

In the modeled impact analysis, the maximum off-property, ground level concentrations of NO_2 and CO were calculated for comparison to the corresponding NAAQS and CAAQS levels. Maximum concentrations were calculated to cover a region from the fence line or site property line extending 10 kilometers or over 6 miles in all directions. Figure 3.6-5 shows the results of the modeling. All project related maximum concentrations for NO_2 and CO with background levels are below the NAAQS and CAAQS. Concentration plots showing the maximum one-hour average concentration of NO_2, the maximum annual average of NO_2, the maximum one-hour average concentration of CO, and the maximum 8-hour average of CO are included as Figures 3.6-6, 7, 8, and 9, respectively.

Based on the air quality modeling results, NO_x and CO will not cause or contribute to a violation of any applicable NAAQS or CAAQS. In addition, the NO_x emissions were offset by the purchase of ERCs in the amount required by Permit #2834C. Therefore, impacts from NO_x and CO are determined to be less than significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required. The Plant combustion emissions are determined to be less than significant. However, the following measures are recommended to verify continued compliance:

USG must maintain and annually renew existing air quality permits to operate from the ICAPCD and be in compliance with such permits.

If a cogeneration unit is installed it shall be permitted through the ICAPCD and shall be in compliance with all applicable ICAPCD rules and regulations.

Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant

Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.

Data presented in Table 3.6-10 indicates that PM_{10} emissions decreased by over 34 TPY despite the increase in production. The principle decrease is related to the construction of the rock storage building, which enclosed the previously open gypsum rock stockpile. Reductions of PM_{10} for this facility were estimated at over 84 TPY. Therefore, the post-project operations have lower PM_{10} emissions and is a beneficial impact to the local air quality.

Project Design Features. The Plant facilities are operated under air quality Permit #2834C as discussed above. Specific conditions and measures to limit and monitor the expected dust emissions are summarized below and listed by the condition number:

- B.1. All belt conveyors, transfer points, or any emission control units serving the third line, with the exception of the IMCU (Integrated Milling Calcining Unit), shall be enclosed and emissions shall not exceed 7 percent opacity, as determined using EPA Method 9.
- B.2. The IMCU shall be enclosed and emissions shall not exceed 10 percent opacity, as determined using USEPA Method 9.
- B.4. Dust collectors shall be adequately sized to emit no more than 0.01 grains /cubic feet at standard conditions and emissions shall not exceed 7 percent opacity.
- C.1. The open storage of gypsum rock is prohibited. The raw gypsum shall be stored within an enclosed building that reduces fugitive gypsum dust caused by wind erosion, rock pile movements or any activity that produces significant amounts of fugitive gypsum dust. Gypsum dust shall not exceed 15 percent opacity from the building for a period or periods aggregating more than 3 minutes in any one hour.
- C.2. Fugitive dust from storage or reclaiming operations shall not exceed 20 percent opacity for a period or periods aggregating more than 3 minutes in any one hour.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-6: Increased PM_{10} and/or Dust Emissions at 10" Replacement Pipeline

Replacement of the Plant water supply pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

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

Source: Trinity Consultants, 1999

Figure 3.6-5
Maximum Modeled Concentrations of No2 (for NOx) and CO
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

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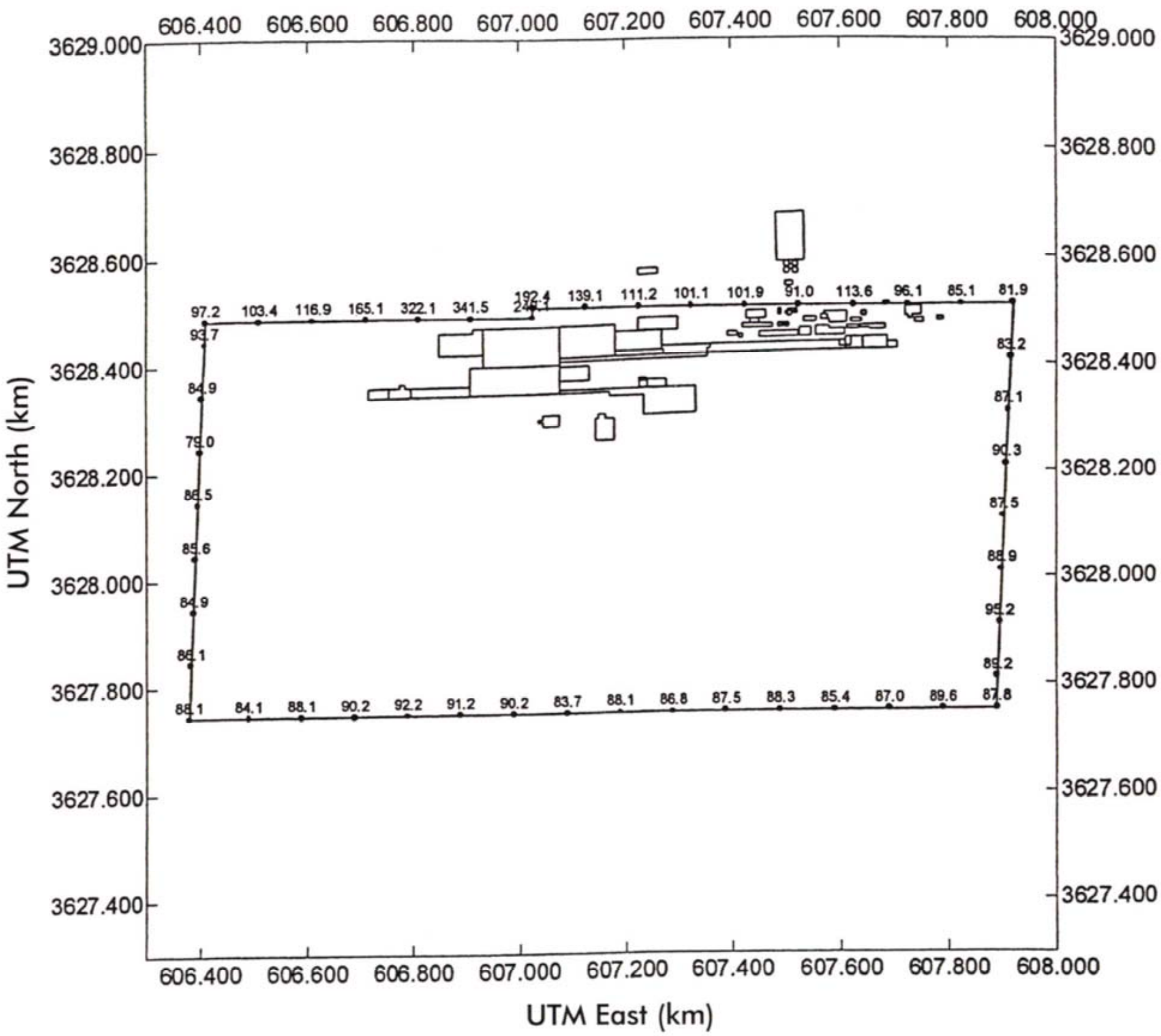
MAXIMUM 1-HOUR AVERAGE NO_2 CONCENTRATIONS (INCLUDES 73.3 $\mu G/M^3$ BACKGROUND) FOR 1956 - FENCELINE GRID. (CAAQS STANDARD = 470 $\mu G/M^3$)



Concentrations shown in micrograms per cubic meter

NP56ST1

Source: Trinity Consultants, 1999

Figure 3.6-6
Maximum 1 Hour Average No2 Concentrations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

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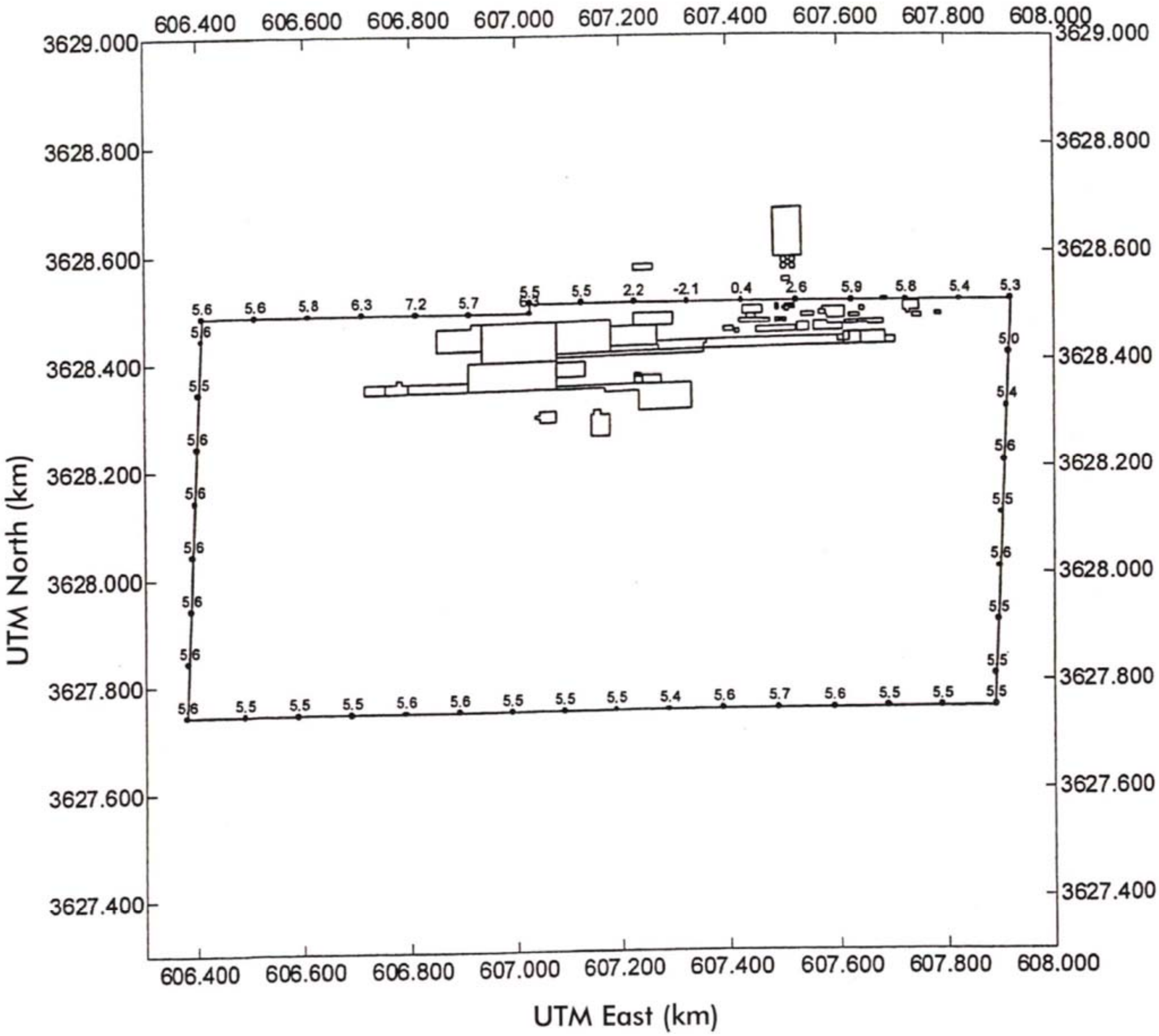
MAXIMUM ANNUAL AVERAGE NO_2 CONCENTRATIONS (INCLUDES 5.6 μG/M^3 BACKGROUND) FOR 1956 - FENCELINE GRID. (NAAQS STANDARD = 100 μG/M^3)



Concentrations shown in micrograms per cubic meter

NP56STA

Source: Trinity Consultants, 1999

Figure 3.6-7
Maximum Annual Average No2 Concentrations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.

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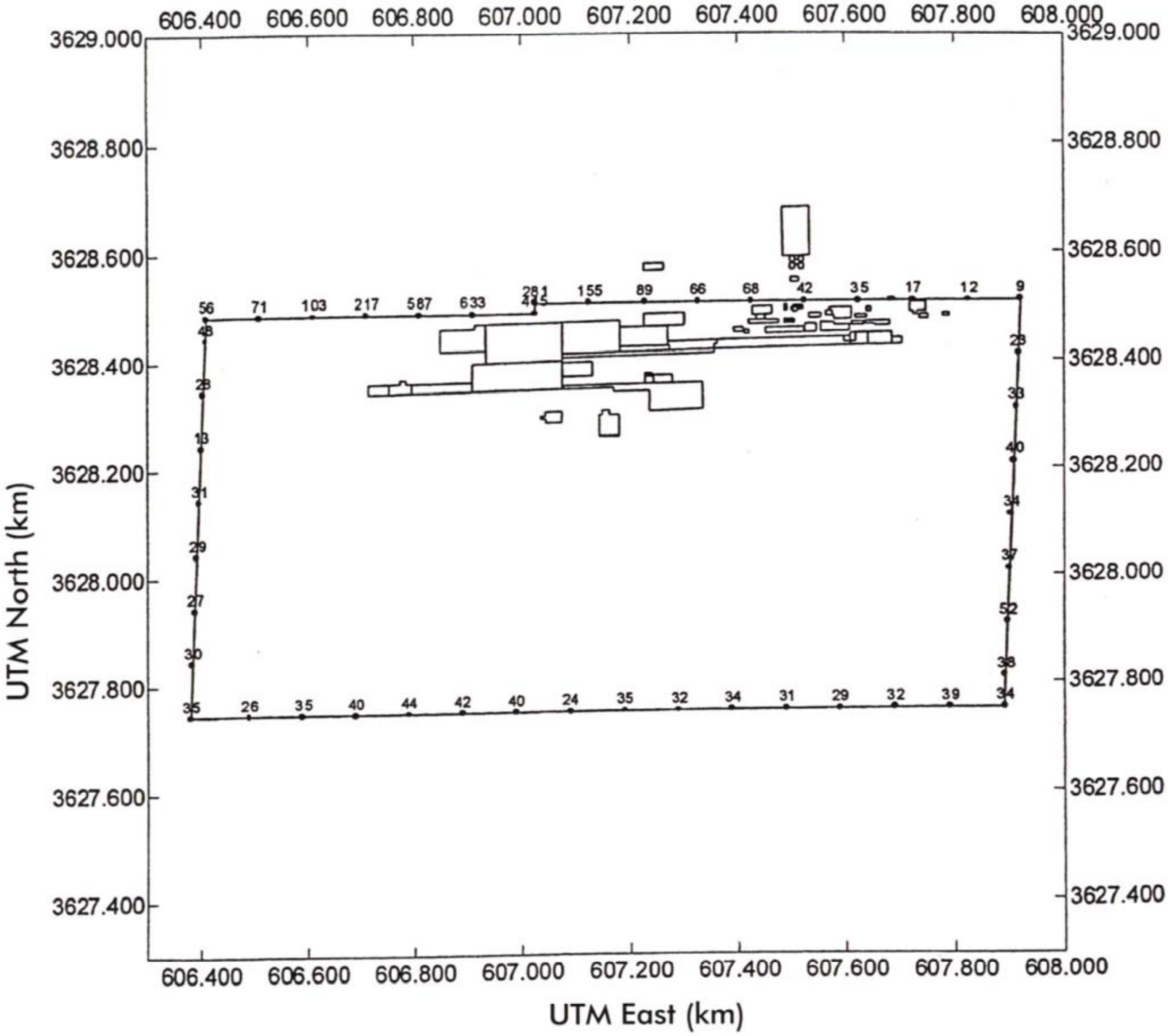
MAXIMUM 1-HOUR AVERAGE CO CONCENTRATIONS FOR 1956 - FENCELINE GRID. (CAAQS STANDARD = 23,000 μG/M³)



Concentrations shown in micrograms per cubic meter

CP56ST1

Source: Trinity Consultants, 1999

Figure 3.6-8
Maximum 1 Hour Average CO Concentrations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.

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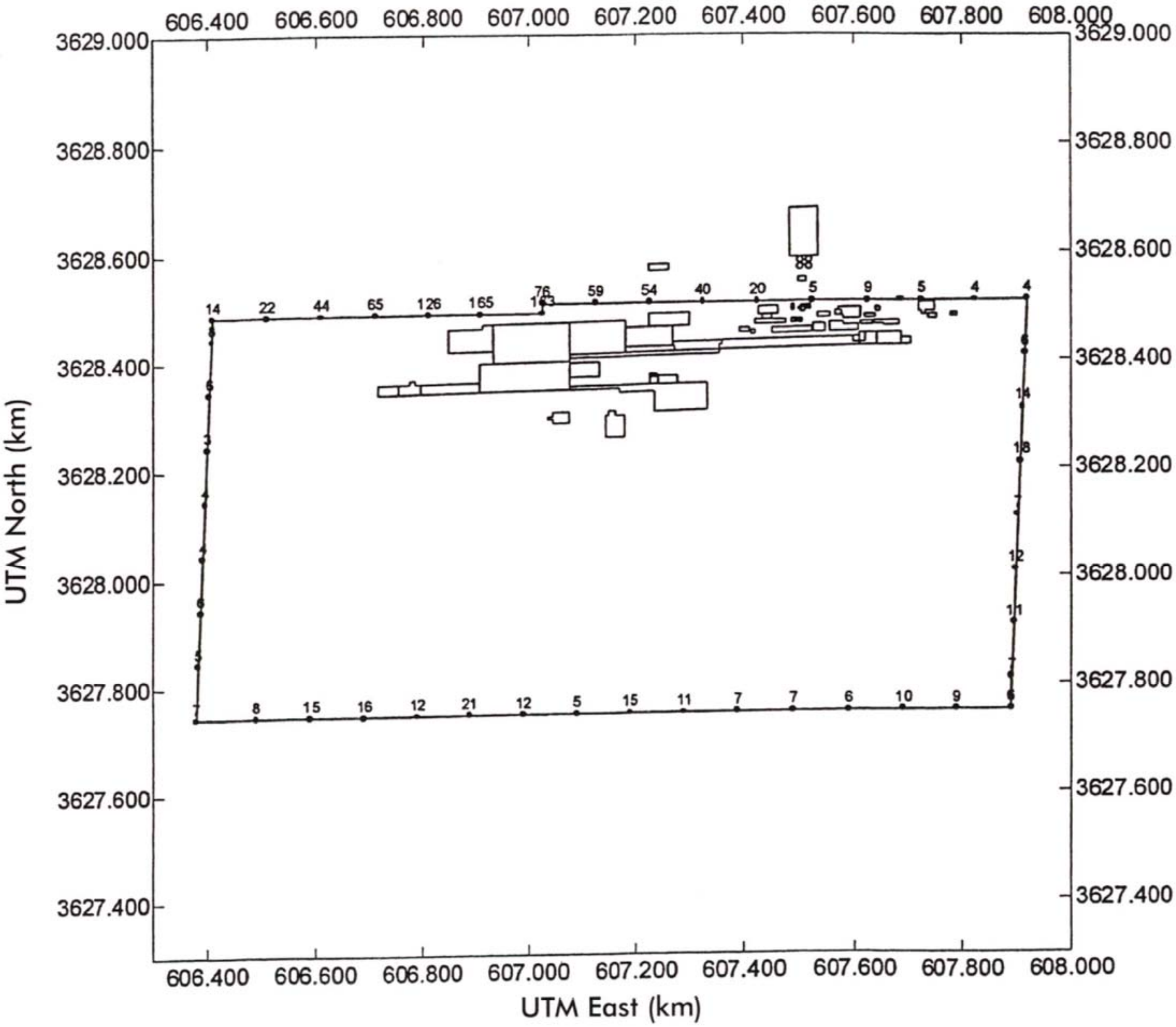
MAXIMUM 8-HOUR AVERAGE CO CONCENTRATIONS FOR 1956 - FENCELINE GRID. (CAAQS STANDARD = 10,000 μG/M^3)



Concentrations shown in micrograms per cubic meter

CP56ST8

Source: Trinity Consultants, 1999

Figure 3.6-9
Maximum 8 Hour Average CO Concentrations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.

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Emissions from the replacement of the existing pipeline are short-term emissions as the construction period is expected to last approximately 20 weeks. Total estimated emissions for the 20-week period are shown in Table 3.6-8. None of the emissions totals exceed the standards of significance. No significant impacts are expected.

Standard construction measures to reduce dust would be utilized including the utilization of a water truck onsite to control dust in disturbed areas.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-7: Increased Exhaust Emissions Along Railroad Right-of-Way

Increased number of train trips to and from the Quarry and resulting diesel locomotive exhaust emissions may exceed standards of significance.

Data presented in Table 3.6-11 shows emissions from the pre-project (1,200 trips), the planned number of trips under the air quality permit (1,588 trips), and the number of trips in the Proposed Action (1,800) and the corresponding fuel consumption. The net exhaust emissions changes for the diesel locomotives for criteria pollutants between the pre-project and the post-project do not exceed the CEQA thresholds of significance and therefore are not considered a significant impact.

NO_x emissions from the locomotive were evaluated as part of the air quality assessment for the overall modernization proposed under Permit #2834. The ERC of 65.14 tons of NO_x required by this permit included the increase in train trips to 1,588 and a corresponding increase in NO_x of about 5 tons. The Proposed Action request of up to 1,800 trips annually would add another 8.4 tpy of NO_x. This increase is still below the level of significance.

In 2000, the EPA established requirements for locomotive exhaust with respect to NO_x, hydrocarbons, CO, particulate matter, and smoke (EPA, 40 CFR Part 92, September 1999). Diesel locomotives manufactured or remanufactured are required to meet specific emission rates depending on the year they were built. When USG either remanufactures or purchases new locomotives in the future, the new or remanufactured locomotives must meet emission standards applicable at that time.

When, in the future, the locomotives are remanufactured or new locomotives are purchased, USG will need to comply with the emission standards applicable at that time for locomotives.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.6.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.6-1: Increased PM_{10} and/or Dust Emissions at Quarry

Increased quarrying and processing of gypsum at the Quarry could result in increases in PM_{10} *or dust emissions, which may exceed standards of significance.*

Under the No Action Alternative the increased mining and processing of gypsum would not occur nor would there be related increased in PM_{10}.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-2: Increase Exhaust Emissions at Quarry

Increased production of gypsum at the Quarry could result in increases in exhaust emissions for mobile equipment, which may exceed standards of significance.

Under the No Action Alternative the number of trains would not increase, therefore there would be no increase in locomotive exhaust emissions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-3: Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline

Construction of the Quarry pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

Under the No Action Alternative the construction of the Quarry pipeline would not occur nor would there be related increases in PM_{10} emissions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-4: Increased Combustion Emissions at Plant

Increased production of wallboard at the Plant would result in increases in combustion emissions from stationary sources including the potential cogeneration system and mobile equipment, which may exceed standards of significance.

Under the No Action Alternative production of wallboard would not increase, therefore there would not be an increase in combustion emissions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant

Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.

Under the No Action Alternative production of wallboard at the Plant would not increase, therefore there would not be an increase in PM_{10} or dust emissions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-6: Increased PM_{10} and/or Dust Emissions at 10” Replacement Pipeline

Replacement of the Plant water supply pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

Under the No Action Alternative construction of the water pipeline would not occur, therefore there would be no increase in exhaust or PM_{10} emissions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-7: Increased Exhaust Emissions at Railroad Right-of-Way

Increased number of train trips to and from the Quarry and resulting diesel locomotive exhaust emissions may exceed standards of significance.

Under the No Action Alternative the number of train trips will not increase, therefore exhaust emissions will not exceed the standards of significance.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.6.3.4 Partial IID Water Supply Alternative

Impact 3.6-1: Increased PM_{10} and/or Dust Emissions at Quarry

Increased quarrying and processing of gypsum at the Quarry could result in increases in PM_{10} or dust emissions, which may exceed standards of significance.

The Partial Imperial Irrigation District Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Increases in PM_{10} or dust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-2: Increased Exhaust Emissions at Quarry

Increased production of gypsum at the Quarry could result in increases in exhaust emissions for mobile equipment, which may exceed standards of significance.

The Partial Imperial Irrigation District Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Increases in mobile equipment exhaust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measures 3.6-1a-c)

Level of Significance After Mitigation: Less than Significant

Impact 3.6-3: Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline

Construction of the Quarry pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

The Partial Imperial Irrigation District Water Supply Alternative would not change activities associated with the Quarry pipeline development as compared to the Proposed Action. Increases in PM_{10} or dust emissions would be identical to the Proposed Action. As these are short-term impacts, none exceed the standards of significance.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-4: Increased Combustion Emissions at Plant

Increased production of wallboard at the Plant would result in increases in combustion emissions from stationary sources including the potential cogeneration system and mobile equipment, which may exceed standards of significance.

The Partial Imperial Irrigation District Water Supply Alternative would not change activities at the Plant as compared to the Proposed Action. Increases in combustion emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant

Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.

The Partial Imperial Irrigation District Water Supply Alternative would not change the planned increases in production of wallboard, as compared to the Proposed Action. Increases in PM_{10} or dust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-6: Increased PM_{10} and/or Dust Emissions at 10" Replacement Pipeline

Construction of the supplemental Plant water supply pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

The Partial IID Water Supply Alternative would require construction of a five mile pipeline between the Plant and the West Side Main Canal. The emissions from the construction of this pipeline are considered short-term emissions as the construction is expected to last less than 10-12 weeks. Implementation of this alternative would not significantly increase PM_{10} or dust emissions as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-7: Increased Exhaust Emissions at Railroad Right-of-Way

Increased number of train trips to and from the Quarry and resulting diesel locomotive exhaust emissions may exceed standards of significance.

The Partial IID Water Supply Alternative would involve an increase in the number of trains identical to that of the Proposed Action. Increases in locomotive exhaust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.6.3.5 Full IID Water Supply Alternative

Impact 3.6-1: Increased PM_{10} and/or Dust Emissions at Quarry

Increased quarrying and processing of gypsum at the Quarry could result in increases in PM_{10} or dust emissions, which may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Increases in PM_{10} and dust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-2: Increased Exhaust Emissions at Quarry

Increased production of gypsum at the Quarry could result in increases in exhaust emissions for mobile equipment, which may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would not change activities at the Quarry as compared to the Proposed Action. Increases in mobile equipment exhaust would be identical to the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation measures 3.6-2a-c)

Level of Significance After Mitigation: Less than Significant

Impact 3.6-3: Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline

Construction of the Quarry pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would not change activities associated with the Quarry pipeline development as compared to the Proposed Action. Increases in PM_{10} and dust emissions would be identical to the Proposed Action. As these items are short-term impacts, none exceed the standards of significance.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-4: Increased Combustion Emissions at Plant

Increased production of wallboard at the Plant would result in increases in combustion emissions from stationary sources including the potential cogeneration system and mobile equipment, which may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would not change activities at the Plant as compared to the Proposed Action. Increases in combustion emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant

Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would not change the planned increases in production of wallboard, activities at the Quarry as compared to the Proposed Action. Increases in PM_{10} and dust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-6: Increased PM_{10} and/or Dust Emissions at 10" Replacement Pipeline

Construction of the supplemental Plant water supply pipeline could result in increased exhaust and PM_{10} emissions, which may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would require development of a canal water alignment. Increases in PM_{10} and dust emissions would be similar to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.6-7: Increased Exhaust Emissions at Railroad Right-of-Way

Increased number of train trips to and from the Quarry and resulting diesel locomotive exhaust emissions may exceed standards of significance.

The Full Imperial Irrigation District Water Supply Alternative would involve an increase in the number of trains identical to that of the Proposed Action. Increases in PM_{10} and dust emissions would be identical to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.6.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Proposed Action that could have a significant effect on air quality.

The cumulative air quality impacts of the Proposed Action as a whole, that is, the pollutant emissions from operations at the Plaster City Plant and the Quarry including stationary and mobile sources, the cogenerator, and the train locomotives are listed in Table 3.6-13. NO_x, SO_x, and VOC emissions are below the CEQA thresholds. NO_x emissions include the ERCs offset required by ICAPCD Permit #2834C. PM_{10} emissions show a net decrease of nearly 80 tons per year due to the increased dust control measures added to the Plant and Quarry operations. As discussed above in Section 3.6.3.1, CO emissions exceed the 25 ton per year CEQA threshold but were shown by modeling to not cause or contribute to a violation of any applicable NAAQS or CAAQS. Therefore, the CO emissions increases constitute a less than significant impact.

Level of Significance Before Mitigation: Less than Significant

TABLE 3.6-13
USG QUARRY AND PLASTER CITY PLANT
CUMULATIVE NET EMISSIONS
STATIONARY, MOBILE, AND FUGITIVE
PRE-PROJECT AND POST-PROJECT OPERATIONS
(TONS PER YEAR)

SOURCES	CO	NO_x	PM_{10}	SO_x	VOC
Quarry Sources	4.40	11.50	-45.95	1.17	0.85
Plant Sources	96.23	-4.12	-34.04	3.25	9.09
Locomotive	1.33	13.46	0.34	1.29	0.50
Emission Change	**101.96**	**20.84**	**-79.65**	**5.71**	**10.44**
CEQA Thresholds	**25**	**25**	**25**	**25**	**25**
Significant?	**No**	**No**	**No**	**No**	**No**

Mitigation Measures: None required

3.7 VISUAL RESOURCES

3.7 VISUAL RESOURCES

3.7.1 Introduction

This section provides a discussion of existing aesthetic resources at both the Quarry and the Plant, and identifies the potential impacts the Proposed Action may have on those resources, and any mitigation measures that may be required. The following information is based on a report entitled *Visual Analysis for the U.S. Gypsum Company Expansion/Modernization Project* prepared by Lilburn Corporation in September 2004. (See Appendix F). The analysis was conducted using the BLM's Visual Resource Management (VRM) Program guidelines.

3.7.2 Affected Environment

3.7.2.1 Area Characteristics

Both the Plant and the Quarry are located in western Imperial County in the Borrego Valley – West Mesa subsection of the Colorado Desert (sometimes called the Salton Trough). This subsection encompasses the Clark and Borrego Valleys, West Mesa, and Yuha Desert and is on the southwest side of the Imperial Valley. The area is known for its very hot arid climate.

The region is mainly located on very gently to moderately sloping alluvial fans, terraces, and nearly level basin floors and dry lakebeds. Also, there are some Pliocene and Pleistocene sediments that have been eroded and dissected to form "badlands". Clark and Borrego Valleys are aligned in a northwesterly trend, along the San Jacinto and Coyote Creek Faults. The elevation range is from about – 230 feet on the shore of the Salton Sea up to about 2000 feet above mean sea level. The highest elevation in the Superstition Mountains, which trend toward the northwest, is 760 feet above mean sea level.

The predominant natural plant communities are Ocotillo series and Creosote bush-white bursage series and, around the Salton Sea, Allscale series. There are some small areas of fan palm series in riparian areas. Mixed saltbush series is common on basin floors.

Humans have been utilizing the area for some 10,000 years. The agricultural practices of Colorado River cultures spread throughout the area during late prehistoric times, after A.D. 1000; in just recent historic times, large areas have been converted to irrigated agriculture. The Salton Sea has become a place for retirement, recreation, and development.

3.7.2.2 Site Characteristics

Quarry

The Quarry is located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. 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 Quarry areas are bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east, the south and southwest public lands are administered by the BLM. USG's properties are located in portion 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 USGS Borrego Mountain South East Quadrangle.

Gypsum occurs throughout the site as a contiguous bed striking northwest to southeast and dipping approximately 25-35 degrees to the southwest with gypsum deposits overlying granite. There is no overburden associated with current quarrying activities of the hillside out crops.

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 including 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 plant facilities. Service and haul roads account for approximately 1.4 acres total. Figure 2.0-6 in Chapter 2.0, Project Description, shows an aerial view of existing conditions at the Quarry. Figures 2.0-11A and 2.0-11B are photographs of existing conditions from inside the Quarry site. Because the Quarry is surrounded by mountains on three sides, public views of the Quarry are limited to views from Split Mountain Road and the Fish Creek Wash that access Split Mountain Road on the north side of the Quarry.

Plant

The Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City approximately 18 miles west of El Centro, the County seat. Access to the Plan is via Evan Hewes Highway immediately north of I-8. The Plant is also located about 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 in the southwestern portion of Imperial County. It is at an elevation of approximately 100 feet above mean sea level (amsl). The existing narrow gauge rail line alignment is from the Fish Creek Mountains near the Plaster City Quarry, at about 350 feet above mean sea level, to Plaster City. It follows a northwesterly direction from the Quarry for about one mile, then turns to the east and southeast, following the alluvial fans associated with 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 feet elevation to Plaster City.

The existing Plant 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 Evan Hewes Highway to the north and east to Plaster City. 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 BLM's "Plaster City Open Area" for off-highway vehicles (OHVs), and a designated OHV staging area is located on the north side of Evan Hewes Highway west of the Plant. The Proposed Action would replace the existing water line by installing a larger line within approximately 20 feet of the existing alignment.

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).

3.7.2.3 Site Visibility

According to the BLM's VRM program, landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. Since areas that are closer have a greater effect 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 three zones are:

- **Foreground-Middleground Zone –** This is the area that can be seen from each travel route for a distance of less than three to five 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 potential public access from any other point.

Quarry

The Quarry is not accessible by the general public. In order to reach the Quarry, employees drive along SR-78 and then turn south onto Split Mountain Road, traveling south into the Quarry at the end of the 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 in the Visual Analysis (Appendix F) 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. Although recreational OHV drivers may use the area to the north of the Quarry, it is unlikely that they would see more than the Shoveler Annex. From some viewpoints in the Fish Creek Wash, viewers can see the Quarry scalehouse and process plant facilities. These facilities and the Shoveler Annex are in the middleground view and do not dominate the views of the Quarry site. Recreational visitors would also only be exposed to the Quarry views only temporarily.

Split Mountain Road is the only route in and out of the Quarry. The expansion/modernization of the Quarry would not increase the amount of traffic through this area, since the purpose of the expansion of the Quarry is to accommodate the modernization of the Plant, and material for the Plant is transported via the USG railroad between the Plant and Quarry. The development of new quarry areas would be noticeable only to those passers-by who are using the wilderness area immediately north of the Quarry.

In the Visual Analysis, Plaster City Quarry was given a Scenic Quality B Rating, which means that there is a combination of outstanding features 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. See Photo 3 on Figure 2.0-12 for an example of gypsum outcrops. Due to the angle of the Fish Creek Mountains, the majority of the Quarry is hidden from public view. Photo 1 of the Visual Analysis (Appendix F) 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 USG 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.

Plant

The two main public roads near the Plaster City Plant are Evan Hewes Highway and I-8. However, the expansion/modernization of the Plant would only result in an increase in employee traffic (through the addition of 140 jobs). The addition of developed Plant land may affect passers-by on I-8 and Evan Hewes Highway. They would only be traveling through however, and the Plant only takes up approximately a ¾-mile strip of land. Most of the surrounding desert scenery would continue to be visible.

The majority of the people viewing the Plant are USG employees. Recreational land visitors will be 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 Wells and El Centro, can see the Plant from I-8. The vicinity of the Plant site is sparsely populated and most vehicles are just passing by.

During the Visual Analysis, 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 of the Visual Analysis (Appendix F) show three various points of view along Evan Hewes Highway and I-8.

Photo 2 was taken from Evan Hewes Highway looking east, approximately 2.5 miles west of the Plant. 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. Other portions of the Plant are in the Seldom-Seen Zone. As seen in the photograph, there is a slight haze on the horizon.

Photo 3 was also taken along Evan Hewes Highway looking southeast, approximately ¾ miles west of the Plant. The IMSA is quite visible from this viewpoint, as is the fence surrounding the property. The fence and IMSA 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 two miles southeast of the Plant. 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 are barely visible within the Seldom-Seen Zone. There is the potential for the Plant and IMSA to be more visible on a clear day, but they would still remain in the Seldom-Seen Zone from this viewpoint.

3.7.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

This section evaluates the changes that would occur to the scenic quality of the surrounding area as a result of the Proposed Action. The BLM manages scenic quality by attempting to limit the landscape to standards based upon scenic quality and sensitivity of an area.

3.7.3.1 Regulatory Framework

Federal Management

The Plant and Quarry are located within the California Desert Conservation Area (CDCA). Section 601 of the Federal Land Policy Management Act (FLPMA) requires that BLM develop a plan to "…provide for the immediate and future protection and administration of the public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality."

All of the BLM-managed public lands in the CDCA (with the exception of a few small and scattered parcels) have been designated geographically into four multiple-use classes. Classification is based on the sensitivity of resources and kinds of uses within each geographic area. In the CDCA, visual resource management objectives in the multiple-use class guidelines provide the framework for determining appropriate levels of management, protection, and rehabilitation of BLM lands.

The Quarry is located mostly on private land (1640 acres) with approximately 408 acres on public land administered by the BLM. BLM Multiple-Use Class I, applicable to federal lands, provides for a wide variety of present and future intensive uses such as mining, livestock grazing, energy and utility development, and recreation. Management is also designed to conserve desert resources and to mitigate damage to those resources that permitted uses may cause.

Visual Resource Management (VRM) Analysis

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.

The VRM system uses a visual resources inventory process to provide decision-makers a means for determining the value of visual resources. This inventory process consists of the following steps which together represent the relative value of the visual resources:

- An evaluation of scenic quality;
- An analysis of the sensitivity level; and
- A delineation of distance zones.

With this information, sites are placed into one of four visual resource inventory classes. Classes I and II are of the highest value, Class III represents sites with a moderate value, and Class IV sites have the least value. The inventory classes provide the basis for considering visual values in the resource management planning process for BLM managers. This VRM system is also used to evaluate visual resources on private land that is adjacent to BLM administered lands, or lands that are currently under the administration of the BLM but that could be patented and become private lands.

Information was gathered from site visits, photographs, and existing documents including the Reclamation Plan.

Scenic Quality

Scenic quality is a measure of the visual appeal of a tract of land. In assessing the visual effect of the Proposed Action, rating scenic quality required a description of the existing scenic values in the landscape both on-site and surrounding the site. In the visual resource inventory process, lands are given a rating of A, B, or C based on the apparent scenic quality which is determined using 7 key factors. These were used in the assessment of scenic quality of the USG Plaster City Quarry, Plant, and vicinity:

- Landform
- Vegetation
- Water
- Color
- Adjacent Scenery
- Scarcity
- Cultural Modifications

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 3.7-1.

TABLE 3.7-1
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	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.	Low rolling hills, foothills, or flat valley bottoms; or few or no interesting landscape features.

	glaciers. **5**	**3**	**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**

Notes:
The Numbers that appear in the corner of each box represent the maximum number of points that can be given to or subtracted from each factor. For example, the maximum number of points that can be given to a site for Landform is 5, but based on the evaluation, the site may receive only 1 or 2 points. In the case of Cultural Modification, negative points can be assigned to a site depending on the level of development or proposed level of development that occurs on that site.

* 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.

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 3.7-1. 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 determined and assigned. These ratings are:

A – 19 or more points
B – 12 - 18 points
C – 11 or less points

The evaluation of the effects of the proposed expansion/modernization on scenic quality in the area was based on the factors identified by the BLM/VRM and specifically the criteria contained in Table 3.7-1. The following ratings in scenic quality were assigned to the Quarry and Plant through the Visual Analysis:

Quarry

Ratings were given to each of the following portions of the scenic quality inventory for the Quarry area:

Feature	Rating
Landform	3
Vegetation	3
Water	0
Color	3
Adjacent Scenery	2
Scarcity	4
Cultural Modification	-2

The overall scenic quality score for the Quarry was 13 points, giving it a B rating.

Plant

Ratings were given to each of the following portions of the scenic quality inventory for the Plant area:

Feature	Rating
Landform	1
Vegetation	2
Water	0
Color	1
Adjacent Scenery	1
Scarcity	3
Cultural Modification	-2

The overall scenic quality score for the Plant was 8 points, giving it a C rating.

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. Table 3.7-2 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.

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. Evan Hewes Highway connects to I-8 via Imperial Highway, Dunaway Road and Drew Road.

The expansion/modernization of the USG Plant would result in an increase in employment at the Plant by approximately 140 workers. After modernization is completed at the Plant, traffic would increase near the site, but remain consistent with current trends (see Section 3.11, Traffic and Circulation).

TABLE 3.7-2
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

Distance Zones

Distance Zones were previously discussed under Section 3.7.2.3, Site Visibility.

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 3.7-3 shows the basis for determining visual resources inventory classes.

TABLE 3.7-3
BASIS FOR DETERMINING VISUAL RESOURCE INVENTORY CLASSES

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="7">Visual Sensitivity Levels</td></tr>
<tr><td colspan="3">High</td><td colspan="3">Medium</td><td>Low</td></tr>
<tr><td>Special Areas</td><td></td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td><td>I</td></tr>
<tr><td rowspan="4">Scenic Quality</td><td>A</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td><td>II</td></tr>
<tr><td rowspan="2">B</td><td rowspan="2">II</td><td rowspan="2">III</td><td>III*</td><td rowspan="2">III</td><td rowspan="2">IV</td><td rowspan="2">IV</td><td rowspan="2">IV</td></tr>
<tr><td>IV*</td></tr>
<tr><td>C</td><td>III</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td><td>IV</td></tr>
<tr><td></td><td></td><td>f/m</td><td>b</td><td>s/s</td><td>f/m</td><td>b</td><td>s/s</td><td>s/s</td></tr>
<tr><td></td><td></td><td colspan="7">DISTANCE ZONES</td></tr>
</table>

*** If adjacent areas is Class III or lower, assign Class III, if higher assign Class IV.**

Objectives

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.

Quarry

The Quarry is not located within any Special Areas. It 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 most viewsheds, except for viewers with views directly into the Quarry from the Fish Creek Wash. 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 increase in quarry areas at 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. Travelers along the stretches of road that have a view of the Plant and IMSA are only impacted during the short time it takes to drive past the Plant. The Plant already exists, and 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 Plant that would add additional facilities to an existing industrial site will not significantly affect visual resources within its vicinity.

Contrast Rating Analysis

To further evaluate the effects of a proposed action using the BLM VRM system, a Contrast Rating System is used to measure the degree of contrast between the new activity and existing conditions. Table 3.7-4 presents the degree of contrast criteria. 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 3.7-4 describes the criteria for the degrees of contrast.

TABLE 3.7-4
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.

Quarry

Table 3.7-5 shows the results of the contrast rating analysis for the Quarry suing criteria identified in Table 3.7-4.

TABLE 3.7-5
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 three miles north of the site at the nearest residence, 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 Anex 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 Anex will be more visible during the morning hours when the sun reflected 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 quarrying activities are in action in this area of the Quarry, the motion of the trucks and loaders will draw more attention to the site.

Some OHV enthusiasts use the Fish Creek Wash directly north of the Quarry. These people would have middleground views of quarrying in the proposed quarries in the wash on-site, as well as some distance background views of quarrying of gypsum outcrops. It is likely that since quarrying activities have occurred on this site since the 1920s, that most OHV enthusiasts who visit the area to ride, are aware of the USG gypsum Quarry and would not be adversely affected by seeing continued quarrying activities during the life of the Proposed Action.

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 3.7-4. 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 Quarry is enclosed within the Fish Creek Mountains. Only the Shoveler Annex is visible from the surrounding area, and limited views of the existing Quarry process plant and Quarry 1A and 1B from limited viewpoints in the Fish Creek Wash. The existing landscape in the vicinity of the Quarry 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 and are arroyos and ridges, creating a jagged line on the horizon. The northern and eastern faces of the mountains also contain sections of relative 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. Likewise, because the gypsum occurs and quarrying activities have been on-going on both sides of the Quarry, views of the process plant and quarries 1A and 1B, are similar, but limited to views from the Fish Creek Wash.

In the long-term expansion of the Quarry, the degree of contrast to the land will be weak. The only noticeable difference will be 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. A revegetation plan is proposed in conjunction with the proposed reclamation plan to provide for vegetation to 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. Approximately 338 acres of the Quarry site have been disturbed by permitted quarrying activities and therefore, holds little or no vegetation. Limited rainfall at the Quarry supports a Sonoran mixed woody and succulent scrub and desert dry wash woodland. Sparse vegetation in the Quarry is further pronounced 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.

Plant density on the gypsum 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 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 proposed Reclamation Plan calls for reclaiming the Quarry to open space. Vegetation should grow again in the washes and on topsoil replaced after mining 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.

Plant

Photos 2 and 4 of the Visual Analysis (Appendix F) show two different viewpoints of the Plant. Photo 2 was taken along Evan Hewes Highway, looking east at the Plant and IMSA, from approximately 2.5 miles away. Photo 4 was taken along I-8, looking northwest at the Plant and IMSA, from approximately two miles away. The majority of the people that will regularly view the Plant are USG employees.

Table 3.7-6 shows the results of the contrast rating analysis for the Quarry using criteria identified in Table 3.7-4.

TABLE 3.7-6
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

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 Wells and El Centro will also continue 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 can and will continue to see the Plant at night after 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 3.7-4. 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. Land textures along both roads are relatively smooth. The expansion and modernization of the Plaster City 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 IMSA 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 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 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 would be considered of medium density from the viewpoint in Photo 2. The IMSA appears smooth in the viewpoint of Photo 4. As the viewer gets closer to the IMSA, its texture becomes coarser. The entire Plant site becomes more distinctive the closer the viewer. The expansion and modernization will not significantly change the visual characteristic of the landscape due to existing disturbance.

Imperial County General Plan, Scenic Highway Element

The Circulation and Scenic Highway 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:

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, grade elevation change, distinctive rock and boulder scenery and plant life variations. The Quarry is located approximately 29 miles north of this segment within a mountainous area. I-8 is not visible from the Quarry, nor is the Quarry visible from I-8. The Plant is approximately three miles north of I-8, but it is about eight miles northeast of the designated scenic highway portion of I-8. Therefore, the expansion/modernization of the Plant and expansion of the Quarry would 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 seven 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 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 stark and striking. 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, northwest of the Quarry. 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.

Imperial County General Plan

In addition, the Imperial County General Plan outlines the following goal and objective to preserve visual resources within the County:

- **Goal:** The aesthetic character of the region shall be protected and enhanced to provide a pleasing environment for residential, commercial, recreational, and tourist activity.

- **Objective:** Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape.

3.7.3.2 Thresholds of Significance

The Proposed Action would have a significant effect on visual quality if it would:

- Substantially affect a scenic area, vista, or public view
- Create visual incompatibility with surrounding land uses
- Introduce a negative visual element (e.g. create light or glare) and
- Change the visual character of the site in a manner inconsistent with BLM Visual Management Objectives

3.7.3.3 Proposed Action: Impacts and Mitigation Measures

Impact 3.7-1: Aesthetic Degradation from Lighting and Glare at Quarry

The Proposed Action could create new sources of lighting and glare at the Quarry site.

The Proposed Action would utilize the existing structures and facilities, and upgrades facilities. No changes to Quarry operating methods are proposed. The changes at the Quarry would therefore marginally increase, but not introduce new sources of light or glare at the Quarry.

The wallboard Plant expansion/modernization will not introduce new lighting to the site, but will increase the level of illumination due to expanded structures and operations. These increases would be evident to nighttime passers-by on Interstate 8. However, such lighting is not an unexpected effect of a large manufacturing facility on industrially-zoned land.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-2: Temporary and Permanent Aesthetic Degradation

Expanded Quarry areas and modernized Plant construction and operations could result in both temporary and permanent alteration of the existing aesthetics of the sites.

BLM/VRM System Conclusions

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 and modernization of the Plant will not significantly affect visual resources within its vicinity.

Scenic Highway Element Conclusions

Although there are four scenic highways within the County of Imperial, travelers on these routes would not be able to see either the Quarry or the Plant at any time. Therefore the proposed expansion and modernization of USG's Plaster City Quarry and Plant would not have an impact on any scenic highways.

Since the Plaster City 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 undertake revegetation through its existing Reclamation Plan, which will ultimately strive to reestablish vegetation throughout the Quarry, including along Shoveler Annex. No Mitigation Measure recommendations are necessary.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-3: Aesthetic Degradation at Wallboard Storage Pile

Expansion of the IMSA could alter the aesthetic character of the site, attracting attention of passers by on Interstate 8 and Evan Hewes Highway.

Under existing conditions, the IMSA consisted of a large area of off-specification wallboard and debris associated with the village formerly located at the Plant (see Chapter 2.0, Proposed Action and Alternative for an expanded discussion of the IMSA). USG has committed to reduce the size of the IMSA by annually recycling or removing approximately 100,000 cubic yards of existing material along with any new off-specification material generated by the Plant. It is anticipated to take approximately four years to recycle the material generated from the Plant post-Project. Only about half of the material in the IMSA is recyclable. The remaining material, after the recyclable material is exhausted, would be covered and capped. The post-Project off-specification material added to the IMSA should be recycled within about four years of approval of this EIR/EIS. Therefore, the visual impacts are temporary. Also, as discussed above, this area is already determined to be disturbed by existing development.

Following 15 years from the date of approval of the Proposed Action, the non-recyclable material in the IMSA will have been covered and capped in accordance with specifications of the County Public Health Department. The cover material is anticipated to be earthen and aesthetically compatible with surrounding soils.

The Plant is an industrial facility that is not designed for aesthetic compatibility with the surrounding desert environment, but is consistent with the expectation of a site planned and zoned for industrial facilities and activities. Nevertheless, the south face of the expanded IMSA stretches for approximately ¼ mile, and is readily visible from I-8. So although 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 under the BLM VRM program for the Plant site as a whole and the modernization would not result in a significant change in the color, texture, mass and contrast with the surrounding environment, the particular feature within the Plant site, the IMSA does have an adverse affect on visual resources within its vicinity because the light color and texture of this feature contrasts with the surrounding area, and is considered a negative visual element.

Level of Significance Before Mitigation: Significant

Mitigation Measures:

Mitigation Measure 3.7-1

USG shall recycle or remove 100,000 cubic yards per year of the stockpiled material, plus the additional material annually generated from Plant operations (approximately an additional 100,000 cubic yards), until covered or capped. Volumes of material generated and recycled shall be annually reported to the County.

Level of Significance After Mitigation: Less than Significant

3.7.3.4 No Action Alternative: Impacts and Mitigation Measures

Impact 3.7-1: Aesthetic Degradation from Lighting and Glare at Quarry

The Proposed Action could create new sources of lighting and glare at the Quarry site.

Under the No Action Alternative, quarrying and production activities will not increase as outlined in the Proposed Action, but will continue at pre-project levels. This baseline level of activity would not result in additional sources of lighting and glare.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-2: Temporary and Permanent Aesthetic Degradation

Expanded Quarry areas and modernized Plant construction and operations could result in both temporary and permanent alteration of the existing aesthetics of the Project.

Under the No Action Alternative, quarrying and production activities would not increase as outlined in the Proposed Action, but would continue at pre-Project levels. This baseline level of activity would not result in additional temporary and/or permanent alteration of site aesthetics.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-3: Aesthetic Degradation at Wallboard Storage Pile

Expansion of the IMSA could alter the aesthetic character of the site, attracting attention of passers-by on Interstate 8 and Evan Hewes Highway.

The No Action Alternative assumes the IMSA would not be expanded beyond baseline conditions. Conditions would therefore be identical to those for the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.7.3.5 Partial IID Water Supply Alternative

Impact 3.7-1: Aesthetic Degradation from Lighting and Glare at Quarry

The Proposed Action will create new sources of lighting and glare at the Quarry site.

The Partial IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action, therefore new sources of lighting and glare may be created as a result of increased activities at the site.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-2: Temporary and Permanent Aesthetic Degradation

Expanded Quarry areas and modernized Plant construction and operations could result in both temporary and permanent alteration of the existing aesthetics of the Project.

With the exception of the construction of the five-mile below-ground pipeline from the West Side Main Canal to the Plant, the Partial IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action. Construction of this new line will take approximately three months. Therefore impacts to the environment will be temporary in nature and not significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-3: Aesthetic Degradation at Wallboard Storage Pile

Expansion of the IMSA adjacent to the Plant could alter the aesthetic character of the site, attracting attention of passers-by on Interstate 8 and Evan Hewes Highway.

The Partial IID Water Supply Alternative would result in increased production of off-specification wallboard, identical to the Proposed Action. These changes would negatively alter the visual character of the site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Project (See Mitigation Measures 3.7-1)

Level of Significance After Mitigation: Less than Significant

3.7.3.6 Full IID Water Supply Alternative

Impact 3.7-1: Aesthetic Degradation from Lighting and Glare at Quarry

The Proposed Action could create new sources of lighting and glare.

The Full IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action, therefore new sources of lighting and glare may be created as a result of increased activities on the site.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-2: Temporary and Permanent Aesthetic Degradation

Expanded Quarry areas and modernized Plant construction and operations could result in both temporary and permanent alteration of the existing aesthetics of the Project.

With the exception of the construction of a five-mile below-ground pipeline from the West Side Main Canal to the Plant, the Partial IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action. Construction of this new line will take approximately three months. Therefore impacts to the environment will be temporary in nature and not significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.7-3: Aesthetic Degradation at Wallboard Storage Pile

Expansion of the IMSA could alter the aesthetic character of the site, attracting attention of passers-by on Interstate 8 and Evan Hewes Highway.

The Full IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action, therefore there may be significant temporary and/or permanent alterations to the existing aesthetics of the Plant site with regard to the IMSA.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Project (See Mitigation Measures 3.7-1)

Level of Significance After Mitigation: Less than Significant

3.7.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (quarry, plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

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3.8 CULTURAL RESOURCES

3.8 CULTURAL RESOURCES

3.8.1 Introduction

This section provides a discussion of cultural resources at both the Quarry and the Plant and identifies potential impacts the Proposed Action may have on those resources, and as well as mitigation measures that may be required. This section is based on a survey entitled, *Archaeological Investigations for the U.S. Gypsum Company Quarry Expansion and Water Pipeline Replacement Project*, Prepared for Resource Design Technology, by John A. Nadolski, M.A., of Pacific Legacy, Inc., 2002.

3.8.2 Affected Environment

3.8.2.1 Environmental Setting

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 as shown in Table 3.8-1, Prehistory of the Southern California Deserts.

Following the Late Archaic Period, Euroamerican exploration of the area and contact with local Native Americans gradually increased across the area. Euroamerican activity in the area, as in other areas of California, dramatically affected Native American populations and culture.

Ethnography

Kumeyaay inhabit the area currently encompassed by western Imperial County, and comprise groups formerly identified as Tipai and Ipai. 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.

Historically, Kumeyaay relied heavily on seasonally available plant foods on valley floors and in the foothills and mountains. 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

TABLE 3.8-1
PREHISTORY OF THE SOUTHERN CALIFORNIA DESERTS

Period	Date	Characteristics/Representation
Paleoindian	12,000-7,500 BP	• First well-dated Native American occupation of region • Three distinct cultural complexes: - Fluted point complexes - Lake Mohave complex - San Dieguito complex • Transition from cool and moist, to arid and hot climate
Early Archaic	7,000-4,000 BP	• Poorly represented in the Colorado Desert • Diversification of artifact assemblages, including the introduction of groundstone technologies for seed processing. • Very hot and dry climate
Middle Archaic	4,000-1,500 BP	• Poorly represented in Colorado Desert • Seed collecting and processing characterize economic pursuits during this period • Artifacts include: manos, metates, handstones, and the bow and arrow • Cooler and moister climate
Late Archaic	1,500-450 BP	• Expansion of territorial boundaries of many Native American groups in region • Changes in flow of Colorado River into Lake Cahuilla expanded it and created a series of fresh water lakes • Development of agriculture and semi-permanent villages along the lower Colorado River • Extensive trade networks established to connect agricultural settlements in the greater southeast with the Gulf of California and the Pacific Ocean.

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.

Traditional 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. 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.

Kumeyaay primarily interacted and traded among themselves, but also involved 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 (Pacific Legacy, Inc., 2002).

Regional History

Spanish exploration of southern California dates to the 16th century. Hernando de Alarcon 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. 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. 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, Mission La Purisima Concepcion de la Virgin Santisima and Mission y Pueblo San Pedro y San Pablo de Bucuñer, in 1780. There was conflict, however, between the Spanish and the local Native American community. Hostile Yuma Indians dissatisfied with their treatment by the Spanish destroyed the two missions and killed 100 people in 1781.

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 (a term used to describe early settlers and miners of California before the 19th century) 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. 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.

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. As the need for transportation facilities increased across the area currently encompassed by Imperial County, Southern Pacific built a branch line from Niland to Imperial in 1903 and linked San Diego with El Centro in 1919. 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, but which resumed partial operation in 2004. Indeed, the "Buffalo Soldiers" (the all-Black unit which had been 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. 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 (in 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.

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 Interstate 8, a transcontinental highway extending from San Diego, California to Tybee Island, Georgia originally commissioned in 1926, also improved transportation across the area.[1] 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 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. Indeed, gypsum has been quarried at the Quarry since the early 1900s and the proposed expansion of the Plant and Quarry and associated facilities owned by USG represent the contribution of these industries in Imperial County.

3.8.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

3.8.3.1 Regulatory Framework

Section 106 of the National Historic Preservation Act presents guidance for the identification of historic properties and determination of historical significance. Section 106 presents the following eligibility criteria for inclusion in the National Register of Historic Places (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,

[1] www.gbcnet.com/ushighways/US80/US80.html

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 Section 15064.5 and Section 21083.2 for the identification of historical resources and determining their historical significance. CEQA Section 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 Section 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.

3.8.3.2 Thresholds of Significance

The Proposed Action would be considered to have a significant effect on cultural resources if it would:

- Disturb cultural resources that are either listed or eligible to be listed in the NRHP; as registered or eligible to be registered as a State Historic Landmark; or included in any responsible local inventory of historical properties;
- Disturb previously unknown important archaeological or historical resources;
- Have the potential to cause physical change which would affect unique ethnic cultural values; or
- Restrict existing religious or sacred uses within the potential impact area.

3.8.3.3 Proposed Action: Impacts and Mitigation Measures

Impact 3.8-1: Prehistoric Cultural Resources

The Proposed Action may affect unique prehistoric sites or artifacts in the potential impact area.

The pedestrian surface survey did not identify any prehistoric sites or artifacts, except for one green porphyry flake, which was identified during pedestrian surface survey along the alignment of the water pipeline replacement Project between Ocotillo and Plaster City. The isolate is an unmodified middle stage flake. No other artifacts were observed in the vicinity of the isolate.

Site Investigation

Archaeological investigations for the Proposed Action 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 a pedestrian surface survey of the sites associated with the Proposed Action.

Water Supply Project Site

Trenching necessary for the potential replacement water line may affect prehistoric sites or artifacts. The water pipeline replacement follows the alignment of County Route S80 between Ocotillo and Plaster City, a distance of approximately 8.5 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 pipeline construction. The area was surveyed using 5 to 8 meter transects, and visibility was generally good across the Project site. The Project site and the area adjacent to it, however, have been and continue to be disturbed by off-road vehicles.

Quarry Project Site

The Project site for the expansion of the Quarry is approximately 845 acres which 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. The area was surveyed using 20 to 30 meter transects, and visibility was generally good across the Project site. The southern end of the Project site, 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 such areas. Pedestrian surface survey also identified that large portions of the Project site, 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 Project site for the Quarry expansion was adequate for Project needs.

Summary of Archaeological Investigation Findings

Current archaeological investigations identified historic site USG-01, identified and recorded remnants of County Route S80, identified an isolated flake, recorded the Quarry, and recorded the narrow gauge Railroad. The Plant and Quarry expansion and water pipeline replacement projects would not relocate any previously recorded sites or isolates.

The record search identified the following:

- 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 Project site of the water pipeline replacement Project;
- Two previously recorded isolates, CA-IMP-2040 and CA-IMP-2357, near the Project site of the water pipeline replacement Project;
- That the Quarry dates to 1902;
- That the narrow gauge 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 between 1907-1919.

Quarry to Plant Railroad

USG's narrow gauge railroad is still in operation and consists of diesel locomotives and cars designed to transport large quantities of gypsum from the Quarry to Plant. The narrow gauge railroad is a unique facility designed and built to haul gypsum from the Quarry to Plaster City. Indeed, the completion and operation of the railroad facilitated the growth of gypsum quarrying in Imperial County. The railroad is important in the history of Imperial County and the development of mining in the region, and represents an unusual type of railway design and construction (i.e., narrow gauge track). Therefore, the USG 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 Action. Indeed, the railroad is a critical component of Quarry operations and will remain fully operational until the Quarry is closed and reclaimed.

Former County Route S80

Remnants of County Route S80 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 Project site 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 County Route S80 is located beyond the Project site, its eligibility for inclusion in either the NRHP or CRHR will not be addressed in this report. Regardless, the alignment and features of the highway would not likely be affected by any Project related activities.

San Diego and Arizona Eastern Railroad

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 County Route S80 and the water pipeline replacement Project. In the vicinity of the Plant, a small portion of the interstate (San Diego and Arizona Eastern) rail line was relocated to the south.

Site Recording

The historic sites identified during current archaeological investigations were recorded using appropriate State Department of Recreation site record forms. The Quarry, site USG-01, USG's narrow gauge railroad, and remnants of County Route S80 were recorded as part of the currently Proposed Action. The records for these sites are included in Appendix E of this report.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.8-2: Ethnic Cultural Resources

The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.

A sacred lands search was completed and a list of Native American contacts for the Project area was obtained from the Native American Heritage Commission. The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the Project site. All groups and/or individuals on the list provided by the Native American Heritage Commission were contacted regarding the USG Quarry expansion and water pipeline replacement projects. Native American consultation, however, was not conducted as an official Government-to-Government consultation.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.8-3: Historic Cultural Resources

The Proposed Action may affect historic sites or artifacts in the potential impact area.

Archaeological investigations identified the Quarry, historic site USG-01, the USG railroad, and abandoned County Route S80, within or near the potential impact area.

The pedestrian surface survey did identify non-diagnostic historic debris (fragments of cans and glass bottles) and one new historic site, USG-01, which consists of the remnants of a stone structure, hearth, and an historic trash scatter. This historic site (USG-01) was recorded, and the Quarry and the narrow gauge railroad were also recorded.

Pipeline Replacement

The pedestrian surface survey also identified remnants of abandoned County Route S80 beyond the Project site for the water pipeline replacement. The remnants of County Route S80 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.

Quarry

Site USG-01 is located in the Quarry expansion area and consists of the remnants of a circular stone structure associated with an historic trash scatter. 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 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. Although this impact is considered to be less than significant, excavation in previously undisturbed areas could uncover unknown resources. As such, USG should implement a plan for such an event as outlined below. CEQA Guidelines Section 15064(f) states that "a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist."

An inadvertent discovery plan could address the unanticipated discovery of cultural resources (e.g., prehistoric, historic sites, and/or artifacts) and facilitate their protection. Such plan would also provide USG staff with information regarding the nature and identification of historic resources and a set of protocols regarding unanticipated discoveries of cultural resources.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.8-3

> *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. An archaeologist qualified by the Society of Professional Archaeologists (SOPA) shall be deemed "qualified" for purposes of this mitigation measure. The services of a qualified archaeologist may be secured by contacting the Center for Public Archaeology – California State University, Fullerton or a member of SOPA.*

Level of Significance After Mitigation: Less than Significant

3.8.3.4 No Action Alternative: Impacts and Mitigation Measures

Impact 3.8-1: Prehistoric Cultural Resources

The Proposed Action may affect unique prehistoric sites or artifacts in the potential impact area.

Under the No Action Alternative none of the proposed activities would be implemented, therefore here would be no additional cultural resources impacts in future Quarry areas.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.8-2: Ethnic Cultural Resources

The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.

Under the No Action Alternative none of the proposed activities would be implemented, therefore there would be no additional cultural resources impacts in future Quarry areas.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.8-3: Historic Cultural Resources

The Proposed Action may affect historic sites or artifacts in the potential impact area.

Under the No Action Alternative none of the proposed activities would be implemented, therefore there would be no additional cultural resource impacts in future Quarry areas.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.8.3.5 Partial IID Water Supply Alternative

Impact 3.8-1: Prehistoric Cultural Resources

The Proposed Action may affect unique prehistoric sites or artifacts in the potential impact area.

The Partial IID Water Supply Alternative would not change current activities at the Quarry, but because no unique prehistoric sites or artifacts were observed, no significant impact to cultural resources would occur. However, Mitigation

Measure 3.8-1 would apply to the Quarry regardless of the water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID West Side Main Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey would be conducted to determine presence/absence of resources to protect them during the construction of the new pipeline from the West Side Main Canal. Recommendations contained in that survey report would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.8-1

> *Prior to construction of the water line between the Canal and the Plant site, USG shall have a Cultural Resources survey conducted to determine presence/absence of resources. Recommendations contained in the survey report shall be adopted and implemented as mitigation measures.*

Also, see Mitigation Measure 3.8-3.

Level of Significance After Mitigation: Less than Significant

Impact 3.8-2: Ethnic Cultural Resources

The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.

The Partial IID Water Supply Alternative would not change current activities at the Quarry site, but because no unique ethnic resources or sacred lands were identified, no significant impact to cultural resources would occur. However, Mitigation Measure 3.8-1 would apply to the Quarry regardless of the water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey and Native American consultation would be conducted to determine presence/absence of resources to protect them during the construction of the new canal. Recommendations contained in that survey report would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.8-1 and 3.8-3

Level of Significance After Mitigation: Less than Significant

Impact 3.8-3: Historic Cultural Resources

The Proposed Action may affect historic sites or artifacts in the potential impact area.

The Partial IID Water Supply Alternative would not change current activities at the Quarry site, but because no historic sites or artifacts were observed, no significant impact to cultural resources would occur. However, Mitigation Measure 3.8-1 would apply to the Quarry regardless of the water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID Canal and the Plant, a length of approximately 5 miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey would be conducted to determine presence/absence of resources to protect them during the construction of the new canal. Recommendations contained in that survey report and Native American consultation would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.8-1 and 3.8-3

Level of Significance After Mitigation: Less than Significant

3.8.3.6 Full IID Water Supply Alternative

Impact 3.8-1: Prehistoric Cultural Resources

The Proposed Action may affect unique prehistoric sites or artifacts in the potential impact area.

The Full IID Water Supply Alternative would not change current activities at the Quarry site, but because no unique prehistoric sites or artifacts were observed, no significant impact to cultural resources would occur. However, Mitigation Measure 3.8-1 would apply to the Quarry regardless of water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey would be conducted to determine presence/absence of resources to protect them during the construction of the new canal. Recommendations contained in that survey report and Native American consultation would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.8-1 and 3.8-3.

Level of Significance After Mitigation: Less than Significant

Impact 3.8-2: Ethnic Cultural Resources

The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.

The Full IID Water Supply Alternative would not change current activities at the Quarry site, but because no ethnic resources or sacred lands were observed, no significant impact to cultural resources would occur. However, Mitigation Measure 3.8-1 would apply to the Quarry regardless of water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey would be conducted to determine presence/absence of resources to protect them during the construction of the new canal. Recommendations contained in that survey report and Native American consultation would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.8-1 and 3.8-3.

Level of Significance After Mitigation: Less than Significant

Impact 3.8-3: Historic Cultural Resources

The Proposed Action may affect historic sites or artifacts in the potential impact area.

The Full IID Water Supply Alternative would not change current activities at the Quarry site, but because no historic sites or artifacts were observed, no significant impact to cultural resources would occur. However, Mitigation Measure 3.8-1 would apply to the Quarry regardless of water supply to the Plant.

Under this alternative, a new water line would be constructed between the IID West Side Main Canal and the Plant, a length of approximately five miles. This right-of-way has not been surveyed for Cultural Resources. If this alternative is selected, prior to construction a Cultural Resources survey would be conducted to determine presence/absence of resources to protect them during the construction of the new canal. Recommendations contained in that survey report, and Native American consultation would be adopted as mitigation to be implemented in conjunction with development of the Partial IID Water Supply Alternative.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.8-1 and 3.8-3

Level of Significance After Mitigation: Less than Significant

3.8.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.9 LAND USE AND PLANNING

3.9 LAND USE AND PLANNING

3.9.1 Introduction

This section presents information on the existing uses at the Plant and Quarry sites and the surrounding areas. Also described in this section are relevant plans and policies that could affect operations at the Plant and/or Quarry. Also described are existing conditions in the vicinity of the other project components: Plant water pipeline; Quarry well site and new water line; and narrow-gauge railroad line.

3.9.2 Affected Environment

3.9.2.1 Land Ownership and Jurisdiction

Plant

USG produces wallboard and related gypsum products at the Plant, which is under private ownership, and is located north of Highway 8 in Plaster City, Imperial County, California, west of the City of El Centro. The Plant site totals approximately 473 acres with 309 disturbed/developed acres prior to 1998.

Pipeline Replacement

Water for processing and manufacturing purposes is currently delivered to the Plant via an 8-inch pipeline from a well field located approximately 8.5 miles west in the Ocotillo/Coyote Wells Groundwater Basin. The approximate alignment of the conveyance pipeline is shown in Figure 2.0-5, Water Supply Pipeline Location. Portions of the pipeline between the Ocotillo/Coyote Wells Groundwater Basin and the Plaster City Plant are located on BLM property.

Quarry

The Quarry and ore crushing facilities supply raw material to the Plant and to other customers, and are located approximately 26 miles north of Plaster City. The Quarry location is shown in Figure 2.0-1, Location of Project Components.

The Quarry consists of 2,048 acres, approximately 1,668 acres of private land and 380 acres of unpatented placer mining claims on federal land currently administered by the BLM. USG has applied for patenting of these claims (see Section 2.2.2 for discussion of this issue). Ore is transported from the Quarry and crushing operation to the Plant via a USG-owned narrow-gauge railroad, located as shown in Figure 2.0-1. In a separate process, gypsum is processed at the Quarry Agri facility to produce raw gypsum products for direct sales from the Quarry. Customers self-load products from the customer loading area and self-haul off-site.

3.9.2.2 Existing Land Uses

Plant

Figure 3.5-1, BLM El Centro Resource Area Boundaries, shows the generalized land uses in Imperial County identified on the BLM El Centro Resource Area Boundaries Map. 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-8 and Evan Hewes Highway are agriculture fields, part of the larger Imperial Valley agricultural area. South and west of the Plant is private land with sparsely scattered rural residences. The Community of Ocotillo is located approximately eight miles west of the Plant.

Pipeline Replacement

To the south of the water supply wells is Yuha. To the north is the community of Ocotillo. The area is 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. The San Diego and Arizona East railroad line also parallels the highway in the vicinity. To the southeast is the BLM managed Jacumba Mountain Wilderness Area, an area closed to vehicles.

Narrow Gauge Rail Line

The narrow-gauge rail line crosses the BLM's Plaster City Open Area and the Navy Desert Test Range, then runs parallel to the Fish Creek Mountains before entering the Quarry.

Quarry

To the east and 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 is 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.

3.9.2.3 Pre-Project Site Conditions

Plant

The Plaster City Plant is located on approximately 473 acres, with 309 disturbed/developed acres prior to 1998. The area developed with the Plant and appurtenant facilities is located on three parcels. The Plant and appurtenant facilities (including driveways, parking, and other paved surfaces) cover approximately 25 acres of the total area. The remaining areas are either leased to a trucking company or represent the area of the former Plaster City village that was removed in the 1980s. The Plant currently has a rock shed covering an area of 19,500 square feet that houses stockpiles of rock delivered from the Quarry by the narrow-gauge railroad. Processed gypsum is held in board stucco silos that accommodate up to 30,830 cubic feet of crushed gypsum.

Prior to the Proposed Action, the Plant housed two board lines: Line No. 1 produces wallboard at a rate of 250-feet per minute and Line No. 2 produced wallboard at a rate of 110-feet per minute. Paper, used for the production of wallboard, is housed in the paper warehouse, which currently covers 11,620 square feet. The finished product is stocked in finished product warehouses (139,354 square feet) where it awaits shipment by rail or truck. The truck loading area is uncovered and the train loading area (14,688 square feet) is covered. The Plant uses water pumped from three wells near Ocotillo Wells, which is transported via an 8″ pipeline. The water is pumped at approximately 400 AF/yr. The Plant employed 290 local residents in 1998.

The train transporting gypsum materials from the Quarry to the Plant consisted of 20 bottom dump rock cars. It averages four round-trips between the Quarry and the Plant each day, seven days per week.

Pipeline Replacement

Water for the Plaster City Plant is delivered via an 8-inch pipeline from the Ocotillo/Coyote Wells Groundwater Basin. Annual water use at the Plaster City Plant was approximately 400 AF/yr.

Quarry

USG has been quarrying the site since 1945, but the site has been quarried for gypsum since the 1920s. USG extracts gypsum from existing quarries based on vested rights for mining on lands under ownership. Approximately 339 acres of surface disturbances have occurred to date. The existing operation consists of surface quarries since existing gypsum is found in outcrops, using established methods common to the industry. Major components of the existing facility include quarries, overburden storage sites, crushing facilities, agricultural product silos, railroad, utilities, and other equipment.

3.9.2.4 Relevant Plans and Policies

Impacts to land uses are determined by reviewing the land use plans and policies pertaining to the Project site and vicinity. The applicable plans and policies are:

- Federal Land Policy and Management Act of 1976 (FLPMA);
- BLM California Desert Conservation Area (CDCA) Plan;
- Title 9 Imperial County Land Use Ordinance;
- The Imperial County General Plan; and
- Imperial County Zoning Ordinance.

FLPMA

In passing the FLPMA, "...Congress declared that the policy of the United States would be to manage public lands to protect the quality of various natural resources, outdoor recreation and human occupancy and uses." (Section 102(a)(8)) The policy statement went on to include...” (12) the public lands [shall] be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Mineral Policy Act of 1970... as it pertains *to* the public lands …." [Section 102(a)(12)].

FLPMA defines multiple use as "...management of the public lands and their various resource values so that they are utilized in the combination that would best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and condition; " The definition goes on to allow some areas to be managed for less than all the resources. A "combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values ..." is also a part of a multiple use. [Section 103 (c)].

Primary or major uses are defined as those which include "…domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production." [FLPMA Section 103(1)].

The CDCA Plan is a multiple use, sustained yield plan developed to manage various resources including mineral development [FLPMA Section 601(d)]. As discussed below, the Proposed Action is consistent with the CDCA Plan. Therefore, the Proposed Action is consistent with Section 601 (a)(4) and Section 601(b) of FLPMA. In addition, Section 601(f) of FLPMA did not amend the 1872 Mining Law and does not preclude mineral development or production within the CDCA. The development of locatable minerals on mining claims in areas designated by the BLM as Class L is authorized subject to applicable federal regulations (43 CFR 3809) and state and local laws.

BLM California Desert Conservation Area (CDCA) Plan

The Proposed Action sites are located within the BLM CDCA, and as such is subject to the CDCA Plan. The CDCA encompasses 25 million acres of desert lands in eastern California, including 12 million acres of public lands. The CDCA was established by FLPMA. This law was passed by Congress in 1976 to direct public land management in the United States. The BLM was directed to inventory the CDCA resources and prepare a comprehensive land-use management plan. As the 12 million acres of public lands made up only half of the CDCA, this plan had to consider the fact that BLM-FLPMA requires the BLM to develop a plan to "…provide for the immediate and future protection and administration of public lands in the California Desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." Section 103 of FLPMA defines the terms "multiple use" and "sustained yield" as follows:

- The term "multiple use" means the management of public lands and their various resources values so that they are used in a combination that would best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource values that takes into account the long-term needs of future generations for the renewable and non-renewable resources including but not limited to recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historic values (BLM, 1980).
- The term "sustained yield" means the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use (BLM, 1980).

The goal of the CDCA Plan is to provide and enhance uses for the public lands in the CDCA area-including economic, educational, scientific and recreational uses without diminishing the environmental, cultural and aesthetic values of these lands. The Proposed Action is consistent with this goal.

All public lands in the CDCA under BLM management, except for a few small and scattered parcels, have been designated geographically into four multiple-use classes. Each class describes a different type, or degree of use permitted within that geographical area. The multiple-use classes include Class C (Controlled Use), Class L (Limited Use), Class M (Moderate Use), and Class I (Intensive Use). The CDCA Plan was adopted in 1980 and has been amended on an annual basis.

The CDCA plan has those areas of the Quarry that are not private lands designated as Multiple-Use Class I (Intensive); mining operations are permitable on such lands with submittal and approval of a Plan of Operations. As these lands are in the final stages of the patenting process and are classified as private land for purposes of this EIR/EIS; nevertheless, a Plan of Operations is still required pursuant to 3809.401(b).

Imperial County Zoning and Land Use Ordinance

Imperial County zoning and other land use regulations are designed to promote land use compatibility by designating acceptable uses and activities within identified areas or zones. Zoning regulations promote or prohibit uses, and designate appropriate building classes or structures within the various zones which are, in part, intended to prevent or inhibit conflicting or incompatible growth or uses within the respective zones (Imperial County, 1998).

The County has zoned the Plant site as M-3 "Heavy Industrial." Portions of the Quarry are located on mining claims on Federal Public lands administered by the BLM; while the County does not have land use jurisdiction over BLM property,. USG has applied for patents on these claims. The water wells location is zoned RI-L40.

Imperial County General Plan

The Imperial County General Plan provides land use designations and policy guidelines for development in the unincorporated areas within Imperial County. The Proposed Action is located within the unincorporated area of Imperial County and partly on federal property.

The Imperial County General Plan was developed to create a balanced, comprehensive guide for future physical development of lands within the County, and provides mechanisms to achieve the County's desired goals and objectives. The General Plan strives towards achieving a balance between development and economic, social, and environmental resources. The General Plan includes the following mandatory Elements: Land Use, Circulation/Scenic Highways, Housing, Conservation/Open Space, Seismic and Public Safety, and Noise. In addition, the County has included three additional Elements: Agriculture, Water, and Geothermal and Transmission.

Four elements in the General Plan are relevant to the Proposed Action: Land Use Element, Seismic and Public Safety Element, Conservation and Open Space Element, and Water Element. These elements include specific goals and objectives that must be considered for the Proposed Action.

Land Use Element

The Land Use Element guides the distribution, general location, and extent of uses of land for housing, business, industry, open space, agriculture, and public facilities. The Land Use Element of the General Plan serves as the primary policy statement by the Board of Supervisors for implementing development policies and land uses in Imperial County, and presents Imperial County's goals, policies, principles, and implementation measures relative to all land use within unincorporated areas of the County.

A key component of the Land Use Element is to delineate the boundaries and establish development standards for land use categories in order to maintain consistency and compatibility between uses and to classify the various land uses recognized by the General Plan. The Land Use Element contains nine land use designations and identifies allowable uses and provides development standards for each land use designation. Goals and objectives are included in the Land Use Element and the other General Plan elements. These goals are included as guidelines for land use decision-making. However, it should be noted that the General Plan also provides that "other social, economic, environmental, and legal considerations are involved in land use decisions and that these goals and objectives should be used as guidelines, but not doctrines." Chapter 14 (Natural/Mineral Resources) of the Land Use Element states: "Gypsum is being mined in the Fish Creek Mountains near the San Diego County line and transported by private rail line to a drywall Plant at Plaster City."

The Land Use Element of the Imperial County General Plan indicates that the Quarry is located within a large expanse of land currently dedicated to Special Purpose Facility, Recreation/Open Space, and Government/Special Public uses. The Special Purpose Facility designation allows mining and processing of mineral, aggregate, or other natural resources following approval of a conditional use permit. A conditional use permit has been granted for the Quarry.

The Plant is designated in the Land Use Element for "Heavy Industrial" use, and the well site is designated "Community Area." The Proposed Action is consistent with these designations.

Seismic and Public Safety Element

The Seismic and Public Safety Element identifies potential natural and human-induced hazards and provides policy to avoid or minimize the risk associated with hazards. Potential hazards must be addressed in the land use planning process to avoid the unfolding of dangerous situations. For example, the risk associated with dangerous flooding can be avoided by not allowing development in floodplains and imposing strict safety standards on water transmission facilities.

The purpose of the Seismic and Public Safety Element contained within the General Plan is directly concerned with reducing the loss of life, injury, and property damage that might result form a disaster or accident. This Element identifies goals and policies that would minimize the risks associated with natural and human-made hazards. In addition, the Element specifies land use planning procedures that should be implemented to avoid hazardous situations. The Proposed Action is consistent with the goals and policies of the Seismic and Public Safety Element.

Conservation and Open Space Element

The County is charged with the responsibility of conserving environmental resources while encouraging economic development and growth. The Conservation and Open Space Element identifies goals and policies to insure the managed use of environmental resources. The goals and policies are designed to prevent limiting the range of resources available to future generations. The Proposed Action is consistent with the goals and policies of the Conservation and Open Space Element.

Water Element

The purpose of this Element is to identify and analyze the types of water resources within Imperial County and to assure that goals and policies are adopted that preserve and enhance resource availability and quality. It has been prepared to assure that water resources are conserved and utilized to enhance long-term availability, while providing for current supplies and demands. In addition, this Element has been prepared to improve the use and distribution of water in Imperial County, including the extension of current water conservation programs. Through this Element, the County provides leadership, information and advisor services to help users increase efficiencies in their water consumption within the County.

As discussed in Section 3.3, the Proposed Action would not have a significant adverse effect on water resources after mitigation, and is subject to the County's Groundwater Ordinance. As such, the Proposed Action is consistent with the goals and policies of the Water Element.

3.9.3 Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.9.3.1 Thresholds of Significance

This land use impact assessment evaluates the potential effects of the Proposed Action on existing and planned land uses in the vicinity of the Project area. It also evaluates the effects of the Proposed Action on wilderness and recreational resources in the Project area and vicinity. The Proposed Action would normally have a significant effect on the environment if it would:

- Conflict with existing land uses;

- Conflict with adopted environmental plans and local community goals; or
- Conflict with established recreational, educational, religious or scientific uses of the area, or substantially degrade or reduce the quantity or quality of the area available for existing or future recreational opportunities.

3.9.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.9-1: Compatibility with Existing Land Uses

The Proposed Action could be incompatible with existing surrounding land uses.

Quarry

The Quarry is located in a remote location. Some surrounding areas are zoned as rural County land uses and nearby large expanses of public land are administered by the BLM and the State of California. The Quarry site is relatively isolated from human population. The area is generally regarded as open space, providing desert habitat for wildlife and dispersed recreational opportunities. The principal land uses in the vicinity of the Quarry include: dispersed recreation (hunting, camping, rock collecting, etc.); OHV use areas, military aircraft overflight training; and commercial mineral exploration. One wilderness area (Fish Creek Wilderness Area) and one state park (Anza-Borrego Desert State Park), are located adjacent to the Quarry. Compatibility of these wilderness area and State Park with the Proposed Action is discussed in the subsection entitled "Wilderness Area and State Park," below.

The Proposed Action would result in an expansion and extension of existing quarrying activities on the site. The site currently consists of the Plaster City Quarry area and Shoveler Annex. Only the Shoveler Annex can be seen from the road at the mouth of the canyon in which it lays. The Quarry areas are only readily visible from the adjacent areas of the Fish Creek Wash which are used by some OHV users. The majority of the site is private property, and if patents are granted, all of the 2,048 acres would be privately held as a Quarry site. There is no intent on the part of USG to use the site for recreational uses. Except for the area around Split Mountain Road, access to the site is limited to people hiking in the remote areas of the Fish Creek Wilderness and Anza Borrego Desert State Park. Continued quarrying activities in the canyon would not significantly affect recreational opportunities on adjacent public lands.

With regard to the proposed Quarry Well No. 3 development and continued use of the narrow-gauge railroad line, these uses would not affect recreational opportunities for the public on adjacent public lands.

Plaster City Plant

The Plaster City Plant is an existing industrial facility located at a remote site that is zoned for industrial use. The expansion/modernization of the Plant will not alter the existing compatibility of this use.

Water Pipeline Replacement

The proposed replacement of the water pipeline would be within the existing right-of-way and would result in temporary disturbance of the right-of-way as a trench is dug, pipe is laid, and backfilling is completed. Once this is done, the alignment would not affect surrounding land uses.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.9-2: Quarry Compatibility with Wilderness Areas

The Proposed Action could be incompatible with Wilderness Area land use plans and policies.

As discussed above, the Proposed Action is consistent with adopted land use plans and policies. Potential impacts on Wilderness Areas and recreational opportunities are discussed in more detail below.

Portions of the lands surrounding the Quarry are used for recreational activities including hiking, backpacking, horseback riding, and camping. These activities occur primarily on two distinct public lands, the Anza-Borrego Desert State Park and the Fish Creek Wilderness Area.

The Quarry is situated immediately east of the eastern boundary of the Anza-Borrego Desert State Park. The Park boundary is crenulated so that a portion of the site is also bounded on the north by the Park. See Figure 3.5-1, BLM El Centro Resource Area Boundaries. The Quarry is irregularly shaped and generally follows the line of the unnamed wash and adjacent mountains to the east, therefore only the Shoveler Annex portion of the Quarry and the northernmost site boundary are near the Park boundary. At its closest point, the

Shoveler Annex portion of the Quarry is approximately 400 feet from the Park boundary on the west, and adjacent to the Park on the north. The east, south, and southwest boundaries of the Quarry border on the Fish Creek Mountain Wilderness Area.

The main road leading to the Quarry site (by way of Split Mountain Road) is Highway 78 – also the main road through Anza-Borrego Desert State Park.

Following the completion of quarrying operations, disturbed areas would be reclaimed to a state of open space. The steepest portion of the hillside quarries would consist of a maximum 1H:1V slopes along the back wall with a broad area excavated to up to approximately 100 feet in depth at the base of the excavations and in the wash. Surface facilities (buildings, roads, and process facilities, etc.) and foundations would be removed, and final reclamation activities would begin. The site access on the north (Split Mountain Road) would remain gated and no entry by the public would be allowed. The privately held lands would not be opened to the public for recreational use. Both vegetation and wildlife habitat values would slowly recover, and the site would be left as revegetated open space.

Development of the various quarry areas and continued processing of gypsum ore within the Quarry site would not prevent camping, hunting or other dispersed recreation activities in areas outside of the boundary of the Quarry. Most recreational activities in the immediate vicinity of the Quarry which consist of hiking and some OHV use, may be affected by quarrying and processing activities conducted during the life of the operation, however, these activities currently occur on-site and have for several decades, so potential adverse impacts on the “wilderness experience” would be limited. Dispersed recreation could be affected by emissions of air pollutants, visibility of the Quarry components, noise generated by quarrying and processing operations, and Project-related traffic on Highway 78. However, as stated above, these activities currently occur on the Quarry site and have for several decades.

Mitigation measures to reduce the effects of these air impacts are presented in Section 3.6. After mitigation, the impacts of the Proposed Action on dispersed recreational use of the areas adjacent to the Quarry would be adverse but would not be significant.

Recreational users of the portions of Fish Creek Wilderness Area and Anza Borrego Desert State Park closest to the Quarry may hear noises generated by the quarrying and processing activity and see the major features of the Quarry during the day (and lights from the Quarry area at night), as currently occurs. These potential effects would be similar to that associated with the existing Quarry activities and, therefore, would not represent a substantial change from baseline conditions.

Wilderness Areas

As directed by the FLPMA and the Wilderness Act of 1964, all BLM-managed lands in California were inventoried and specific areas were identified as wilderness areas. Wilderness Areas were designated by the California Desert Protection Act (1994). The Fish Creek Wilderness Area is the only Wilderness Area in the vicinity of the Quarry.

The Proposed Action would not result in any surface disturbance within the Fish Creek Wilderness Area. However, major facilities within the Quarry may be visible from some elevated areas within the Wilderness Area. Minor increases in ambient levels of particulate matter may occur as a result of increased Quarry activities. Blasting and other noises generated by the Quarry operations may be audible within those portions of the Wilderness Area nearest the Quarry area. All of these already occur under current conditions and because the adjacent area is a Wilderness Area, the number of visitors is limited, therefore, the potential for air emissions or noise associated with the Quarry to negatively impact the public's wilderness experience is considered low.

Section 103(d) of the California Desert Protection Act (1994), which applies to the Fish Creek Wilderness Area, reads:

> "No Buffer Zones – The Congress does not intend for the designation of wilderness areas in section 102 of this title to lead to the creation of the protective perimeters or buffer zones around any such wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area."

Based upon the lack of direct impacts on these Wilderness Areas as a result of the Proposed Action, the impacts to these areas will be below a level of significance.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.9.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.9-1: Compatibility with Existing Land Uses

The Proposed Action could be incompatible with surrounding existing land uses.

Under the No Action Alternative no further proposed activities would be implemented on site, and existing uses would be continued. There is no land use change under this alternative.

Recreational users of the portions of Fish Creek Wilderness Area and Anza Borrego State Park closest to the Quarry may hear noises generated by the existing quarrying and processing activity and see the major features of the Quarry during the day and lights from the Quarry area at night. However, because these potential impacts are consistent with the baseline conditions, the Proposed Action would not result in a significant adverse effect on land use.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.9-2: Compatibility with Adopted Land Use Plans

The Proposed Action could be incompatible with adopted land use plans and policies.

Under the No Action Alternative existing and ongoing land uses would remain compatible with adopted land use plans and policies.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.9.3.4 Partial IID Water Supply Alternative

Impact 3.9-1: Compatibility with Existing Land Uses

The Proposed Action could be incompatible with surrounding existing land uses.

Te Partial IID Water Supply Alternative would not change the existing land uses at the Project site as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.9-2: Compatibility with Adopted Land Use Plans

The Proposed Action could be incompatible with adopted land use plans and policies.

Under the Partial IID Water Supply Alternative existing and ongoing land uses would remain compatible with adopted land use plans and policies.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.9.3.5 Full IID Water Supply Alternative

Impact 3.9-1: Compatibility with Existing Land Uses

The Proposed Action could be incompatible with surrounding existing land uses.

The Full IID Water Supply Alternative would not change the existing land uses at the Project site as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.9-2: Compatibility with Adopted Land Use Plans

The Proposed Action could be incompatible with adopted land use plans and policies.

Under the Full IID Water Supply Alternative existing and ongoing land uses would remain compatible with adopted land use plans and policies.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.9.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three main components (Quarry, Plant, and pipelines) that are somewhat separated geographically, reducing potential cumulative effects.

3.10 HAZARDS AND HAZARDOUS MATERIALS

3.10 HAZARDS AND HAZARDOUS MATERIALS

3.10.1 Introduction

This section discusses the potential impacts associated with the storage and use of products that are classified as hazardous materials at the Plaster City Plant and Quarry.

3.10.2 Affected Environment

The western portion of Imperial County is a sparsely populated area characterized by public lands consisting of state and federal wilderness areas, military bombing ranges, off-highway vehicle recreation areas, and private lands used for agriculture. Rural residential uses are limited to areas south and west of Plaster City and along Split Mountain Road north of the Quarry. Both the Plant and Quarry are relatively isolated from populated areas in the County.

3.10.2.1 Quarry Operations

The Quarry consists of surface quarries, crushing and other equipment, conveyors, storage equipment, haul roads, administration and other facilities, and an access road. Quarry operations employ heavy-duty earthmoving equipment to extract minerals and transport those materials to stockpiles that are processed by stationary crushing equipment.

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 including 40.6 acres used for the processing facilities and access roads. The areas of quarrying activities are located on the western slope of the Fish Creek Mountains and the eastern slope of Split Mountain.

Finally, USG has a current practice of using Ammonium Nitrate Fuel Oil explosives to blast minerals from the ore body. The explosives are stored in portable magazines.

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 using a large rotary drill to facilitate blasting. A pattern of holes is drilled into the gypsum to optimize fragmentation in the blasting. Each blasthole is primed with a booster, delay cap, and a mixture of slurry of ammonium nitrate and fuel oil, used as an explosive (ANFO). Blasting occurs two 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 13 cubic yard 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 rail 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. Post Proposed Action, the train consists of up to 25 bottom dump hopper cars (45-ton capacity) and currently makes about 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.

In a separate process, gypsum is 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. As shown in Figure

2.0-9, these materials are stored at the Quarry site 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 the bill before leaving the site. Approximately 30 trucks per weekday travel to and from the site.

Equipment used at the Quarry to conduct all of these activities are either operated by electricity or use petroleum products for fuel and lubrication. Such substances include diesel fuel, gasoline, cleaning solvents, and adhesives. More detail on the existing operation is found in Chapter 2.0, Proposed Action and Alternatives.

3.10.2.2 Plant Operations

The Plant site consists of rock unloading and storage area, milling and processing areas, material warehouses, two boardlines, truck and rail loading areas, administration and other facilities.

The rail and equipment were, and continue to be, operated and maintained by the Plant portion of the facility. The USG narrow-gauge railroad line enters the Plant from the north and travels through the Plant site to the east side of the mill where material is unloaded. The material is received by the mill and processed into finished goods through handling, crushing, grinding, and calcining (cooking). Pre-Proposed Action mill equipment consisted of an outdoor rock storage pile, a covered rock storage shed and storage silos, rock crushing and processing equipment, gypsum mills, calcining kettles, and a packing department, some of which remain at the Plant.

Dust collection is done throughout the mill to control gypsum particulate emissions. The train unloading facility has a dust collector to control particulates while the rock is dumped from the train onto a belt where it is conveyed to rock silos or the rock storage shed. The rock storage shed covers a portion of the rock pile stored on the north side of the Plant. Dust collectors are used throughout the mill and packing departments on belt conveyors, the crushing system, screens, elevators, screw conveyors, mills, and calcining kettles to minimize emissions. Board line kilns are permitted by the Imperial County Air Pollution Control District (ICAPCD).

South of the Plant is the Union Pacific Railroad line and the finished product loading area. Finished product was loaded on rail cars and hauled to market from the Plant. Finished products are also hauled to markets via semi-trucks.

The existing operation also has a water pipeline approximately eight and one-half miles long. This pipeline contains non-friable asbestos material. The maintenance of this pipe, from time to time, requires the removal and replacement of sections to repair ruptures. Some of the pipeline sections, as they become unusable, must be disposed of at appropriate landfills or other waste facilities as asbestos-containing materials. USG's Proposed Action includes replacing the current 8" line with a new 10" line and removing and disposing of the 8" line..

3.10.3 Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.10.3.1 Thresholds of Significance

Hazards

The Proposed Action would be considered to have a significant impact if it resulted in the creation of a public health or safety hazard.

Hazardous Materials

The use of hazardous substances in an industrial setting are regulated by occupational safety and health laws, the storage and disposal of hazardous substances are regulated under federal and state environmental protection laws including the Federal Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act (RCRA), the Porter-Cologne Water Quality Act, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the California Integrated Waste Management Act, among others.

The Porter-Cologne Water Quality Act, Water Code section 13000, *et seq.*, generally prohibits the release of oil or other hazardous substances in California, unless covered by a permit issued by a Regional Water Quality Control Board.

RCRA and the California Integrated Waste Management laws set forth a "cradle to grave" regulatory scheme respecting the generation, transportation and disposal of hazardous wastes. This scheme is augmented by CERCLA and its California counterpart, which impose strict liability for the investigation and remediation of hazardous substances released onto or into land or water.

At the state level, the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), regulates hazardous waste, oversees cleanup of existing contamination and works with industry to reduce hazardous waste produced in the state. DTSC regulates hazardous waste primarily under the authority of the RCRA and the state Health and Safety Code. The EPA authorizes DTSC to carry out the RCRA programs in the state. Permitting, inspection, compliance, and corrective action programs to ensure hazardous waste is managed in compliance with state and federal regulations.

The federal and California Clean Air Acts regulate the release of hazardous air pollutants or toxic air contaminants from industrial processes. One such regulation is the National Emission Standard for Hazardous Air Pollutants for Asbestos, 40 C.F.R. § 61.140, *et. seq.*, which requires any person who demolishes or renovates certain structures to notify EPA or the designated local authority prior to performing any work that may disturb asbestos. When applicable, this regulation also specifies work practices that must be followed to prevent the release of asbestos into the environment and regulates the transportation and disposal of asbestos-containing waste.

3.10.3.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.10-1: Groundwater Contamination Hazards at Plant and Quarry

In the course of using of petroleum products and other solvents and hazardous materials at the Plant and Quarry, some of those substances may be spilled or otherwise released into the environment. This substance may migrate through soil into groundwater supplies.

Plant

The Plaster City Plant includes manufacturing areas, maintenance and fueling areas, shops, and could include a co-generation facility for generating electricity from a turbine. These components require use and storage of fuels, oils, and other liquids that are classified as hazardous substances or materials.

Quarry

Petroleum-based fuels, including diesel fuel and gasoline, are stored in aboveground storage tanks located within a secondary containment area, near the Plant. These fuels are dispensed into vehicles or into a mobile fuel truck. Quarry equipment is fueled in the Quarry from the mobile fuel truck. The total storage capacity for petroleum products exceeds 1,320 gallons. The plant area of the Quarry includes a shop that uses various petroleum-based solvents. The Plant area also includes a rack where equipment that has petroleumcontaminated residue is serviced. Drains from the shop and rack drain to an oil/water separator before discharge.

USG has and maintains a Spill Prevention, Control and Countermeasures Plan (SPCC) that satisfies all the criteria of 40 C.F.R. §112.1, *et seq.* This Plan addresses spills from the mobile fueling trucks, in addition to other applicable spill sources. The SPCC Plan applies to both the Plant and Quarry. Responses to emergency situations and non-emergency situations are spelled out in the plan including names and contact information for responders as well as the steps to respond, isolate the situation, evacuate the area, and contain the situation.

Additionally, catch pans, either an absorbent material or a plastic barrier, are used underneath the engines of all parked haul trucks and loaders at the Quarry to collect fluids (oil, antifreeze, hydraulic fluid, etc.) that might leak from such equipment and prevent their release to the Quarry environment. Catch pans will be of sufficient size to catch dripping fluids (approximately four feet wide by four feet long) and are made from plastic or other impervious material. Fluids collected in the catch pans are gathered and disposed of per applicable state and federal regulations.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.10-2: Explosive Hazards at Quarry

Quarrying operations would use Ammonium Nitrate Fuel Oil [ANFO] to blast mineral deposits free from the ore body at a similar rate as is currently used.

Explosives could inadvertently ignite if stored or be used in an improper manner. In addition, the detonation of these explosives would create ground vibration, dust and may result in flying rock. If members of the public are near the blast area, they may be exposed to the vibration, dust and rock. However, explosives are managed such that little such risk occurs, as the components (ammonium nitrate and fuel oil) are stored separately and mixed directly only when the hole is filled for blasting.

The USG operations, pre-Proposed Action, used ANFO and high explosives in the same ways as it will post-Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

Mitigation Measure 3.10-1

USG shall conform to the requirements of 27 CFR Part 55, particularly sections 55.204 – 55.217 and 55.220, and any local requirements that are more stringent than the federal regulations, for the storage and use of explosives.

Level of Significance After Mitigation: Less than Significant

Impact 3.10-3: Asbestos Exposure from 8" Pipeline

The existing water supply pipeline from Ocotillo to the Plaster City Plant contains asbestos materials. The Proposed Action allows for discontinuing the use of this pipeline and installing a new one made with non-asbestos containing materials. Should the pipeline be removed, asbestos material could become friable and could pose a hazard .

The Proposed Action allows for the removal of the 8" diameter pipeline. The pipeline would be removed in manageable sections using wet methods to control emissions according to federal, state, and local procedures and requirements regarding methods for asbestos removal and disposal. Asbestos regulations require facility owners and/or operators involved in demolition and renovation activities to control emissions of particulate asbestos. The primary method used to control asbestos emissions is to adequately wet the Asbestos Containing Material (ACM) with a wetting agent prior to, during and after demolition/renovation activities.

The removal is expected to be completed within an approximate 4-month period. All removed pipeline will be disposed at an EPA approved landfill.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.10-2

USG shall comply with OSHA regulations and the National Emission Standard for Hazardous Air Pollutants respecting the demolition or renovation of structures containing or covered with asbestos-containing materials, 40 C.F.R. §

61.140 et seq., or a local regulation that is at least as stringent as the federal regulation.

Level of Significance After Mitigation: Less than Significant

3.10.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.10-1: Groundwater Contamination Hazards at Plant and Quarry

In the course of using of petroleum products and other solvents and hazardous materials at the Plant and Quarry, some of those substances may be spilled or otherwise released into the environment. This substance may migrate through soil into groundwater supplies.

The No Action Alternative would not change operations at the Plant or Quarry with regard to use of petroleum products and other solvents and hazardous materials in new expanded Quarry areas or existing Plant. No increased potential for contaminant of soil or groundwater would therefore occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.10-2: Explosives Hazards at Quarry

Quarrying activities on-site in existing and expansion areas would use ANFO to blast mineral deposits free from the ore body at a similar rate as is currently used.

The No Action Alternative would not include use of ANFO in new expanded Quarry areas. Therefore, there would be no increase of impacts associated with the use of these explosives, beyond baseline conditions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.10-3: Asbestos Exposure from 8" Pipeline

The existing water supply pipeline from Ocotillo to the Plaster City Plant contains asbestos materials. The No Action Alternative would involve continued use of this pipeline.

The No Action Alternative would not include the installation of a new pipeline. The existing pipeline would remain without change.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.10.3.4 Partial IID Water Supply Alternative

Impact 3.10-1: Groundwater Contamination Hazards at Plant and Quarry

In the course of using of petroleum products and other solvents and hazardous materials at the Plant or Quarry, some of those substances may be spilled or otherwise released into the environment. This substance may migrate through soil into groundwater supplies.

The decision on the water supply for the Plant is independent of the proposed Quarry expansion. Therefore this Alternative would include the expansion of Quarry areas, identical to those described in the Proposed Action. Potential for soil or groundwater contamination from use of petroleum products, solvents and hazardous materials would therefore be identical. Likewise, the use of these materials or substances at the Plant would be similar to existing conditions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.10-2: Explosives Hazards at Quarry

Quarrying activities on-site in existing and expansion areas would use ANFO to blast mineral deposits free from the ore body at a similar rate as is currently used.

The decision on the water supply for the Plant is independent of the proposed Quarry expansion. Therefore, this Alternative would be identical to the Proposed Action, with associated effects.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.10-1, above)

Level of Significance After Mitigation: Less than Significant

Impact 3.10-3: Asbestos Exposure from 8" Pipeline

The existing water supply pipeline from Ocotillo to the Plaster City Plant contains asbestos materials. The Proposed Action allows for discontinuing the use of this pipeline and installing a new one made with non-asbestos containing materials. Should the pipeline be removed, asbestos materials could become friable and could pose a hazard.

The Partial IID Water Supply Alternative would still require pipeline replacement and water use from the Ocotillo Well field. Impacts associated with removal and disposal of the old pipeline would be identical to those of the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measure 3.10-2

Level of Significance After Mitigation: Less than Significant

3.10.3.5 Full IID Water Supply Alternative

Impact 3.10-1: Groundwater Contamination Hazards at Plant and Quarry

In the course of using of petroleum products and other solvents and hazardous materials at the Plant and Quarry, some of those substances may be spilled or otherwise released into the environment. This substance may migrate through soil into groundwater supplies.

The decision on the water supply to the Plant is independent of the proposed Quarry expansion. Therefore, the Full IID Water Supply Alternative would include the expansion of Quarry areas, identical to those described in the Proposed Action. Potential for groundwater contamination from use of petroleum products, solvents and hazardous materials would therefore be identical. Likewise, the use of these materials or substances at the Plant would be similar to existing conditions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.10-2: Explosives Hazards at Quarry

Continued quarrying activities on-site in existing and expansion areas would use ANFO and high explosives to blast mineral deposits free from the ore body at a similar rate as is currently used.

The Full IID Water Supply Alternative would involve expanded and extended quarrying identical to the Proposed Action, with associated effects.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.10-2, above)

Level of Significance After Mitigation: Less than Significant

Impact 3.10-3: Asbestos Exposure from 8" Pipeline

The existing water supply pipeline from Ocotillo to the Plaster City Plant contains asbestos materials. The Proposed Action allows for discontinuing the use of this pipeline and installing a new one made with non-asbestos containing materials. Should the pipeline be removed, asbestos materials could become friable and could pose a hazard.

The Full IID Water Supply Alternative would still require pipeline replacement and water use from the Ocotillo Well field. Impacts associated with removal and disposal of the old pipeline would be identical to those of the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measure 3.10-2

Level of Significance After Mitigation: Less than Significant

3.10.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

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3.11 TRAFFIC AND CIRCULATION

3.11 TRAFFIC AND CIRCULATION

3.11.1 Introduction

USG currently operates a manufacturing facility approximately 18 miles west of El Centro, California. The Plant is located on Evan Hewes Highway in Plaster City, California as shown in Figure 3.11-1, Vicinity Map. The independent consulting firm of Peters Engineering Group performed a traffic analysis to determine any potential impacts resulting from the expansion of the wallboard manufacturing operations (Project). (See Appendix G). The traffic analysis was conducted for the Proposed Action at the Plant only. Expansion of the Quarry into new areas would not result in an increase in traffic on roads.

The analysis was prepared in accordance with CalTrans *Guide for the Preparation of Traffic Impact Studies (January 2001)* with the following modifications:

- Due to the fact that certain components of the Proposed Action have already been implemented, accurate before Project or "baseline" conditions cannot be ascertained at each study intersection or segment. Therefore, "existing Plus Project" conditions will be analyzed utilizing current traffic counts and results. If acceptable levels of service are obtained with the "existing Plus 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 Plus Project" scenario, then further analysis would be required to ascertain the "existing" condition.

3.11.2 Affected 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 Evan Hewes Highway. Evan Hewes Highway is aligned parallel to Interstate 8 and connects Plaster City to El Centro, California. Evan Hewes Highway connects to Interstate 8 via Imperial Highway, Dunaway Road and Drew Road. Descriptions of these roadways are as follows:

- **Evan 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.

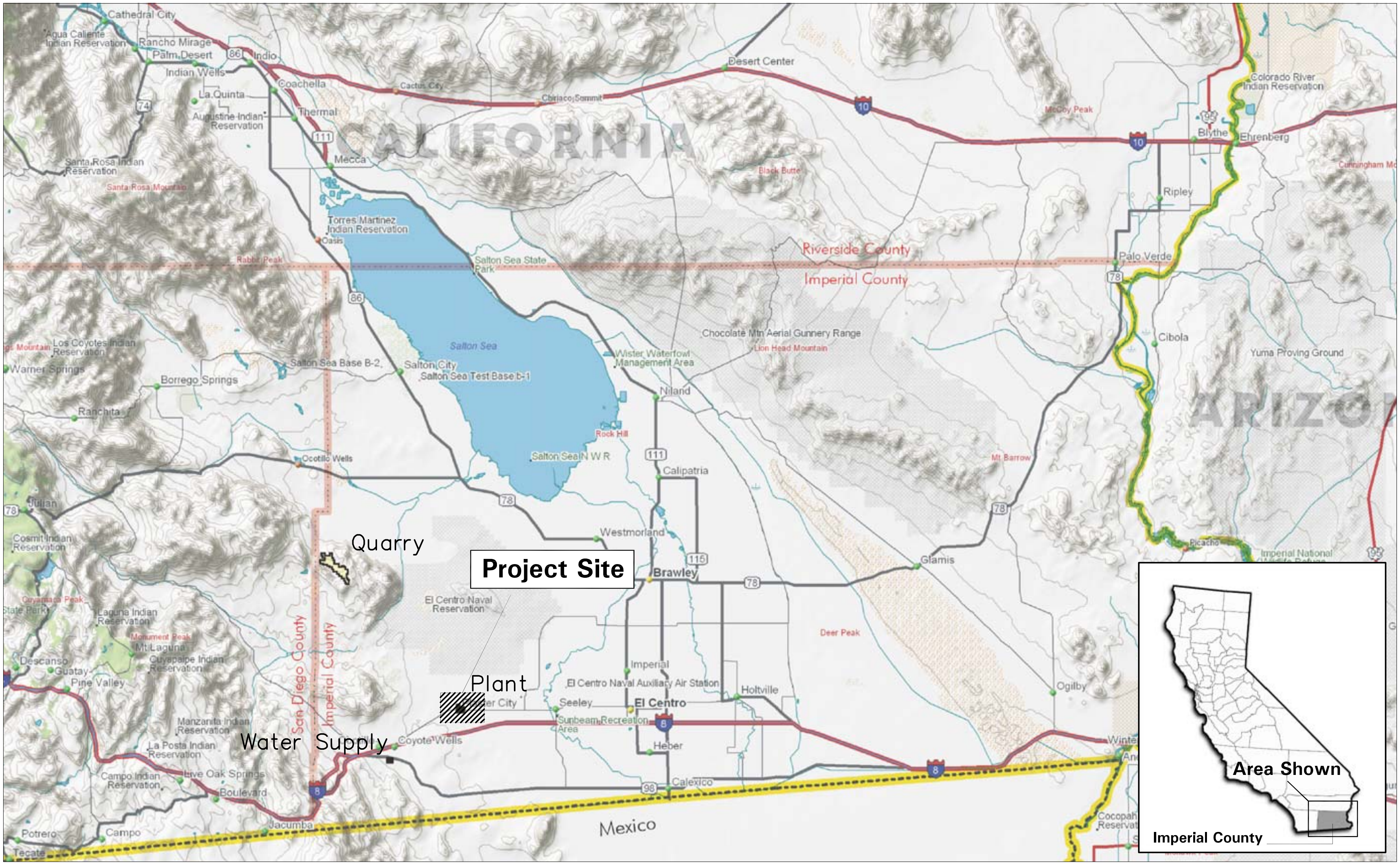
- **Interstate 8** is a four-lane divided conventional freeway which connects San Diego, California to Yuma Arizona. The interchanges providing access to the Plant within the Project area are located at Imperial Highway, Dunaway Road and Drew Road.
- **Dunaway Road** is a two-lane undivided rural highway which connect Evan Hewes Highway to Interstate 8. The existing highway structural section is in fair condition.
- **Drew Road** is a two-lane undivided rural highway which connect Evan Hewes Highway near Seeley to Interstate 8. The existing highway structural section is in fair condition.

The traffic conditions prior to Plant expansion/modernization, could not be precisely determined. Typically, traffic counts would be gathered at study intersections prior to implementation of the Proposed Action. The analysis of these traffic volumes along with existing roadway geometrics, ascertains the conditions of the existing roadway system prior to build out. Since the Plant expansion/modernization has already been implemented and was operational prior to the traffic analysis being undertaken, it was not possible to observe the “pre-Project” traffic volumes.

One strategy to estimate pre-Project traffic volumes would be to subtract the traffic associated with the Proposed Action from gathered traffic counts to determine pre-Project conditions. The *Institute of Traffic Engineers* (ITE) *Trip Generation Manual* estimates the amount of traffic which could be expected by typical developments. However, the ITE Manual does not contain trip generation data for a wallboard manufacturing facility.

Another potential source for pre-Project traffic volumes was a traffic study report prepared by Stephen George & Associates, revised May 7, 1999. Unfortunately, this report only contained peak hour turning movement counts at one of the USG Plant study intersections. Utilizing this single intersection count as a basis for determining traffic association with the Proposed Action would not be accurate.

Because of these circumstances, the traffic engineer approached the analysis by evaluating the study intersections with traffic counts obtained after the Proposed Action had been implemented. These counts represent the “existing Plus Project” scenario. The analysis resulted in a level of service (LOS) of A for all study intersections and road segments. See Table 3.11-1, Level of Service Characteristics for Unsignalized Intersections.



SOURCE: DeLorme Topoquads 2002

N

0 15 Miles

SCALE 1" = 15 Miles

Figure 3.11-1
Vicinity Map
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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TABLE 3.11-1
LEVEL OF SERVICE CHARACTERISTICS FOR UNSIGNALIZED INTERSECTIONS

Level of Service	Description	Delay (in seconds)
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

Although the pre-Project traffic conditions cannot be precisely determined, USG estimates that the number of truck trips in shipping wallboard, other shipments and deliveries was just over 490 truck trips per week. That number of truck trips increased to just less than 600 truck trips per week post Project. Because pre-Project traffic volumes are less than post-Project volumes, the "existing" conditions would have experienced the same or better levels of service as compared to the "existing Plus Project" conditions. The future plus Project scenario (year 2025) was also analyzed, which resulted in LOS A and B for all study intersections and scenarios. Levels of Service of A and B are considered very good and exceed the minimum LOS requirements of both Caltrans and the County of Imperial. These results assisted in evaluating the magnitude of the impacts of the Proposed Action as it pertains to traffic.

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:

- Evan Hewes Highway (between Imperial Highway and Dunaway Road)

Existing lane configurations are shown in Figure 3.11-2, Existing Lane Configurations. Current (2002) traffic volumes for the study intersection are shown in Figure 3.11-3, Existing Plus Project Traffic Volumes AM and PM Peak Hour Trips.

3.11.3 Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.11.3.1 Thresholds 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).
- Exacerbate conditions on a roadway segment or an intersection that currently operates at an unacceptable level of service.

3.11.3.2 Proposed Action: Impacts and Mitigation Measures

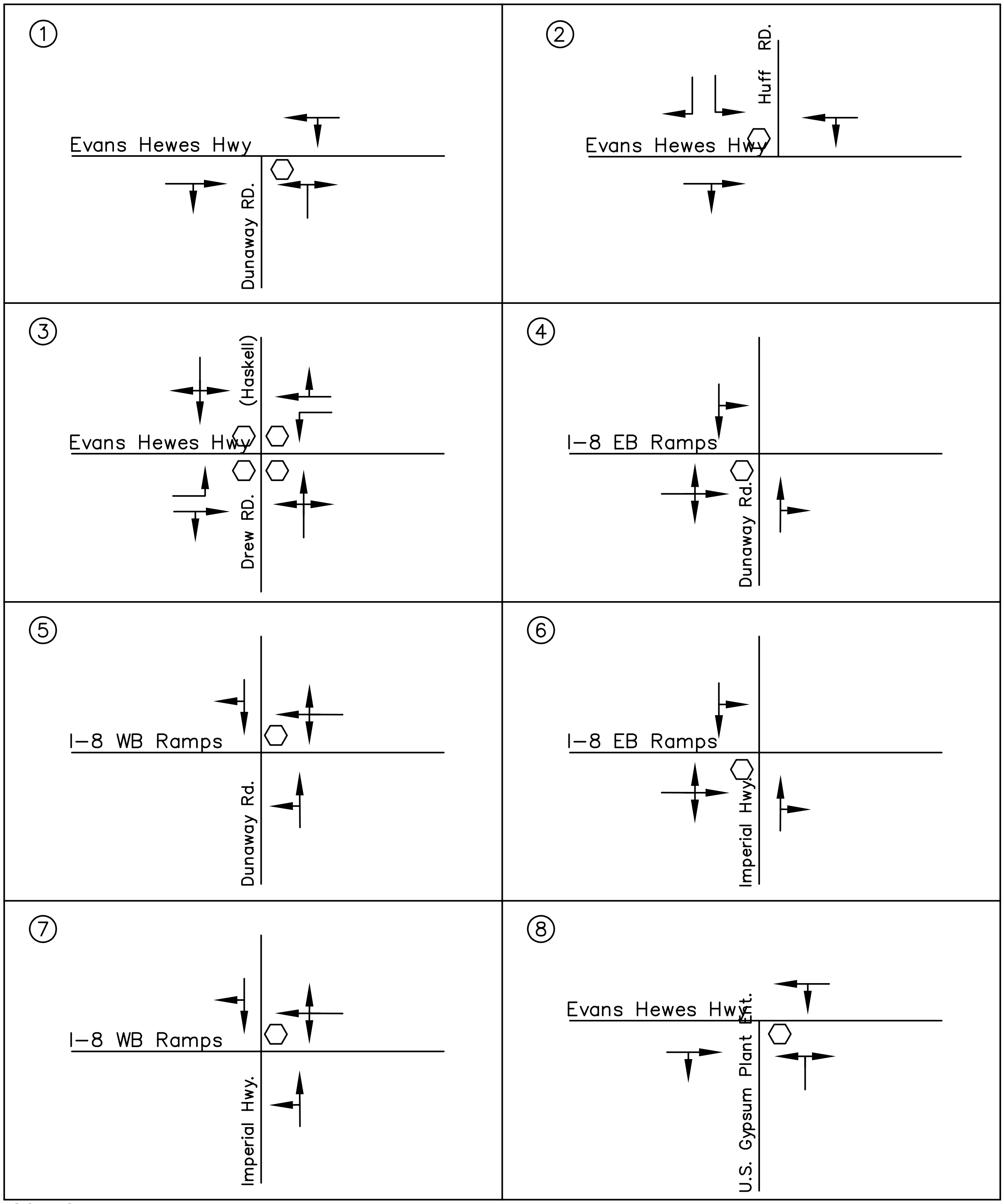
Impact 3.11-1: Truck Traffic Increases

The Project could result in additional truck traffic on Evan Hewes Highway, Interstate 8, Dunaway Road, and Drew Road.

For the traffic analysis, the Proposed Action involves expansion of the existing wallboard manufacturing operation. The expansion included 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 Plant expansion/modernization resulted in an increase in employment from 290 employees in 1998 to 430 employees, or a net increase of about 140 employees. Most workers arrive between 7:00 a.m. and 9:00 a.m. and depart between 4:00 p.m. and 6:00 p.m.

The LOS at the study intersections for the existing and existing Plus Project conditions were determined using the Highway Capacity Software (HCS2000).

A description of LOS for unsignalized intersections is presented in Table 3.11-1. A description of levels of service for roadway segments is presented in Table 3.11-2, Level of Service Characteristics for Roadway Segments.



SOURCE: Peters Engeneering

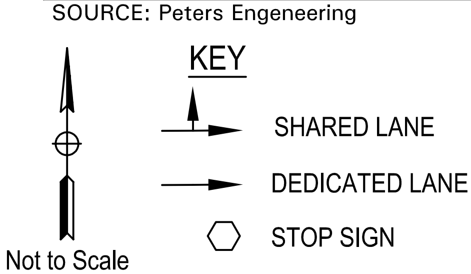


Figure 3.11-2
Existing Lane Configurations
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

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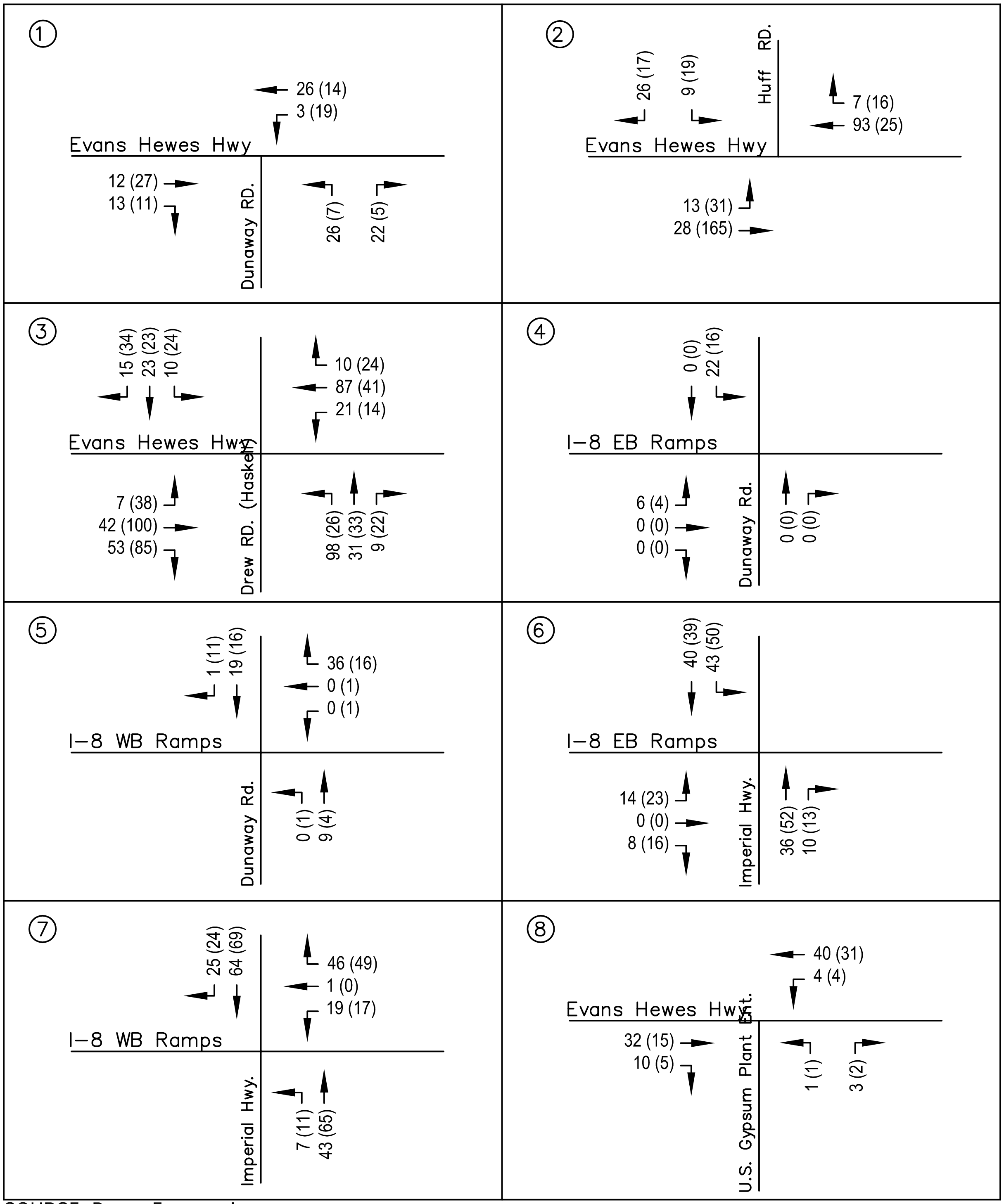

SOURCE: Peters Engeneering

KEY

20 AM PEAK HOUR VOLUME

(20) PM PEAK HOUR VOLUME

Not to Scale

Figure 3.11-3
Existing Plus Project Traffic Volumes
AM and PM Peak Hour Trips
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.

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TABLE 3.11-2
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

Notes:

1. Ratio of the average daily traffic volume on a road segment or intersection relative to its design capacity.

Existing Plus Project Conditions

The Proposed Action 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 3.11-3. Existing Plus Project levels of service are shown in Table 3.11-3, Existing Plus Project Levels of Service.

TABLE 3.11-3
EXISTING PLUS PROJECT LEVELS OF SERVICE

	AM Peak Hour	PM Peak Hour
Intersections		
• Evan Hewes Highway / U.S. Gypsum Plant Access	A	A
• Evan Hewes Highway / Dunaway Road	A	A
• Evan Hewes Highway / Huff Road	A	A
• Evan Hewes Highway / Drew Road	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
Segments		
• Evan Hewes Highway (Imperial Highway to Dunaway Road)	A	A

Excavated gypsum material is transported from the Quarry to the Plant via narrow gauge railroad. The Quarry also sells gypsum materials which are hauled away by the purchaser in haul trucks. This situation is not anticipated to change and no increase in truck traffic to/from the Quarry is anticipated. Road traffic from the Quarry is therefore not expected to increase. Additional trucks associated with the Proposed Action would only be related to the increase in Plant production due to expansion/modernization, although the majority of product would still be shipped by rail. A nominal increase in rate would occur from the additional Plant employees. Other Plaster City Plant traffic is accounted for within the existing traffic volumes and no substantial increase is anticipated.

All study intersections and roadway segments operate at a level of service of A for the "existing Plus 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.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Future with Project Conditions

The Proposed Action would have a life that would extend beyond the year 2025. It is common practice to analyze traffic conditions in a future year that is typically twenty years beyond "opening day" for the Project. Nonetheless, future traffic conditions with the Project were analyzed out to the year 2025. In order to project future traffic volumes in the year 2025, the existing counts, which includes the Project traffic, were increased at a rate of 2 percent per year for 23 years (the counts were performed in 2002. The resulting future with Project traffic is presented in Figure 3.11-4, Future (2025) Plus Project Traffic Volumes AM and PM Peak Hour Trips. Future with Project levels of service are shown in Table 3.11-4, Future with Project Levels of Service.

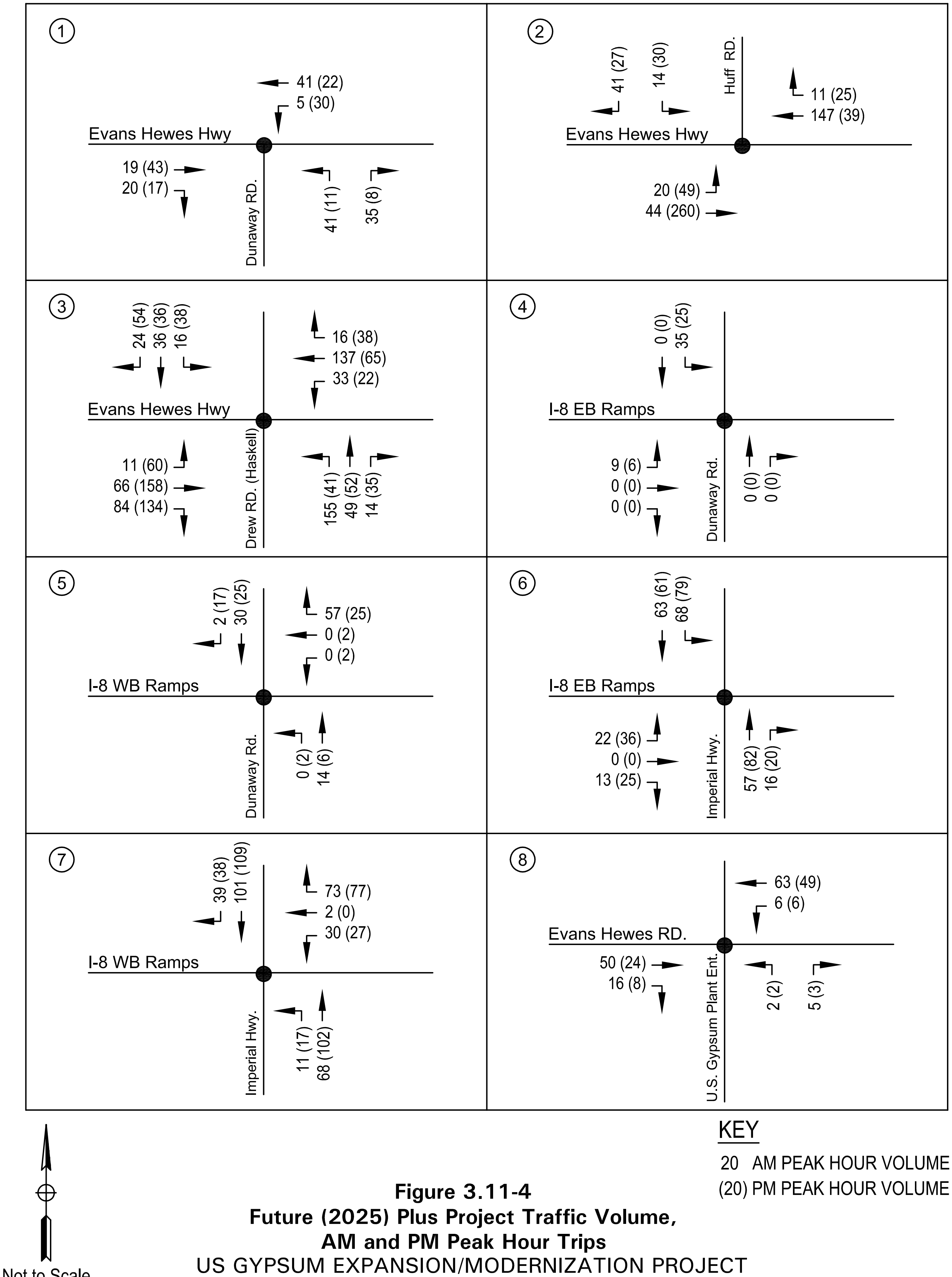

Figure 3.11-4
Future (2025) Plus Project Traffic Volume,
AM and PM Peak Hour Trips
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

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TABLE 3.11-4
FUTURE WITH PROJECT LEVELS OF SERVICE

	AM Peak Hour	PM Peak Hour
Intersections		
• Evan Hewes Highway / U.S. Gypsum Plant Access	A	A
• Evan Hewes Highway / Dunaway Road	A	A
• Evan Hewes Highway / Huff Road	A	B
• Evan Hewes Highway / Drew Road	B	B
• Interstate 8 EB Ramps / Dunaway Road	A	A
• Interstate 8 WB Ramps / Dunaway Road	A	A
• Interstate 8 EB Ramps / Imperial Highway	A	B
• Interstate 8 WB Ramps / Imperial Highway	A	A
Segments		
• Evan Hewes Highway (Imperial Highway to Dunaway Road)	A	A

All study intersections and roadway segments operate at a level of service of A or B for the "future Plus Project" condition. All study intersections and roadway segments operate at a level of service in the year 2025 above the minimum defined by the Imperial County General Plan and the State of California Department of Transportation Guidelines and therefore does not require mitigation measures.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.11.3.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.11-1: Truck Traffic Increases

The Project could result in additional truck traffic on Evan Hewes Highway, Interstate 8, Dunaway Road, and Drew Road.

Under the No Action Alternative Project operations would not be increased as outlined in the Proposed Action, but will continue at pre-Project levels. This baseline level of activity would not result in increased truck traffic on applicable roads and highways.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.11.3.4 Partial IID Water Supply Alternative

Impact 3.11-1: Truck Traffic Increases

The Project could result in additional truck traffic on Evan Hewes Highway, Interstate 8, Dunaway Road, and Drew Road.

Under the Partial IID Water Supply Alternative activities at the Plant and Quarry sites would be identical to those described in the Proposed Action, therefore impacts on local traffic would be less than significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.11.3.5 Full IID Water Supply Alternative

Impact 3.11-1: Truck Traffic Increases

The Project could result in additional truck traffic on Evan Hewes Highway, Interstate 8, Dunaway Road, and Drew Road.

Under the Full IID Water Supply Alternative activities at the Plant and Quarry sites would be identical to those described in the Proposed Action, therefore impacts on local traffic would be less than significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.11.4 Cumulative Impacts

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Proposed Action that could result in a significant cumulative effect. The Proposed Action itself is comprised of three components

(Quarry, Plant, and water pipeline) that are somewhat separated geographically, reducing the potential for cumulative effects.

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3.12 ACOUSTICS/NOISE

3.12 ACOUSTICS/NOISE

3.12.1 Introduction

This section presents information on the existing conditions at, or in the vicinity of, the Plant and Quarry and describes future activities that may impact the acoustic environment.

The Noise Element of the Imperial County General Plan provides a program for incorporating noise issues into the land use and planning process, with a goal of minimizing adverse noise impacts to sensitive noise receptors. The Noise Element establishes goals, objectives and procedures to protect the public from noise intrusion. The Noise Element is applicable to lands owned or zoned by the County. However, lands regulated by the state or federal government, such as those within and surrounding the Project area, are not subject to local land use policy (County of Imperial, General Plan Noise Element, 1993).

3.12.2 Affected Environment

Noise is a form of energy that is generally described as unwanted sound. Noise levels, or sound pressure levels, are typically measured in units of A-weighted decibels [dB(A)] using a logarithmic scale which designates various “frequency-weights” within the audible range in order to approximate human hearing. Human hearing typically encompasses a sound range from approximately 5 dB(A) at the quietest end to approximately 140 dB(A), which causes pain in most listeners.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the effective perceived noise levels.

3.12.2.1 Quarry

The Quarry has produced and will continue to produce noise from various sources including the following:

- Removal and handling of gypsum rock and overburden
  - Drilling
  - Blasting
  - Ore and overburden loading, hauling, and dumping
- Crushing and screening for transport
- Construction of haul roads and structures
  - Earthmoving activities
  - Construction activities
- Loading and transport of gypsum rock by rail
- Other miscellaneous vehicle use, maintenance and operational activities

The Quarry is located in a canyon surrounded by the Fish Creek Mountains to the north and east, and the Vallecito Mountains on the west and south. The Fish Creek Mountains are part of the Fish Creek Wilderness Area administered by the BLM, and the Vallecito Mountains are located in the Anza Borrego Desert State Park, administered by the State Department of Parks and Recreation. The nearest residential receptors are nearly ten miles to the north of the quarry in the community of Ocotillo, and are not affected by operation at the Plant or Quarry sites.

3.12.2.2 Plant

Noise associated with past and future operations of the wallboard manufacturing Plant includes:

- Rail transport and unloading;
- Crushing, screening and conveying;
- Kettle, heaters/dryers, and blowers;
- Wallboard line equipment;
- Site mobile equipment;

- Finished product truck and rail transport;
- Employee and service vehicles;
- Other miscellaneous vehicle use, maintenance and operational activities; and
- Cogeneration unit (Proposed Action).

The topography at the Plant and in the vicinity is relatively flat and there are relatively few buildings or barriers to attenuate noise associated with manufacturing activities. However, there are no sensitive receptors (residences, schools, hospitals, etc.) nearby to be adversely affected by these activities. The closest sensitive receptors are nearly ten miles to the north of the Quarry sites. To the north of the Plant site is the BLM Plaster City Open Area, used by OHV enthusiasts. Other properties in the vicinity are undeveloped or used for agricultural production, with an occasional rural residence. Therefore, existing noise associated with activities at the Plant site does not adversely affect sensitive receptors.

3.12.2.3 Pipeline

There is no noise associated with the water pipeline between Ocotillo and Plaster City.

Noise occurring from the replacement of the water pipeline will largely be limited to short-term construction equipment. Noise will also be produced by occasional maintenance activities.

Narrow Gauge Railroad

Noise associated with the operation of the narrow gauge train between the Plant and Quarry does not adversely affect sensitive receptors because there are none located between the two facilities.

3.12.3 Thresholds of Significance, Environmental Impacts, and Mitigation Measures

Noise generated by the Project is regulated by the Imperial County Land Use Ordinance and the Noise Element of the Imperial County General Plan. The thresholds for significance for the noise analysis are based on the Imperial County General Plan Noise Element.

The Noise Element requires Imperial County to perform a formal acoustical analysis of proposed discretionary projects that may generate excessive noise if the Project:

- Would be located in a Noise Impact Zone as defined in the Noise Element.
- Has the potential to generate noise in excess of the Property Line Noise Limit thresholds stated in the Noise Element.
- Would have the potential to result in a significant increase in noise levels to sensitive receptors in the area.

Based on the location of Project elements, any additional acoustical analysis of noise sources and effects is not considered necessary.

3.12.3.1 Proposed Action: Impacts and Mitigation Measures

Impact 3.12-1: Noise Pollution at Quarry and Plant Sites

The Proposed Action could result in increased noise at the Quarry.

Potential on-site impacts to employees and visitors could occur from ongoing noise at the Quarry. Federal and state laws governing worker safety would require the use of safety equipment and procedures to prevent noise impacts to employees and visitors. Because of these Environmental Health and Public Safety requirements, noise impacts to on-site employees and visitors would not be significant.

Noise impacts would not be significant largely because of the distance between the Quarry expansion activities and off-site receptors and because the operations at the Quarry will not significantly change after implementation of the Proposed Action. Such noise would be similar to that of the existing operations and to that normally experienced with surface quarrying operations.

Some recreational visitors in off-site wilderness areas may hear Quarry activities if they happen to be in close proximity at the time of equipment movement or needed blasting. This noise would be similar to that associated with the existing Quarry activities and, therefore, would not substantially change from existing conditions.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.12-2: Noise Pollution at Plant Site

The Project could result in increased noise at the Plant.

Potential on-site impacts to employees and visitors could occur from ongoing noise at the Plant, though the noise levels will not be significantly more intense after the Project is approved. Federal and state laws governing worker safety would require the use of safety equipment and procedures to prevent noise impacts to employees and visitors. Because of these Environmental Health and Public Safety requirements, noise impacts to on-site employees and visitors would not be significant.

Potential off-site noise impacts would not be significant largely because of the distance between the Plant and any sensitive receptors. Some recreational visitors in off-site BLM Open Area may hear noise from the Plant, however, these visitors would be making their own noise and would not likely be disturbed by the Plant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.12.3.2 No Action Alternative: Impacts and Mitigation Measures

Impact 3.12-1: Noise Pollution at Quarry and Plant Sites

The Project could result in increased noise at the Quarry.

Under the No Action Alternative the Quarry would not be expanded as outlined in the Proposed Action, but would continue at pre-project levels. This baseline level of activity would not produce increased ongoing noise in he vicinity of the Quarry.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.12-2: Noise Pollution Along Railroad Right-of-Way

The Project could result in increased noise at the Plant.

Under the No Action Alternative the Plant would not be expanded as outlined in the Proposed Action, but would continue at pre-Project levels. This baseline level of activity would not produce increased ongoing noise in the vicinity of the Plant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.12.3.3 Partial IID Water Supply Alternative

Impact 3.12-1: Noise Pollution at Quarry and Plant Sites

The Proposed Action could result in increased noise at the Quarry.

The Partial IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action. As discussed above, there would be no significant noise impacts.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.12-2: Noise Pollution Along Railroad Right-of-Way

The Proposed Action could result in increased noise at the Plant.

The Partial IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action. As discussed above, there would be no significant noise impacts.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.12.3.4 Full IID Water Supply Alternative

Impact 3.12-1: Noise Pollution at Quarry and Plant Sites

The Proposed Action could result in increased noise at the Quarry.

The Full IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action, therefore there would be no significant noise impacts.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.12-2: Noise Pollution Along Railroad Right-of-Way

The Proposed Action could result in increased noise at the Plant.

The Full IID Water Supply Alternative would implement changes identical to those outlined in the Proposed Action. As discussed above, there would be no significant noise impacts.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.12.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and Pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

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3.13 PUBLIC HEALTH AND SAFETY

3.13 PUBLIC HEALTH AND SAFETY

3.13.1 Introduction

This section evaluates the potential public health and safety impacts that could be associated with the Proposed Action or its alternatives. The following discussion evaluates potential health and safety concerns, as they would relate to the general public, visitors, and Quarry and Plant employees.

3.13.2 Affected Environment

3.13.2.1 Introduction

Existing conditions at the Plant and Quarry relative to public health and safety are the result of previous activities (quarrying and processing at the Quarry, and manufacturing and distribution at the Plant) as well as other activities associated with ongoing operations.

3.13.2.2 Quarry Operations

The Quarry consisted of surface quarries (quarrying is currently conducted by removal of gypsum from hillside outcrops creating a series of benches), crushing and other equipment, conveyors, storage equipment, haul roads, administration and other facilities, and an access road. 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 using a large rotary drill to facilitate blasting. Rock is then hauled to a partially enclosed crushing and processing operation. After crushing, the rock is conveyed to an enclosed rock storage building. From storage, rock is gravity loaded into rail hopper cars (up to six at a time) in a tunnel underneath the storage building. The operation utilizes 20 hopper cars with a nominal capacity of 45 tons each. When the transfer is completed, the gypsum is transported to the Plant via USG's narrow-gauge railroad. Gypsum is also transported by trucks utilizing Split Mountain Road to State Highway 78. More detail on the existing operation at the Quarry can be found in Chapter 2.0, Proposed Action and Alternatives.

3.13.2.3 Plant Operations

The Plant site consists of rock unloading and storage areas, milling and processing areas, material warehouses, two board lines, truck and rail loading areas, and administration and other facilities. Gypsum rock that is processed at the Quarry is hauled by train from the Quarry along USG's narrow-gauge rail line which unloads the raw material at the Plant where it is stored in the enclosed rock storage area. Figure 2.0-9, Plaster City Plant Expansion Layout, shows the location of the rock storage area on the north side of Evan Hewes Highway. The gypsum was and is further processed at the Plant into a variety of products including gypsum wallboard, industrial and building plasters, as well as raw gypsum products and for the manufacture of Portland cement.

In addition to the mill, storage sheds, production line and loading areas, the Plant includes the railroad line to the Quarry, the UP rail line and Evan Hewes Road, USG offices and parking areas for employees.

More detail on the existing operation is found in Chapter 2.0, Proposed Action and Alternatives.

3.13.3 Thresholds of Significance, Environmental Consequences, and Mitigation Measures

This section focuses on the issues of public health and safety hazards that could potentially be created by operational activities and conditions.

3.13.3.1 Thresholds of Significance

The Proposed Action would be considered to have significant impact if it resulted in the creation of a public health or safety hazard.

3.13.3.2 Proposed Action: Impacts and Mitigation Measures

Quarry Operations

Impact 3.13-1: Industrial Facility Safety

The Proposed Action would allow additional facilities at the Quarry, thereby increasing the potential for continued processing and operations hazards.

> The process of quarrying raw ore material involves activities that could generate potential health and safety impacts to the public and Quarry employees. Blasting and the use of heavy construction equipment are typical procedures that are utilized during Quarry operations. Additionally, operational methods have

been utilized at the Quarry since the 1920s and by USG staff since 1945. However, due to the remote locations of the Quarry, Plant and other Project components and the fact that the Project operates pursuant to numerous state and federal regulations, significant impacts to the public's health and safety are not expected.

Explosives pose a public safety hazard if the public were exposed to blasting materials or explosives, which they are not. ANFO and high explosives are used during quarrying operations to break and loosen ore in the outcrops. Once loosened, the ore is loaded into haul trucks for transport to the crusher. Explosives are stored in portable magazines in the Quarry.

The potential safety impacts from blasting and explosives are discussed in Section 3.10, Hazards and Hazardous Materials.

Employee training procedures are and will continue to be implemented in accordance with Mine Safety and Health Administration (MSHA) regulations to ensure that all employees are familiar with the potential hazards of their jobs. First aid equipment is, and will continue to be, provided at appropriate locations.

Given the remote location of the Quarry, significant health and safety impacts to the public resulting from mining operations are not expected. The closest residence to the Quarry is over three miles away on Split Mountain Road and in Ocotillo Wells. The strict industry regulations providing for worker safety at the site would also eliminate offsite impacts to the public.

USG will continue to incorporate environmental health and public safety protection measures required by local, state, or Federal regulations into the proposed future quarry and facilities expansion, design and operation. Specifically, appropriate OSHA, MSHA, and Cal-OSHA worker environmental health and public safety regulations and the continuance of established public safety measures and programs existing at the Quarry will continue to be implemented.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.13-2: Reclaimed Quarry Site Safety

The Proposed Action could potentially result in the exposure of people to health and safety hazards associated with quarries left following conclusion of all operations.

The Proposed Action would result in expansion and extension of quarrying activities, including the creation of new quarries. These facilities could potentially result in the exposure of people to the hazards of quarries following operations such as falls associated with inadvertent or purposeful entry into reclaimed areas. On the land owned by USG, and with patenting of the federal mine claims, such entry would be a trespass.

Operating quarry slopes are excavated at an overall slope averaging between 1H:1V and 1.5H:1V, which, while not particularly dangerous to a pedestrian (a 1H:1V slope is equivalent to 45 degrees), could result in injuries in a fall. The Proposed Action involves reclamation activities that include reducing these excavated slopes to between 1.5H:1V and 2H:1V. Such slope reduction would not only reduce the potential for injury in falls, they would be stable such as to minimize potential for failures and rock fall hazards. Determination of the appropriate stable slope angle for the type of rock material is accomplished by geotechnical engineering methods; the proposed Reclamation Plan includes such analysis in a Slope Stability Report.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

Mitigation Measure 3.13-2a

To prevent unauthorized entry into the Quarry, access to the Quarry shall remain gated at the end of Split Mountain Road. No trespassing signs shall be posted in the Fish Creek Wash area adjacent to the north boundary of the Quarry site. Other Quarry boundaries are located in wilderness areas where human access is limited. No trespassing signs shall be posted at locations to be determined in consultation with BLM and Anza Borrego Desert State Park staff to limit unauthorized access to the Quarry site.

Mitigation Measure 3.13-2b

Reclaimed slopes shall be finished to a stable configuration per recommendations of the Slope Stability Report.

Level of Significance After Mitigation: Less than Significant

Plant Operations

Impact 3.13-3: Health and Safety Impacts to the Public and Plant Employees

The Proposed Action would create additional facilities at the Plant and increase the number of employees, thereby increasing the potential for continued processing and operations hazards.

The process of wallboard manufacturing involves activities that could generate potential health and safety impacts to the public and Plant employees. The operation of heavy machinery and transport of large quantities of wallboard are typical procedures utilized during the manufacture and distribution of wallboard.

Employee training procedures are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations to ensure all employees are familiar with potential hazards of their jobs. Visitor protection measures also are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.13-3

USG shall continue to incorporate environmental health and public safety protection measures required by local, state, or Federal regulations into the proposed Plant expansion, design and operation. Specifically, appropriate OSHA, and Cal-OSHA worker environmental health and public safety regulations and the continuance of established public safety measures and programs existing at the Plant shall be incorporated.

Level of Significance After Mitigation: Less than Significant

3.13.3.3 No Action Alternative: Impacts and Mitigation Measures

Quarry Operations

Impact 3.13-1: Industrial Facility Safety

The No Action Alternative would not create additional facilities at the Quarry, and there would be no increase in the potential for processing and operations hazards.

No increased health or safety impacts would occur with this alternative, which would not involve additional facility development.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.13-2: Reclaimed Quarry Site Safety

The No Action Alternative would not result in any additional exposure of people to health and safety hazards associated with quarries left following conclusion of all operations.

Since the No Action Alternative would not involve expanded quarries and extended operations, no increased health or safety impacts would occur.

There would be no additional health or safety hazard related impacts from operations at the Quarry by reducing quarrying, production and related processes.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Plant Operations

Impact 3.13-3: Health and Safety Impacts to the Public and Plant Employees

The No Action Alternative would create additional facilities at the Plant and increase the number of employees, thereby increasing the potential for continued processing and operations hazards.

No increased health or safety impacts would occur with this alternative since it would not involve additional development.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.13.3.4 Partial IID Water Supply Alternative

Impact 3.13-1: Industrial Facility Safety

This Alternative would allow additional facilities at the Quarry, thereby increasing the potential for continued processing and operations hazards.

Activities at the Quarry are and would continue to be independent of the determination of the source of the water supply to the Plant. The water source to the Plant does not affect quarrying or processing activities at the Quarry. Therefore, under the Partial IID Water Supply Alternative, potential hazards from blasting, and equipment use would still be an impact. Employee training procedures are and will continue to be implemented in accordance with MSHA regulations to ensure that all employees are familiar with the potential hazards of their jobs. First aid equipment is, and will continue to be, provided at appropriate locations. The strict industry regulations providing for worker safety at the site would also eliminate offsite impacts to the public.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.13-2: Reclaimed Quarry Site Safety

This Alternative could potentially result in the exposure of people to health and safety hazards associated with quarries left following conclusion of all operations.

The Partial IID Water Supply Alternative would involve expanded and extended quarries development identical to those of the Proposed Action. Potential hazards from Quarry slopes would therefore be identical.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.13-2a and 3.13-2b

Level of Significance After Mitigation: Less than Significant

Plant Operations

Impact 3.13-3: Health and Safety Impacts to the Public and Plant Employees

This Alternative would create additional facilities at the Plant and increase the number of employees, thereby increasing the potential for continued processing and operations hazards.

The determination of a water supply source is independent of employee and public safety at the Plant. Employee training procedures are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations to ensure all employees are familiar with potential hazards of their jobs. Visitor protection measures also are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.13-3)

Level of Significance After Mitigation: Less than Significant

3.13.3.5 Full IID Water Supply Alternative

Impact 3.13-1: Industrial Facility Safety

This Alternative would allow additional facilities at the Quarry, thereby increasing the potential for continued processing and operations hazards.

The Full IID Water Supply Alternative would involve changes in activities associated with quarrying and processing, identical to those of the Proposed Action. Potential hazards from blasting and equipment use are therefore expected.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.13-2: Reclaimed Quarry Site Safety

This Alternative could potentially result in the exposure of people to health and safety hazards associated with quarries left following conclusion of all operations.

The Full IID Water Supply Alternative would involve expanded and extended quarries development identical to those of the Proposed Action. Potential hazards from mine slopes would therefore be identical.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: See Mitigation Measures 3.13-2a and 3.13-2b

Level of Significance After Mitigation: Less than Significant

Plant Operations

Impact 3.13-3: Health and Safety Impacts to the Public and Plant Employees

This Alternative would create additional facilities at the Plant and increase the number of employees, thereby increasing the potential for continued processing and operations hazards.

The determination of a water supply source is independent of employee and public safety at the Plant. Employee training procedures are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations to ensure all employees are familiar with potential hazards of their jobs. Visitor protection measures also are and will continue to be implemented in accordance with OSHA and Cal-OSHA regulations.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.13-3)

Level of Significance After Mitigation: Less than Significant

3.13.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

4.0 Other CEQA/NEPA Topics

4.0 Other CEQA/NEPA Topics

4.1 RELATIONSHIPS BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Proposed Action would result in additional surface disturbance over 845 acres at the existing USG Quarry. This would result in a cumulative impact of 1,184 acres of surface-disturbing activities over the approximate remaining 80-year Quarry life. Long-term and cumulative impacts would be predominantly associated with these surface disturbances, and largely restricted to the Quarry area.

Benefits resulting from this short-term use of the environment for the proposed continuation of quarrying activities are primarily socioeconomic. Over 290 people were employed at the Quarry and Plant, prior to the Proposed Action. Secondary employment is also realized through expenditures for goods and services in the region. USG believes that the Proposed Action is justified at this time because of these economic and social benefits generated by the Proposed Action. Project-related employment, direct and indirect expenditures associated with ongoing quarrying activities, and property tax would contribute to the viability of the local and regional economy for an additional 80 years. Continued operation, therefore, benefits the region's economy as well as county, state, and federal governments through taxes and fees.

The Proposed Action would enhance the long-term production of the Plant and Quarry which supplies wallboard and other gypsum products throughout the West. The Quarry area has historically been used for quarrying of gypsum from hillside outcrops. Therefore, the commitment of the additional 845 acres would do little to narrow the range of other beneficial land uses of this site. Continued operation includes concurrent planned reclamation, so re-establishment of vegetation and wildlife habitat would be on-going through the life of the Proposed Action. As activities in individual Quarry areas are completed, reclamation would begin so that during the life of the Proposed Action both quarrying and reclamation would be occurring at the Quarry.

The primary cumulative and long-term effects of the Proposed Action are changes to the landscape, thereby altering the site aesthetics. Although mitigation measures are planned to reduce this effect, the landscape would nonetheless be permanently altered.

Long-term risks to public safety are also recognized, but planned to be minimized through design features. Proper reclamation and the remote location of the site serve to minimize public safety risks.

4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.2.1 Energy and Materials

The Proposed Action would commit the use of non-renewable energy sources associated with the continued Quarry operations for power production. Diesel fuel, gasoline, and oil would be utilized for mining equipment and transportation vehicles.

4.2.2 Geology and Minerals

Operations associated with the Proposed Action would extract mineral resources from the Quarry. This would result in an irreversible and irretrievable development of known gypsum reserves. However, the development of these gypsum reserves would not preclude the future use of remaining reserves; the resource would be made available for use by society through the quarrying and processing activities.

4.2.3 Water Resources

The Proposed Action would result in an additional usage by the Plant of Ocotillo/Coyote Wells Groundwater Basin resources due to the extended period of withdrawal and an increase in annual pumping. In addition, USG would also develop Quarry Well No. 3 to supply non-potable water to the Quarry. Water from this well is distinct from the Ocotillo/Coyote Wells Groundwater Basin.

4.2.4 Vegetation

The Proposed Action would result in the disturbance of an additional 845 acres for a total of 1,185 acres of desert upland and wash habitat. Continued operation of the Quarry includes concurrent planned reclamation, so re-establishment of vegetation and wildlife habitat would be on-going through the life of the Proposed Action. As activities in individual quarry areas are completed, reclamation would begin so that during the life of the Proposed Action both quarrying and reclamation would be occurring at the Quarry.

4.2.5 Air Quality

The Proposed Action would result in continued generation of air emissions. These impacts would be limited to the life of the Proposed Action and are regulated by local, state and federal agencies.

4.3 ENVIRONMENTAL JUSTICE

4.3.1 Introduction

The purpose of an environmental justice evaluation is to determine whether federal actions would disproportionately affect minority and/or low-income population groups.

This section describes environmental justice concepts and issues related to federal actions associated with the USG modernization/expansion Project in two regions of Imperial County: Ocotillo/Quarry Region and El Centro Region. These regions were determined based on the location of the project components and the direct effects of the Project which are expected to occur in: (1) several communities of the Ocotillo/Coyote Wells groundwater basin area in the southwestern part of Imperial County; and (2) the City of El Centro.

Information on population, demographic characteristics, and income for the two regions is provided in the section titled Methodology. Demographic and income data from the U.S. Census Bureau and the California Department of Finance Demographic Research Unit (CA State Census Data Center) were used to identify high minority populations and low-income communities within the Project's affected regions.

4.3.1.1 Minority Groups

Countywide statistics were reviewed to determine the percentage of the population classified as non-Caucasian and the percentage classified as Hispanic. Each of the census tracts in the identified regions were evaluated relative to County averages to determine whether minority population percentages were greater in the regions and their tracts than the County average. If the percentage in the tracts exceeded that of the County average, the tract was further analyzed for environmental justice effects.

4.3.1.2 Low-Income Groups

The second criteria for evaluation of environmental justice impacts is income. Low-income population groups were identified by determining the County percentage of households that have incomes below the poverty level. The percentage of households with incomes below poverty level were then determined for each region and its tracts. If the percentage of low-income households in the tracts exceeded the County average, that tract was further analyzed for environmental justice impacts.

4.3.2 Regulatory Framework

Executive Order No. 12989 "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations," was issued in 1994 and states:

> *"To the greatest extent practicable and permitted by law, and consistent with principles set forth in the report on the National Performance Review, each Federal agency shall make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…"*

The objectives of the Executive Order include federal agency execution of environmental justice policies and objectives, determination of low-income populations, minority populations, or Indian tribes present in an area affected by a proposed action, and whether such group(s) may be disproportionately affected by the proposed action, and agency development of effective public participation strategies to reach such affected groups.

Therefore, this analysis was performed on the Proposed Action to determine whether any of the adverse effects would disproportionately affect low-income, minority, or Indian tribe populations within the Ocotillo/Quarry Region and/or the El Centro Region.

4.3.3 Environmental Setting

4.3.3.1 Ocotillo/Quarry Region

The Ocotillo/Quarry Region is geographically defined by Census Tract 123.01. The Tract is very large due to the population-based strategy by which Imperial County determines tract size. Ocotillo is designated as a census "place" within the larger tract named "Ocotillo". Total population within Tract 123.01 is 5,202. Ocotillo is located in the south-western region of the Tract with a population significantly less than that of the Tract at large: 296. The Ocotillo Region necessitates analysis due to its proximity to the U.S. Gypsum Project area. The Quarry, Plant and water supply are all located such that the population of the region may be affected.

4.3.3.2 El Centro Region

There are 10 census tracts in the El Centro region that establish an area of potential effect on minority and/or low-income populations groups. These tracts, 112.01, 112.02, 113, 114, 115, 116, 117, 118.01, 118.02, and 118.03, are located in and around the City of El Centro in the central region of Imperial County. These tracts are smaller in size due to the higher density of population in and around the El Centro Region. This Region will serve as a central point of commerce and labor for the Project and thus may result in significant effects for minority population groups in the area. Calculations based on U.S. Census-identified tracts show statistical evidence that minority and/or low-income population groups exist within their parameters and thus warrant extended analysis of the potential effects those populations may bear due to the U.S. Gypsum expansion project.

4.3.4 Methodology

For this analysis, the following assumptions were made:

- The major region of influence included in this environmental justice analysis is the County of Imperial. Throughout this section it may also be referred to as the general population or the affected area.
- To satisfy NEPA requirements, Hispanic population groups are analyzed as minority populations even though the percentage of Hispanics in the general population exceeds 70 percent.
- According to NEPA Guidelines, a minority population should be identified where either the minority population exceeds 50 percent OR the minority population percentage is meaningfully greater than that of the general population. Because Hispanic or Latino population groups are greater than 70 percent throughout the County of Imperial, this analysis focuses on the second option, whether or not a minority population group is meaningfully greater than that of the general population (County of Imperial).

4.3.4.1 Minority Groups

The U.S. Census Bureau formatted the 2000 U.S. Census data such that individuals of "Hispanic or Latino" descent are not distinguished as a separate race and thus are dispersed throughout other population groups, i.e. White, Asian, or Black (See Table

4.0-1, Race: County of Imperial, Hispanic Dispersed per Census Data). However, the *Guidance Under the National Environmental Policy Act* (NEPA), defines "Hispanic" as a minority population group. Section 1-101 of the NEPA Guidelines defines "minority" as:

> *Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.*

TABLE 4.0-1
RACE: COUNTY OF IMPERIAL, HISPANIC DISPERSED PER CENSUS DATA

Imperial County 2000 Census-RACE		
	Number	**Percent**
Total Population	**142,361**	**100**
One Race	137,169	96.4
White	70,290	49.4
Black or African American	5,624	4
American Indian and Alaska Native	2,666	1.9
Asian	2,836	2
Native Hawaiian and Other Pacific Islander	119	0.1
Some other race	55,634	39.1
Two or more races	5,192	3.6

*__Source:__
U.S. Census Bureau, Census 2000 Redistricting Data (Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.
*Hispanic minority groups incorporated into racial groups (U.S. Census definition)
*Minority includes: Native Indian or Alaska Native, Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (NEPA definition)
*Analysis will not include "Two or more races"

Therefore, for the purposes of this analysis, and in the interest of compliance with NEPA Guidelines, U.S. Census data on race is presented in the following manner:

- Minority population groups not distinguishing Hispanic or Latino as a separate race per Census methodology (See Table 4.0-1, Race: County of Imperial Hispanic Dispersed per Census Data)
- Hispanic populations groups separated out as an independent minority per NEPA guidelines (See Table 4.0-2, Race: County vs. Tract Hispanic or Latino)
- Minority populations groups including all non-white minorities as defined by NEPA (See Table 4.0-3, Race: County vs. Tract Minority vs. Non-Minority)

TABLE 4.0-2
RACE: COUNTY VS. TRACT HISPANIC OR LATINO

	Total	Hispanic or Latino	Percent of Population
Imperial County	**142,361**	**102,817**	**72.2%**
Total Selected Tracts	**52,834**	**37,766**	**71.5%**
El Centro Region			
Tract 112.01	3,378	2,080	**61.6%**
Tract 112.02	4,731	3,688	**78.0%**
Tract 113	6,658	5,823	**87.5%**
Tract 114	4,212	3,635	**86.3%**
Tract 115	6,648	5,652	**85.0%**
Tract 116	6,976	5,534	**79.3%**
Tract 117	5,260	3,880	**73.8%**
Tract 118.01	3,266	1,714	**52.5%**
Tract 118.02	4,968	2,769	**55.7%**
Tract 118.03	1,239	570	**46.0%**
Ocotillo/Quarry Region			
Tract 123.01	5,202	2,362	**45.4%**
Ocotillo CDP	296	59	**19.9%**

* U.S. Census Bureau, Census 2000 Redistricting Data

** Highlighted tracts represent those with a higher percentage than the County.

(Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

TABLE 4.0-3
RACE: COUNTY VS. TRACT MINORITY OR NON-MINORITY

	Total	Minority *	Percentage of Population (Minority) ***	Non-Minority **	Percentage of Population (Non-Minority)
Imperial County	**142,361**	**112,319**	79%	**28,768**	20%
Total Selected Tracts	**52,834**	**42,051**		**10,343**	
El Centro Region					
Tract 112.01	3,378	2,291	**68%**	1,044	**31%**
Tract 112.02	4,731	4,012	**85%**	674	**14%**
Tract 113	6,658	5,935	**89%**	689	**10%**
Tract 114	4,212	4,116	**98%**	83	**2%**
Tract 115	6,648	6,004	**90%**	585	**9%**
Tract 116	6,976	5,766	**83%**	1,162	**17%**
Tract 117	5,260	4,095	**78%**	1,126	**21%**
Tract 118.01	3,266	2,011	**62%**	1,212	**37%**
Tract 118.02	4,968	3,256	**66%**	1,637	**33%**
Tract 118.03	1,239	641	**52%**	576	**46%**
Ocotillo/Quarry Region					
Tract 123.01	5,202	3,860	**74%**	1,329	**26%**
Ocotillo CDP	296	64	**22%**	226	**76%**

* U.S. Census Bureau, Census 2000 Redistricting Data
** Percentages are rounded up to the nearest whole number
*** Highlighted tracts represent those with a higher percentage than the County.
(Public Law 94-171) Summary File, Matrices PL1, PL2, PL3, and PL4.

Hispanic or Latino

Based on the County percentage of Hispanic or Latino populations (72.2 percent), the italicized tracts in Table 4.0-2, Race: County vs. Tract Hispanic or Latino, represent the areas most likely to have Hispanic or Latino minority groups disproportionately affected by the project.

Minority or Non-Minority

According to U.S. Census data, Table 4.0-3, Race: County vs. Tract Minority or Non-Minority, represents the groups within the regions and their tracts that have a minority population percentage potentially affected by the project that is "meaningfully greater than the minority population percentage in the general populations," (NEPA

Guidelines). Census data incorporates Hispanic or Latino groups into other race categories. Therefore, the term "minority" in Table 4.0-3 represents Hispanic or Latino, Black or African American, American Indian and Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, or other races (non-Caucasian). The term "non-minority" represents Caucasian. The italicized tracts in Table 4.0-3 represent the areas most likely to have minority groups disproportionately affected by the project.

4.3.4.2 Low-Income Groups

According to U.S. Census Data, Table 4.0-4, Low Income, Poverty Status represents low-income groups in the two regions and its tracts. The poverty levels were measured against the County percentage. If the tract percentage was higher than the County, that tract was further analyzed for environmental justice impacts.

TABLE 4.0-4
LOW-INCOME, POVERTY STATUS

	Individuals for whom Poverty Status is Determined	Number Below Poverty Level	Percent Below Poverty Level
California	**33,100,044**	**4,706,130**	**14.2%**
Imperial County	**131,459**	**29,681**	**22.6%**
El Cento Region			
Tract 112.01	3,364	195	**5.8%**
Tract 112.02	4,731	1,262	**26.7%**
Tract 113	5,832	1,280	**21.9%**
Tract 114	4,206	1,699	**40.4%**
Tract 115	6,075	2,312	**38.1%**
Tract 116	6,976	1,921	**27.5%**
Tract 117	5,140	324	**6.3%**
Tract 118.01	3,244	41	**1.3%**
Tract 118.02	4,762	551	**11.6%**
Tract 118.03	1,310	56	**4.3%**
Ocotillo/Quarry Region			
Tract 123.01	774	124	**16.0%**
Ocotillo CDP[1]	307	51	**16.6%**

* Italicized Tracts represent those with a greater percentage below poverty level than the County as a whole.

[1] CDP means census designated place.

Potential Effects on Minority and Low-Income Populations

Water Supply

The Proposed Action relies on water supply wells located in the Ocotillo/Coyote Wells Groundwater Basin which includes several communities represented by Census Place Ocotillo CDP within the Ocotillo/Quarry Region. These communities rely on the Ocotillo/Coyote Wells groundwater basin as their sole source of potable water. The Proposed Action anticipates increasing groundwater pumping from these existing wells.

As indicated in Tables 4.0-1 through 4.0-4, several areas within the affected region have minority and low-income census tracts. However, the areas of direct impacts relative to Water Supply (Ocotillo/Quarry Region, Tract 123.01 and Ocotillo CDP) have both a minority population and a low-income population well below the respective County percentages. Therefore, no disproportionate effects on minority or low-income communities have been identified. Further analysis of general hydrology impacts is discussed in Section 3.3, Hydrology and Water Quality.

Economic Impact

The Proposed Action would contribute 140 new jobs through direct employment and also contribute to the economic well-being of Imperial County through secondary effects such as commerce and increased consumer spending in local communities. The employment effects of the Proposed Action represent 0.2 percent of the total regional employment of 50,788. Most economic effects are expected to occur within the El Centro Region because of its proximity to project components.

As indicated in Tables 4.0-1 through 4.0-4, of the ten tracts within the El Centro Region, six tracts have minority population percentages above the County average and four have low-income population percentages above the County average. Therefore, though these minority and low-income groups may be disproportionately affected by the Proposed Action's impacts according to NEPA Standards, these economic impacts are beneficial and will manifest themselves through increased local employment and consumer spending, thereby building up local commerce.

4.4 GROWTH INDUCING IMPACTS

The Proposed Action involves the expansion and modernization of USG's wallboard manufacturing facility in Imperial County. The increased board line production capabilities at the Plant would increase employment by approximately 140 people. This is not a substantial increase in the regional employment and housing is available in the El Centro market area to accommodate this limited increase.

4.5 ENERGY CONSUMPTION AND CONSERVATION

Implementation of the Proposed Action would result in the consumption of non-renewable energy resources. These resources would primarily include petroleum products, such as diesel fuel and gasoline, and electricity. Fuel consumption by heavy equipment would be the largest single energy requirement. One of the primary opportunities for energy conservation associated with the Proposed Action is the regular, scheduled maintenance of the vehicles and equipment to maximize fuel efficiency. Vehicle and heavy equipment maintenance is performed at the shop located at the Quarry.

The expansion and modernization of the wallboard Plant provides the opportunity to upgrade outdated mechanical equipment with current technology that is both more efficient in power usage and has better environmental controls (such as emissions reduction).

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5.0 Consultation and Coordination

5.0 Consultation and Coordination

5.1 PUBLIC PARTICIPATION

The process undertaken for determining the scope of environmental issues to be addressed in this EIR/EIS included public involvement, as required by NEPA's implementing regulations and as encouraged by CEQA. Scoping was undertaken to identify the range of actions, alternatives, impacts and mitigation measures associated with the Proposed Action to be analyzed in depth in the EIR/EIS, and to eliminate issues found not important. The public scoping process was designed to solicit comments from the general public and from local, state, and federal governmental agencies, and included the following steps:

- County Notifications:
  - Notice of Preparation (NOP) to prepare an EIR on the Proposed Action, published by the County of Imperial. The NOP was sent to state agencies, surrounding property owners, and other interested individuals according to the County's mailing list, on December 20, 2001, requesting comments within a 30-day period on the issues to be addressed.
- BLM Notifications:
  - Notice of Intent (NOI) to complete an EIS on the Proposed Action, published in the Federal Register by the U.S. Environmental Protection Agency (EPA) on May 1, 2002, requesting comments on the issues to be addressed within a 41-day period.
  - Direct mailing of approximately 518 notices for the public scoping meetings for the expansion project were sent to interested respondees.
- County and BLM Notifications:
  - Notices of the public scoping meetings were published in newspapers of local and regional distribution (Imperial Valley Press and El Sol del Valle) on December 23, 2001 and December 28, 2001.
  - Two scoping meetings were held in El Centro, California, as noticed by the direct mailing letter and the newspaper notices. Less than 20 individuals attended the two meetings.

Copies of the above notices and mailings are included in Appendix A.

5.1.1 Issues of Concern

The scoping process resulted in the following list of potential environmental impacts from the proposed mine plan modifications:

- Hydrology/Water Quality
  - Surface flows and groundwater
  - Stormwater management
- Air Quality
  - Emissions of criteria and other pollutants
- Transportation/Circulation
  - Traffic levels
- Biology
  - Unique, threatened, or endangered species
  - Revegetation in accordance with the reclamation plan
  - Onsite habitat and species distribution
- Geology
  - Topography and soils
  - Stream configuration and erosion
  - Slope stability
- Public Health and Safety
  - Storage and handling of fuels, oils, and other hazardous materials
- Acoustics
  - Noise exposure and effects
- Recreation/Scenic
  - Site's aesthetic characteristics and the viewshed
- Cultural Resources
  - Prehistoric and archeological resources
- Hazardous Materials
  - Storage and handling of fuels, oils, and other hazardous materials
- Land Use
  - Consistency with applicable land use plans, policies, and regulations

5.2 LIST OF CONTACTS

During the preparation of the EIR/EIS the County and the BLM communicated with and received input through the NOP/NOI and scooping process from various federal, state and local agencies, private organizations, and individuals. The following sections list these contacts.

5.2.1 Federal Agencies

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Geological Survey

5.2.2 State Agencies

California Department of Conservation, Office of Mine Reclamation

California Department of Health Services

5.2.3 Local Agencies

Imperial County Irrigation District

Imperial County Public Works Department

Imperial County Health Department

Imperial County Air Pollution Control District

California Regional Water Quality Control Board (Region #7)

5.2.4 Private Organizations and Companies

Lilburn Corporation

Jeffer, Mangels, Butler and Marmaro LLP

United States Gypsum Company

Bookman-Edmonston Engineering, Inc.

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7.0 Glossary and Acronyms

7.0 Glossary and Acronyms

7.1 GLOSSARY

active fault Fault with seismic activity recent enough so as to have displaced Holocene materials (up to 10,000 years old).

aggregate A hard, inert material composed of fragments which show a wide and gradational range in sizes, and which can be bound together into a coherent mass by means of a cementing material such as portland cement, gypsum plaster, or asphalt.

alluvial fan An outspread, gently sloping mass of alluvium deposited by a stream flowing from a narrow canyon onto a plain or valley floor. Viewed from above, it has the shape of an open fan, the apex being at the valley mouth.

alluvial deposit Clay, silt, sand, gravel or other sediment deposited by the action of running or receding water.

alluvial Pertaining to material or processes associated with transportation or deposition of soil and rock by flowing water (e.g., streams and rivers).

alluvium A general term for geologic materials deposited by running water (e.g., streams and rivers). The term applies to deposits of recent time that have not been consolidated and cemented into rock.

ancillary facilities Support structures and equipment.

ANFO A slurry of ammonium nitrate and fuel oil, used as an explosive.

anticline A flow in the rock layer, generally upward, whose core contains the stratigraphically older rocks.

aquifer A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

artifact Any object showing human workmanship or modification, especially from a prehistoric or historic culture.

Authority to Construct Written permit which must be obtained from the APCD prior to construction, alteration, or replacement of any article, machine, or equipment which may emit air contaminants or affect any emission of those contaminants.

bajada A sloping ground surface comprised of a series of merged alluvial fans.

bedrock A general term for the rock, usually solid, that underlies soil or other unconsolidated, bed material.

berm An elongate earthen structure which acts as a barrier; e.g., to make it difficult for a vehicle to cross, or to redirect the flow of water.

braided channel A stream that is characterized by random interconnected channels divided by islands or bars. Bars which divide the stream into separate channels at low flows are often submerged at high flow.

California Endangered Species Act (CESA) Legislation enacted in 1984 to protect floral and faunal species by listing them as "rare," "threatened," "endangered," or "candidate," and providing a consultation process for the determination and resolution of potential adverse impact to the species.

California Environmental Quality Act (CEQA) Legislation enacted in 1970, as amended, to protect the quality of the environment for the people of California through requiring public agencies and decision makers to document and consider the environmental consequences of their actions.

channel morphology The physical shape, size and characteristics of a stream channel in relation to the hydraulic factors of velocity, roughness, flow and flow frequency.

channel A natural or artificial waterway of perceptible extent which periodically or continuously contains moving water. It has a definite bed and banks which serve to confine water.

clay Made of sediment particles that are classified according to size on scale in a range from coarse (0.004 to 0.0020 millimeters) to very fine (0.0005 to 0.00024 millimeters). See Table 7-1

cobbles Rock sediment particles that are classified according to size in a range from 256 to 64 millimeters. See Table 7-1.

cone of depression The depression produced in a water table or potentiometric surface by the withdrawal of water due to pumping.

contrast The effect of a striking difference in the form, line, color, or texture of the landscape features within the area being viewed.

convergence The state of tending to a unique solution. A given scheme is convergent if an increasingly finer computational grid leads to a more accurate solution.

cumulative impacts Two or more individual effects which, when considered together, compound or increase the impact.

cumulative effects The combined environmental impacts that accrue over time and space from a series of similar or related individual actions, contaminants, or projects. Although each action may seem to have a negligible impact, the combined effect can be significant. Included are activities of the past, present, and reasonably foreseeable future; synonymous with cumulative impacts.

deposition The mechanical or chemical processes through which sediments accumulate in a (temporary) resting place. The raising of the stream bed by settlement of moving sediment that may be due to local changes in the flow, or during a single flood event.

direct impacts Impacts that are caused by the action and occur at the same time and place (40 Code of Federal Regulations 1508.7); synonymous with direct effects.

discharge The discharge (Q) is the volume of a fluid or solid passing a cross section of a stream per unit time.

discretionary actions For the purpose of CEQA, these are actions or approvals by governmental agencies or boards that require the exercise of judgment or deliberation when making a decision to approve, deny, or approve with conditions a proposed project.

distributaries Diverging streams which do not return to the main stream, but discharge into another stream or the ocean.

TABLE 7-1
SCALE FOR SIZE CLASSIFICATION OF SEDIMENT PARTICLES

Class Name	Millimeters	Feet	PHI Value
Boulders	>256< -8	--	<-8
Cobbles	256 - 64	--	-8 to -6
Very Coarse Gravel	64 - 32	.148596	-6 to -5
Coarse Gravel	32 - 16	.074216	-5 to -4
Medium Gravel	16 - 8	.037120	-4 to -3
Fine Gravel	8 - 4	.018560	-3 to -2
Very Fine Gravel	4 - 2	.009279	-2 to -1
Very Coarse Sand	2.0 - 1.0	.004639	-1 to 0
Coarse Sand	1.0 - 0.50	.002319	0 to +1
Medium Sand	0.50 - 0.25	.001160	+1 to +2
Fine Sand	0.25 - 0.125	.000580	+2 to +3
Very Fine Sand	0.125 - 0.0625	.000288	+3 to +4
Course Silt	0.0625 - 0.031	.000144	+4 to +5
Medium Silt	0.031 - 0.016	.000072	+5 to +6
Fine Silt	0.016 - 0.008	.000036	+6 to +7
Very Fine Silt	0.008 - 0.004	.000018	+7 to +8
Coarse Clay	0.004 - 0.0020	.000009	+8 to +9
Medium Clay	0.0020 - 0.0010	--	+9 to +10
Fine Clay	0.0010 - 0.0005	--	+10 to +1 I
Very Fine Clay	0.0005 - 0.00024	--	+II to +12
Colloids	<0.000024	--	>+12

NOTE: Portions of Table 7-1 are taken from EM II 10-2-4000, March 1988

drainage Natural channel through which water flows at some time of the year. Natural and artificial means for effecting discharge of water as by a system of surface and subsurface passages.

drawdown The lowering of the water level in a well as a result of withdrawal; the reduction in head at a point caused by the withdrawal of water from an aquifer.

dust palliative A compound used to reduce fugitive dust. Dust palliatives include water, water/surfactant mixtures, emulsion compounds, etc.

effect Effect and impact are synonymous as used in this report. Direct or primary impacts are those caused by the project and occur at the same time and place. Indirect, or secondary, effects are those which result from the project and occur later in time or farther removed in distance or time, but are still reasonably foreseeable.

end-dumping The process of dumping material from the back of a dump truck. Overburden piles are constructed by backing a dump truck up on the top surface of a pile to the edge of the pile, and end-dumping the overburden over the side of the pile.

endangered species Any animal or plant species which is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act (ESA) and ESA Amendments of 1982 and by CESA of 1984.

Endangered Species Act (ESA) Federal legislation enacted in 1973, as amended, that extends legal protection to plants and animals listed as "threatened" or "endangered" and includes consultation with FWS.

environment The physical conditions which exist within the area which will be affected by a proposed project or alternative, including but not limited to land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance (CEQA §21060.5). The environment includes both natural and man-made conditions.

Environmental Impact Statement (EIS) An analytical document prepared under NEPA that portrays potential impacts to the human environment of a particular course of action and its possible alternatives. An EIS is prepared for use by the public, public agencies, and agency decision makers to weigh the environmental consequences of a proposed action.

Environmental Impact Report (EIR) A detailed report prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. An EIR is prepared for use by the public, public agencies and agency decision makers to weigh the environmental consequences of a proposed action.

ephemeral stream A stream or portion of a stream that flows briefly in direct response to precipitation in the immediate vicinity and whose channel is at all times above the water table. (Such flow is usually of short duration.)

erosion The wearing away of soil and rock by weathering, mass wasting, and the action of streams, glaciers, waves, wind, and underground water.

evapotranspiration The process by which water is returned to the air through direct evaporation or by transpiration of vegetation, with no attempt being made to distinguish between the two.

fault A surface or zone along which there has been displacement of the geologic materials on either side relative to one another as a result of seismic activity.

feasible Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors. (CEQA §2106 1. 1)

federal land All classes of land owned by the federal government.

flake A flake is a remnant or chip of stone which indicates previous human activity.

floodplain The portion of a river valley, adjacent to the channel, which is built of sediments deposited during the present regimen of the stream and is covered with water when the river overflows its banks at floodstages.

fluvial process The processes occurring in rivers and creeks.

fluvial Of or pertaining to rivers or produced by the action of a stream or river.

fold A bend in bedding, foliation, cleavage, or other planar features in rocks. A fold is usually a product of deformation.

fugitive dust Dust particles suspended randomly in the air from road travel, excavation, and rock loading operations.

g The acceleration of gravity (32.2 ft/sec 2).

game species Animals commonly hunted for food or sport.

geomorphology The shape of the earth's surface.

grain size See **particle size.**

gravel Fragments of rock larger and coarser than sand, worn by the action of air **or** water, two millimeters to three inches in size. See Table 7-1.

groundwater All subsurface water that is below the water table.

groundwater recharge Replenishment of groundwater by precipitation, runoff or by artificial methods.

growth media Geologic and organic materials, including soils, that are suitable for use in growing plants.

habitat The place where an animal or plant normally lives, often characterized by a dominant plant and codominant form, such as creosote bush habitat.

hardrock minerals Include copper, lead, zinc, magnesium, nickel, tungsten, gold, silver, bentonite, barite, feldspar, fluorspar, and uranium. They are not defined as "leasable minerals" (oil, gas, coal, oil shale, phosphate, sodium, sulfur, asphalt, or gilsonite) or "saleable minerals" (common variety of sand and gravel).

haul road A road used by large (50- to 100-ton capacity) trucks to haul ore and overburden from the open pit to other locations.

hazardous material Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (California Health and Safety Code, §2550 1)

heavy metals A group of elements, including copper, lead, mercury, molybdenum, nickel, cobalt, chromium, iron, silver, etc., that may be acquired by organisms in trace amounts that are toxic in higher concentrations.

Holocene The epoch of the Quaternary period of geologic time from 10,000 years ago up to the present.

hydraulic conductivity The capacity of a rock to transmit water. It is expressed as the volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

hydraulics The study and computation of the characteristics, e.g., depth (water surface elevation), velocity, and slope of water flowing in a stream or river.

hydrograph A graph showing, for a given point on a stream or conduit, the discharge, water surface elevation, stage, velocity, available power, or other property of water with respect to time.

hydrology The study of the properties, distribution, and circulation of water on the surface of the land, in the soil, and in the atmosphere.

impact A modification in the status of the environment brought about by the proposed action or an alternative.

in situ In (its original) place.

incise To cut down into or entrench.

incised Having a margin that is deeply and sharply notched.

infrastructure The basic framework or underlying foundation of a community or project, including road networks, electric and gas distribution, water and sanitation services, and facilities.

Initial Study A preliminary analysis prepared by the lead agency to determine whether an EIR or a Negative Declaration must be prepared or to identify the significant environmental effects to be analyzed in an EIR.

intermittent stream A stream that flows only part of the time or during part of the year.

intrusive Of or pertaining to the process and rock formed by the emplacement of molten rock material in preexisting rock.

irreversible Applies primarily to the use of nonrenewable resources, such as minerals, cultural resources, wetlands, or to those factors that are renewable only over long time spans, such as soil productivity. Irreversible also includes loss of future options.

jurisdictional wetlands A wetland area identified and delineated by specific technical criteria, field indicators, and other information for purposes of public agency jurisdiction. The public agencies that administer jurisdictional wetlands are the U.S. Army Corps of Engineers (ACE), the U.S. Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Service (FWS), and the USDA Soil Conservation Service.

lead agency The public agency which has the principal responsibility for carrying out or approving a project which may have a significant effect upon the environment. (CEQA §21067)

local agency Any public agency other than a state agency, board or commission (CEQA §21062)

locatable minerals Minerals of metallic or other substances recognized by standard authorities and found in sufficient quantity and quality to justify their location under the mining law.

lode claim One of four types of mining claims, it is located for veins or lodes of quartz or other rock in place and may extend for 1,500 feet along the vein or lode and to a maximum of 300 feet on either side.

magazine A storage room for explosives. Magazines are built to specifications set by the MSHA and are usually located in a secure but remote area of the project site.

mass wasting The downslope movement of soil and rock material under the direct influence of gravity.

mass failure Unit downslope movement of a portion of the land surface, as in creep, landslide, or slip.

Maximum Contaminant Levels (MCLS) The drinking water standards defined by the State Drinking Water Act.

meandering stream An alluvial stream characterized in planfonn by a series of pronounced alternating bends. The shape and existence of the bends in a meandering stream are a result of alluvial processes and not determined by the nature of the terrain (geology) through which the stream flows.

metamorphism The mineralogical, chemical, and structural adjustment of solid rocks to physical and chemical conditions imposed at depth below the surface zones of weathering and cementation, which differ from the conditions under which the rocks originated.

mine pit Area from which ore and overburden are removed.

mine Mine includes all mineral bearing properties of whatever kind of character, whether underground, or in a quarry or pit, or any other source from which any mineral substance is obtained.

mineral materials Minerals such as common varieties of sand, stone, gravel, pumice, pumcite, and clay that can only be obtained under the Materials Act of 1947.

mineral permit Authorizes prospecting for certain leasable minerals on public lands described in the permit.

mineralization The process by which a valuable mineral or minerals are introduced into a rock.

mining The process or business of taking mineral substances from a pit, quarry or excavation in conjunction with other permitted construction activities.

mining claim location Staking and reordation of a lode, or placer claim, millsite or tunnel site on public land.

mining claim A mineral entry and appropriation of public land under the Mining Law of 1872, as amended.

mitigate/mitigation To cause to become less severe or harmful; actions to avoid, minimize, rectify, reduce or eliminate, and compensate for impacts to environmental resources.

mitigation A method or procedures which may: (1) avoid an impact altogether by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of the action and its implementation; (3) rectify the impact by repairing, rehabilitating, or restoring the impacted environment; (4) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and (5) compensate for the impact by replacing or providing substitute resources or environments.

monitor to systematically and repeatedly watch, observe, or measure environmental conditions in order to track changes.

monitoring The collection of environmental, scientific, or engineering data by either continuous or periodic sampling methods.

morphology The shape of the earth's surface.

National Environmental Policy Act (NEPA) Legislation enacted in 1969, as amended, that requires federal agencies to include in their decision-making process: (1) appropriate consideration of all environmental effects; (2) procedures to avoid or minimize adverse effects; and (3) restore and enhance environmental quality as much as possible.

National Register of Historic Places (NRHP) A list, maintained by the National Park Service, of areas that have been designated as being of historical significance.

native species Plants that originated in the area in which they are found; i.e., they naturally occur in that area.

Notice of Intent Similar to the Notice of Preparation, is used to notify other agencies and the public that an EIS is being prepared under NEPA.

Notice of Preparation (NOP) A brief notice sent by the public agency with principal responsibility for carrying out or approving a project to notify other agencies that an EIR is being prepared under CEQA.

open pit operation. Surficial mining, in which the valuable rock is exposed by removal of overburden.

ore Rock that can be mined for extraction of a mineral commonly under conditions that allow a profit to be made.

outcrop The part of a geologic formation or structure that appears at the surface of the earth; also, bedrock that is covered by surficial deposits such as alluvium.

overburden Rock which contains either no gold or gold in quantities that cannot be economically extracted. Because such rock either lies on top of ore or is mixed in with the ore, overburden must be mined in advance of or at the same time as the ore is mined.

ozone (0_3) An end product of complex reactions between ROG and (or non-methane hydrocarbons) and NO_x in the presence of ultraviolet radiation.

parameter Any set of physical properties whose values determine the characteristics or behavior of something.

particle size A linear dimension, usually designated as "diameter," used to characterize the size of a particle. The dimension may be determined by any of several different techniques, including sedimentation sieving, micrometric measurement, or direct measurement.

particulate(s) Minute, separate particles, such as dust or other air pollutants.

patent Government deed; a document that conveys legal title to public lands to the patentee.

patented claims Mining claims for which the United States government has conveyed the fee simple interest in the surface and minerals into private ownership.

permeability A measure of the relative ease with which a porous medium can transmit a liquid under a potential gradient; the property of a soil that permits the passage of water under a gradient of force.

permeable The property or capacity of a porous rock, sediment, or soil to transmit a liquid.

pH The measure of acidity or basicity of a solution.

phreatophyte A deep rooted plant that obtains its water from the water table or the soil layer just above it.

Placer claim One of four types of mining claims, it is located for all forms of deposits except veins of quartz or other rock in place; limited to 20 acres per individual or corporation, but up to 160 acres for an association of eight or more persons.

plan of operations As required by 43 Code of Federal Regulations 3809: Operators must submit plans of operation outlines to the Bureau of Land Management that include the name and address of the operator; location of the proposed area of operation; and information sufficient to describe the type of operation proposed, the type of roads, the means of transportation to be used, the period when the proposal will take place, and measures to be taken to meet the requirements for environmental protection.

potentiometric surface A surface that represents the total head in an aquifer; that is, it represents the height above a datum plane at which the water level stands in tightly cased wells that penetrate the aquifer.

prevention of significant deterioration (PSD) A term used to describe an air quality permitting process that is triggered by any project that has the potential to emit certain pollutants above levels prescribed by law.

project An activity which may cause either a direct physical change in the environs or a reasonably foreseeable indirect physical change in the environment, and which is any of the following: (a) An activity directly undertaken by any public agency, (b) an activity undertaken by a person which is supported, in whole or in part, through contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies, (c) an activity that involves the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. (CEQA§21065)

pseudostatic analysis Static analysis of slope stability that incorporates a simulated horizontal force equal to the horizontal acceleration of the design earthquake times the mass of the potential sliding material.

pseudostatic factor of safety The ratio of forces contributing to slope stability (e.g., intergranular friction and cohesion) versus forces working against slope stability (e.g., gravity, seismic acceleration) for a simulated seismic load. A pseudostatic factor of safety equal to one indicates that these forces are equal and slope movement may occur.

public agency Any state agency, board, or commission; county, city, regional agency, public district, redevelopment agency, or other political subdivision. (CEQA §21063)

public land Any land and interest in land owned by the United States within the several states and administered by the Secretary of the Interior through the Bureau of Land Management (BLM), without regard to how the United States acquired ownership, except: (1) lands located on the Outer Continental Shelf, and (2) lands held for the benefit of Indians, Aleuts, or Eskimos.

riverbed erosion Rivers that are cutting downward produce sediments by the development of canyons or valleys. The grain-size distribution of sediment contributed to the river is determined by the range in grain sizes composing the geologic material through which the river is incising and the transporting ability of the river.

ROG Reactive organic gases, chemicals that are the precursors to the formation of ozone.

saturated zone Zone in which all the connected interstices or voids in rock or soil are filled with water under pressure equal to, or greater than, atmospheric pressure. The water table is commonly considered to be at the top of the zone of saturation.

saturation The degree to which voids in soil are filled with water.

seismic Pertaining to an earthquake or earth vibration which may be natural or artificial.

seismicity Oscillation of the ground resulting from shifting of the earth's crust.

sensitive species Generic term for any plant or animal species which is recognized by the government as being depleted, rare, threatened, or endangered.

significant effect on the environment A substantial, or potentially substantial, adverse change in the environment. (CEQA §21068)

significant effect A substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance.

soil horizon In a vertical section of land, the reasonably distinct layer of upper layer of earth that may be dug or plowed and in which plants grow.

soil erosion Movement of soil through the action of natural physical processes, primarily associated with the action of wind and water, from their position on the earth's surface. Soil erosion includes detachment, transport and subsequent deposition of soil particles.

threatened species Species which, although not presently threatened with extinction, is likely to become endangered in the foreseeable future throughout all or a significant portion of its range 'm the absence of special protection and management efforts.

transpiration The process by which liquid water is taken up by a plant, then released to the atmosphere as a vapor at the surface of the plant.

unconfined aquifer The aquifer in which the water surface is free to move up and down.

unsaturated zone Zone in which the connected interstices or voids in a permeable rock are not filled with water and in which there can be movement of air. Generally, the zone between the land surface and the water table, but a zone of aeration can exist below an artesian aquifer, and below a perched body of water.

visual resource The composite of basic terrain, geologic features, water features, vegetation patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for viewers.

visual resource management classes A classification of landscapes according to the kinds of structures and changes that are acceptable to meet established visual goals (Bureau of Land Management designation).

waste rock See **overburden.**

water budget A quantitative system of accounting for sources, storage locations and losses of water in a basin.

water erosion Water erosion occurs when the intensity of rainfall exceeds the infiltration capacity of the soil, and overland flow is generated. In arid and semiarid regions, runoff and erosion are generated during storms over widespread portions of the landscape, producing largely silt- and sand-sized sediment. Surface erosion produces sand-sized and smaller sediments.

water table The level in the saturated zone at which the pressure is equal to the atmospheric pressure.

watershed The geographic region from which water drains into a particular stream, river, or body of water. A watershed includes hills, lowlands, and the body of water into which the land drains. Watershed boundaries are defined by the ridges or divides separating them. Also called a drainage area.

withdrawal Action restricting disposition of public lands and held for a specific public purpose.

7.2 ACRONYMS

AF/Yr	Acre Feet per Year
ANFO	Ammonium nitrate and fuel oil
AQAP	Air Quality Attainment Plan
APCD	Air Pollution Control District
ATC	Authority to Construct
BATC	Best Available Control Technology
Bgs	Below ground surface
BLM	Bureau of Land Management
BMPs	Best Management Practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
Caltrans	California Department of Transportation
CalOSHA	California Occupational Safety and Health Administration
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDCA	California Desert Conservation Act
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CIWMB	California Integrated Waste Management Board
CNDDB	California Natural Diversity Data Base
CO	Carbon Monoxide
CP Mill	Claudius Peters Mill
CUP	Conditional Use Permit (County land use permit)
DEHS	Department of Environmental Health Services
DOI	U.S. Department of Interior
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERCs	Emission Reduction Credits
ESA	Endangered Species Act
F	Fahrenheit
FLPMA	Federal Land Policy and Management Act
FTHL	Flat-tailed horned lizard
g	gravity
gpd	gallons per day

gpm	gallons per minute
I-8	Interstate 8
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
IMSA	Inert Material Storage Area
ITE	Institute of Traffic Engineers
LOS	Level of Service
MCE	Maximum Credible Earthquake
MCLS	Maximum Contaminant Levels
MMBtu	Million British thermal units per hour
msf	million square feet
MSHA	Mine Safety and Health Agency
M_w	Moment Magnitude
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	Nitrogen dioxide
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NSR	New Source Review
0_3	ozone
OSHA	Occupational Safety and Health Act
OHV	Off-highway Vehicle
Pb	Lead
pH	Hydrogen ion potential
$PM_{2.5}$	Fine Particulate Matter
PM_{10}	Coarse Particulate Matter
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
PTO	Permit to Operate
RCRA	Resource Conservation and Recovery Act
RO	Reverse Osmosis
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SMARA	Surface Mining and Reclamation Act (State of California)
SO_2	Sulfur Dioxide
SWPPP	Storm Water Pollution Prevention Plan

SWRCB	State Water Resources Control Board
TPH	tons per hour
TPY	tons per year
UP	Union Pacific
USFWS	United States Fish and Wildlife Service
USG	United State Gypsum Company
USGS	United States Geological Survey
V/C	Volume/Capacity Ratio
VOC	Volatile Organic Compound
VRM	Visual Resource Management
WA	Wilderness Area

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