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Environmental Impact Statement & Environmental Impact Report

for the proposed

Mesquite Regional Landfill

Imperial County, California

SCH. No. 92051024
BLM No. CA-060-02-5440-10-B026

Prepared by the
Bureau of Land Management
California Desert District

and the
County of Imperial
Planning & Building Department

Environmental Consultant
The Butler Roach Group, Inc.
San Diego, California

April 1994

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BUREAU OF LAND MANAGEMENT
El Centro Resource Area
1661 South 4th Street
El Centro, California 92243-4561

April 8, 1994

IN REPLY REFER TO:

2000
Mesquite Landfill
(C-067.00)

Dear Reader:

We are pleased to provide this Draft Environmental Impact Statement and Environmental Impact Report (EIS/EIR) for the proposed Mesquite Regional Landfill for your review and comment. The proposed project would be located adjacent to the existing Mesquite Gold Mine and Ore Processing Facility in eastern Imperial County. The purpose of this document is to provide information to the public, as well as Cooperating and Responsible agencies regarding the environmental consequences of establishing the proposed Class III sanitary landfill. Various technical reports have been prepared which have been used in the preparation of this Draft EIS/EIR. Copies of the technical reports are available for review at the libraries listed herein, the Imperial County Planning/Building Department and Bureau of Land Management (BLM) office in El Centro, CA.

To facilitate review, this document has been prepared as an Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and implementing regulations. The Bureau of Land Management is the lead agency for the purpose of compliance with the requirements of NEPA for the proposed project.

This document has also been prepared as an Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA) and implementing regulations and guidelines. The County of Imperial is the lead agency for the purpose of compliance with the requirements of CEQA for the proposed project.

Comments concerning the adequacy or accuracy of this document will be considered in preparation of the Final EIS/EIR. A 90-day public review period has been established for this document. In addition, two public hearings will be held during the public comment period to receive verbal testimony on the following dates: 7 p.m. PDT, Wednesday, May 25, 1994, at the El Centro Community Center, 375 South First Street, El Centro, California 92243, (619-337-4555); 7 p.m. PDT, Thursday, May 26, 1994, at the Desert Expo Center, Fine Arts Building, 46-350 Arabia Street, Indio, California 92201 (619-863-8247). Written comments on this document will be accepted through July 6, 1994, and should be addressed to:

Bureau of Land Management
1661 South 4th Street
El Centro, CA 92243

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For information concerning the Federal aspects of the project, including comments on the EIS, contact Thomas Zale of the BLM at (619) 353-1060. For information concerning the non-federal aspects of the project, including comments on the EIR, contact Jurg Heuberger, AICP at (619) 339-4236, Extension 310.

Respectfully submitted,

G. Ben Koski
Area Manager
El Centro Resource Area

Jurg Heuberger, AICP, CEP
Planning Director
County of Imperial

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ENVIRONMENTAL IMPACT STATEMENT

ENVIRONMENTAL IMPACT REPORT

for the

PROPOSED MESQUITE REGIONAL LANDFILL

State Clearinghouse No. 92051024

BLM No. CA-060-5440-10-B026

Applicant

Arid Operations, Inc.

Prepared By

U.S. Department of the Interior
Bureau of Land Management

Henri R. Bisson
District Manger
California Desert District

Date
April 1, 1994

County of Imperial
Planning and Building Department

Jurg Heuberger
Planning Director
County of Imperial

Date
April 1, 1994

Mesquite Regional Landfill Project, Imperial County, California
Federal Land Exchange and Right-of-Way Approval
Imperial County Conditional Use Permit,
General Plan Amendment, and Change of Zone
Draft Environmental Impact Statement/Environmental Impact Report

Lead Agencies:

U.S. Department of the Interior
Bureau of Land Management
California Desert District
El Centro Resource Area

County of Imperial
El Centro, California

Prepared By:

The Butler Roach Group, Inc.

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Jurg Heuberger
Imperial County Planning and
Building Department
939 Main Street
El Centro, CA 92243
(619) 339-4236

Abstract:

The Mesquite Regional Landfill Project (Proposed Action) is a proposed Class III non hazardous solid waste landfill adjacent to the active Mesquite Gold Mine and Ore Processing Facility in eastern Imperial County, California. The proposed site is located in the California Desert Conservation Area. The site is comprised of approximately 4,250 acres of private and public land. Under the Federal Land Policy and Management Act (FLPMA), about 1,750 acres of Bureau of Land Management (BLM) lands would be transferred to Arid Operations, Inc., in exchange for land owned by Arid Operations, Inc. The BLM Lands are necessary for the operation of the proposed landfill and the offered lands contain desirable quality wildlife habitat on the Chuckwalla Bench and high quality scenic resources in the Santa Rosa Mountains National Scenic Area. Also, a FLPMA right-of-way would be issued for the approximately 4- to 5-mile rail spur to be constructed between the existing Southern Pacific Railroad tracks and the proposed site and for a future gas pipeline within the existing SP right-of-way and proposed rail spur right of way between the proposed site and Niland.

In addition, an Amendment to the California Desert Conservation Area Plan would be required to change the classification of that portion of the Singer Geoglyphs ACEC located north of SR 78 to Multiple Use Class M. There are no cultural resources

the ACEC north of SR 78. The Mesquite Regional Landfill General Plan Amendment, Rezone, and Conditional Use Permit amends the Imperial County General Plan and Zoning Ordinance and Map to facilitate initiation of a landfill operation at the proposed site.

The landfill itself would comprise 2,290 acres. At full-scale operations, the landfill would accept an inflow of up to 20,000 tons of solid waste per day from throughout Southern California for approximately 100 years. Most of this total would be shipped in enclosed containers by rail along the Southern Pacific main line.

The design of the landfill includes the use of a "triple composite" liner on the bottom, a leachate collection and recovery system, and a landfill gas collection system. Treatment systems for leachate and other contaminated water and landfill gas (LFG) would be provided on-site. Once economically feasible, LFG would be converted to energy through a boiler-powered generator or the LFG would be cleaned and either piped off-site as methane gas or compressed and hauled off-site in rail cars as liquefied methane gas.

The Proposed Action incorporates mitigation measures such that most impacts to the human environment would not be significant. The proposed landfill would strongly contrast with the existing visual setting, and visual impacts would be significant and unmitigable. Emissions of particulates (PM_{10}) during periods when background PM_{10} standards are not met would be cumulatively significant. State Route 78, in the vicinity of Glamis, is very congested during the period beginning the afternoon before and ending the morning after weekends and holidays from October 1st to May 31st. Employee vehicle trips would not avoid these periods. Therefore, traffic impacts from employee vehicle trips during these periods would be cumulatively significant.

By providing for the landfilling of solid waste outside of the South Coast Air Basin, it is expected that the amounts of ozone transported to the Southeast Desert Air Basin and the Imperial County Air Basin would be reduced. The Proposed Action would create jobs, income, and revenues in Imperial County. These would be beneficial effects of the Proposed Action.

Other Federal, State, and Local Actions

Endangered Species Act, Section 7 Consultation between BLM and U.S. Fish and Wildlife Service; the California Department of Fish and Game will be party to this consultation

National Historic Preservation Act, Section 106 Consultation between the BLM and the State of California Office of Historic Preservation

Solid Waste Facilities Permit from the Imperial County Department of Health Services, Division of Environmental Health (Local Enforcement Agency) and certification by the California Integrated Waste Management Board

Waste Discharge Requirements from the Lower Colorado River Regional Water Quality Control Board

Authority to Construct and Permit to Operate from the Imperial County Air Pollution Control District

Encroachment Permit from the California Department of Transportation for the new access road from SR 78

Solid Waste Plan Modification from the Imperial County Department of Public Works

Solid Waste Facility Approval by the majority of the cities with the majority of the population in Imperial County

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

PURPOSE OF THIS DOCUMENT

This draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) addresses the potential impacts and mitigation measures for construction and operation of the proposed Mesquite Regional Landfill project. This document is being prepared as an EIS in compliance with the National Environmental Policy Act (Pub. L. 91-90, 42 U.S.C. 4321 et seq., Herein, "NEPA") and the implementing Council on Environmental Quality (CEQ) Regulations (40 CFR Section 1500-1508). The Bureau of Land Management (BLM) National Environmental Policy Handbook (H-1790-1) was also consulted in preparing this document. The BLM is the lead agency for the purpose of compliance with the requirements of NEPA for the Proposed Action.

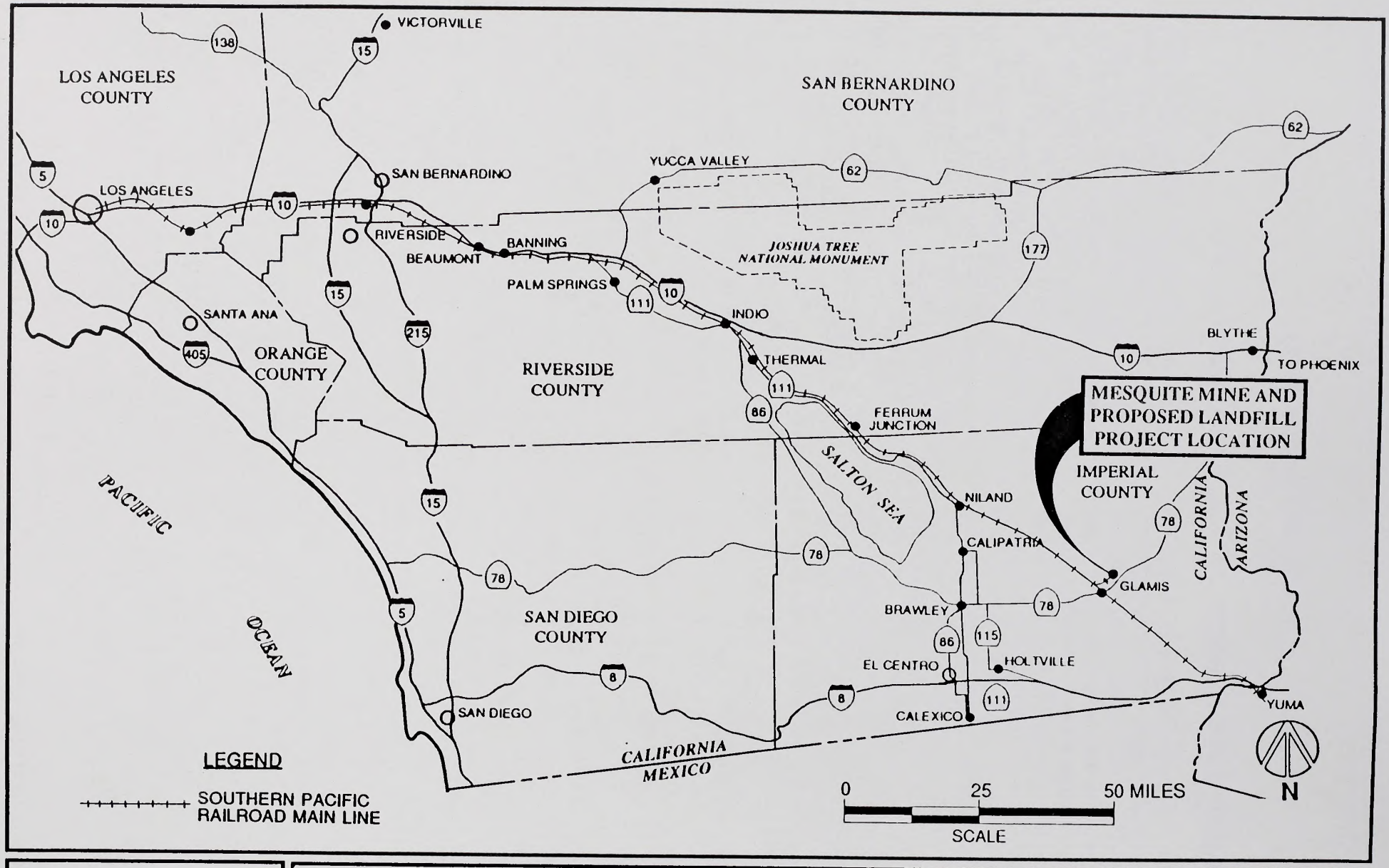
In addition, this document is being prepared as an EIR in compliance with the California Environmental Quality Act (Public Resources Code, Section 21000, et seq., Herein, "CEQA"), the Guidelines for the Implementation of CEQA (CCR, Section 15000, et seq., herein, "State CEQA Guidelines"), and the Imperial County CEQA Guidelines, as amended. The County of Imperial is the lead agency for the purpose of compliance with the requirements of CEQA for the proposed project. In the preparation of this report, the format specifications of NEPA have been followed, with minor modifications to include additional discussions required by CEQA.

This EIS/EIR examines the potential environmental impacts of receipt of MSW residue from Southern California. In the future, some volumes of MSW residue could come from communities outside of the Southern California area. This EIS/EIR does not analyze this possibility and future environmental analysis would be required before communities outside of Southern California could ship MSW residue to the proposed Mesquite Regional Landfill.

PROPOSED ACTION

Gold Fields Mining Corporation (Gold Fields), Western Waste Industries, and SP Environmental Systems have entered into an agreement to permit and begin development of a new regional Class III sanitary landfill in eastern Imperial County (Proposed Action) (Figure S-1). Arid Operations Inc., a wholly owned subsidiary of Gold Fields has been engaged by these parties to permit and operate the landfill and is the Applicant (Applicant) for the Proposed Action. The proposed Mesquite Regional Landfill would be located adjacent to the existing Mesquite Gold Mine and Ore Processing Facility (Mesquite Mine) (Figure S-2). The project would also include a four- to five-mile railroad spur that would extend from the existing Southern Pacific Transportation Company (SP) Main Line track to the landfill site. The municipal solid waste (MSW) that has been sorted to remove recyclable and hazardous materials, (MSW residue) would be transported to the proposed landfill from various Southern California communities via the existing SP Main Line track and the proposed rail spur. The proposed rail spur would connect the landfill site to the existing SP Main Line approximately one mile northwest of the Glamis Beach Store.

The proposed landfill would be located in eastern Imperial County, primarily on and adjacent to the site of the existing Mesquite Gold Mine and Ore Processing Facility (Figure S-2). The proposed project configuration is shown on Figure S-3. The proposed site includes portions of Sections 7, 8, 15, 16, 17, 18, 19, 20, and 21, and Tract 38 of Township 13 South, Range 19 East, San Bernardino Meridian as shown on the United States Geologic Survey maps Acolita and Quartz Peak 15-minute series. Approximately 1,750 acres of the proposed landfill site are federally owned, managed by the BLM. The entire project area covers approximately 4,245 acres with the actual landfill footprint covering 2,290 acres. The proposed



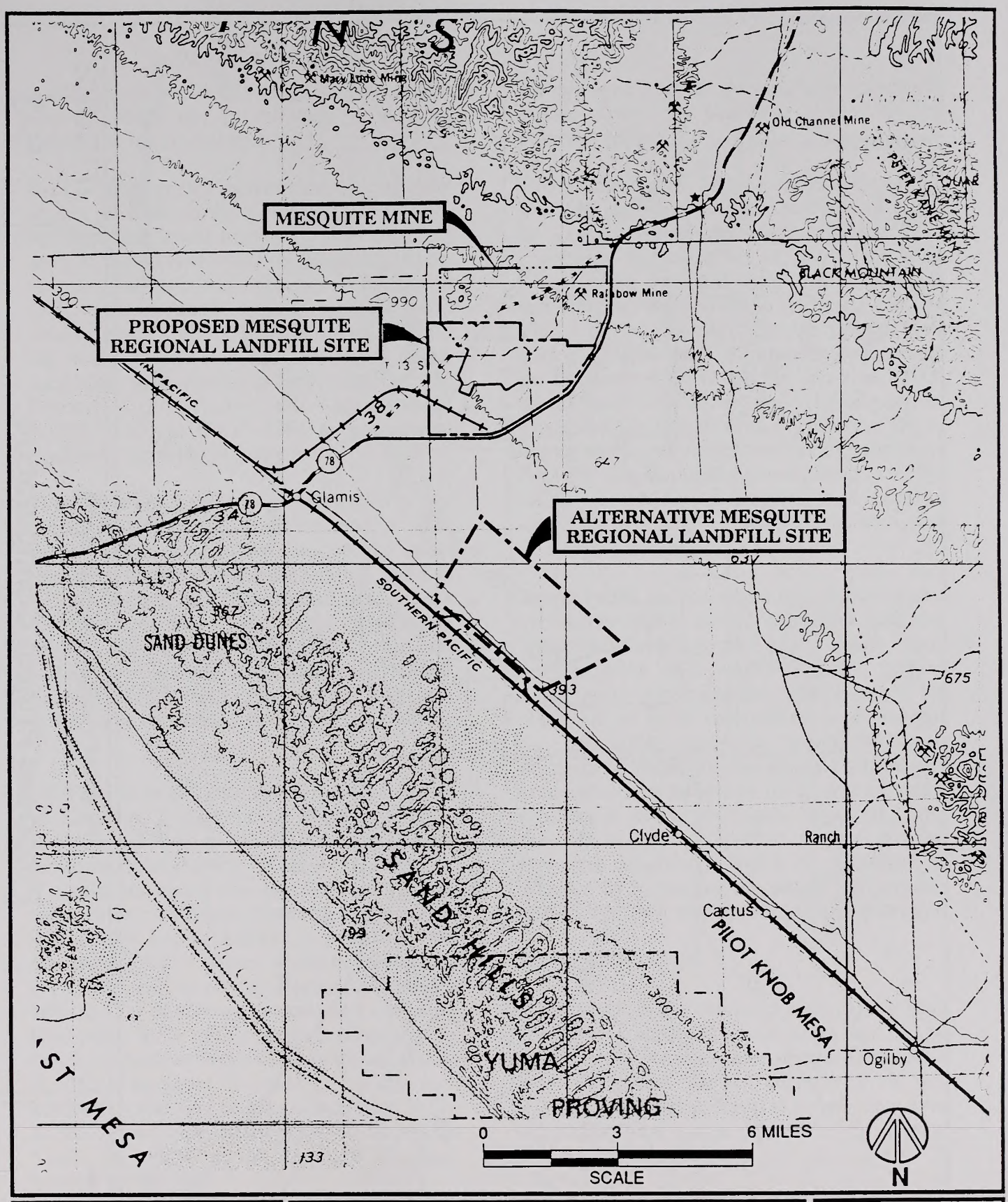
SOURCE: Environmental Solutions, Inc. 1992

Proposed Mesquite Regional Landfill

Regional Location Map

FIGURE

S-1



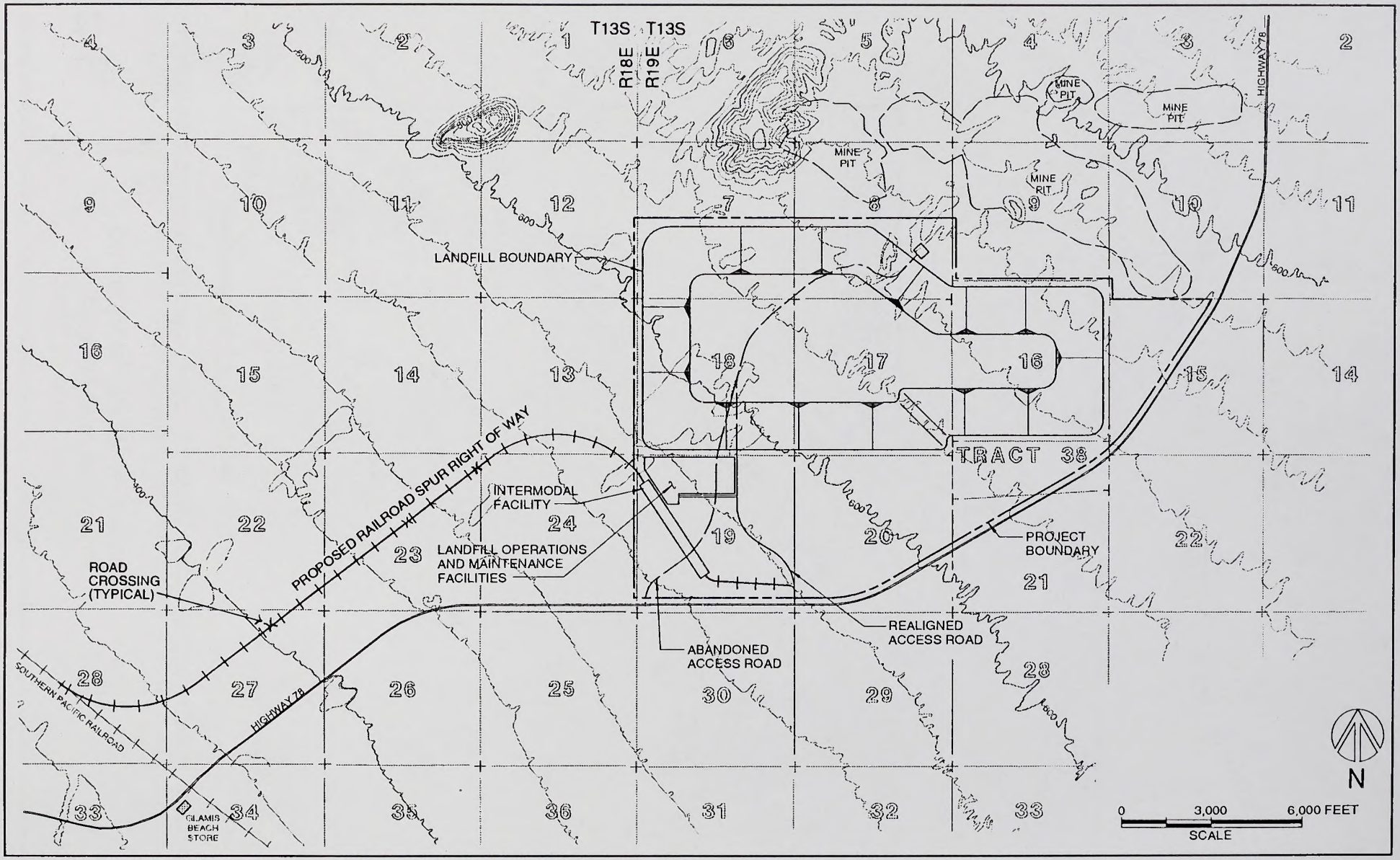
SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Location of Mesquite Mine and Proposed and Alternative Regional Landfill Sites

FIGURE

S-2



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Proposed Project Configuration

FIGURE

S-3

landfill could accommodate up to 600 million tons of MSW and is expected to have an operational life of 100 years.

Because BLM policy prohibits the establishment of new landfills on BLM-managed public land, the Applicant would need to acquire the 1,750 acres of federal land within the proposed land fill site. In order to obtain ownership of the federal lands within the landfill site, the Applicant would conduct an exchange of privately-owned land for the on-site federal land managed by the BLM, according to procedures authorized by the Federal Land Policy and Management Act(FLPMA) (43 U.S.C. 1701 et seq. and all regulations implementing this Act).

The Applicant proposes to exchange, in fee simple, the surface and subsurface rights, of all or the majority of the 2,241.96 acres of land within the parcels identified in Figures S-4, S-5, and S-6, for the surface and subsurface rights on the 1,750 acres of federal land within the proposed project boundary. These offered lands are located in the Santa Rosa Mountains Natural Scenic Area (SRMNSA) and near the Chuckwalla Bench Area of Critical Environmental Concern (ACEC).

MSW would be collected from population centers in Southern California by local collection vehicles, and taken to existing or future transfer stations/material recovery facilities (MRFs) where it would be sorted and processed to remove recyclables, hazardous materials, and other unacceptable wastes. Initially, it is expected that the resulting MSW residue would be loaded into containers and would be transported to SP's existing City of Industry intermodal facility. In later years, MSW residue train loading may be moved to the Los Angeles Transportation Center (LATC) intermodal facilities or to any new intermodals that may be built in the region in the future. From these intermodals, MSW residue would be hauled to the Mesquite Regional Landfill by railroad.

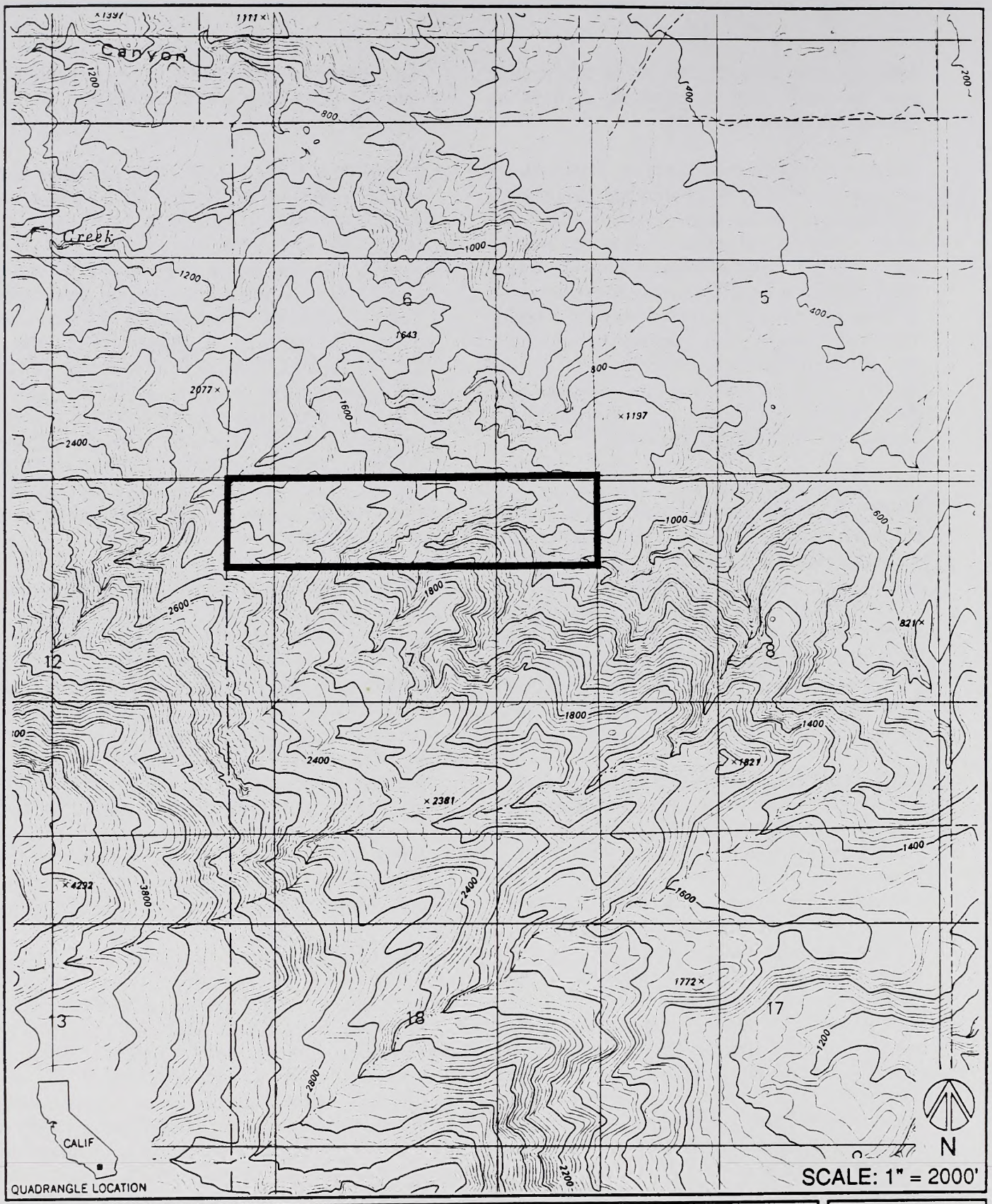
An estimated total of 268 long-term operations-related direct jobs would be created by the proposed project.

The estimated daily MSW residue volumes that would be accepted at the proposed landfill would be 4,000 tons per day (tpd) for Year 1 of operations, increasing up to 20,000 tpd after Year 7. The estimated daily number of trains that would be required would be one train during Year 1 (4,000 tpd), increasing to 5 trains after Year 7 (20,000 tpd). The proposed maximum daily volume of MSW residue would be 20,000 tpd averaged over a two week, 12 day period. The actual rate of growth and operational life of the landfill would depend on market conditions for MSW disposal in Southern California. MSW residue would also be accepted from Imperial County, if the county or local municipalities were to decide to use the proposed landfill.

The proposed landfill would be constructed and operated to meet or exceed all federal, state, and county standards regarding design, construction, and operation of a landfill. These include requirements for lining the landfill before the placement of MSW and installation of systems for collection, recovery, monitoring, and treatment of landfill gas and leachate that may be produced during the life of the project. Closure procedures and post-closure monitoring and funding would be provided by the project. Financial assurances would be provided as required by prevailing regulations for closure, post-closure care, and environmental impairment.

ALTERNATIVES

Alternatives to the Proposed Action have been identified in accordance with NEPA and CEQA guidelines. A reasonable range of feasible alternatives are further considered in this EIS/EIR. Alternatives found to be infeasible were eliminated from further consideration (Section 2.4). The feasible alternatives analyzed in Chapter 4.0 of this EIS/EIR include the following: (1) Smaller Landfill Footprint (Alternative I), (2) Reduced Daily Volumes (Alternative II), (3) Alternative Mesquite



SOURCE: Martinez Mtn.
USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Santa Rosa Mountains
Exchange Parcel in Section 7

FIGURE

S-4

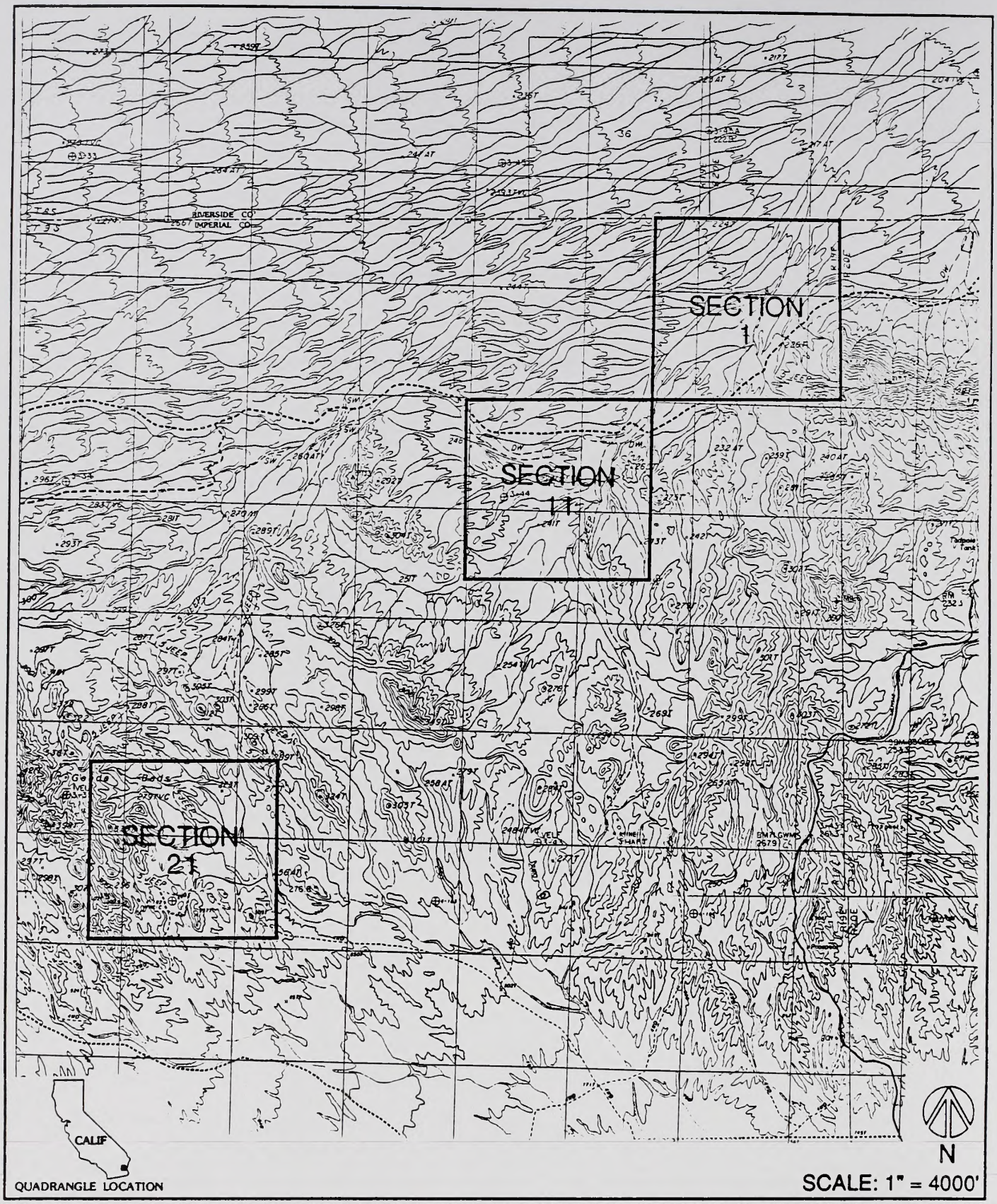
SOURCE: Valerie USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Santa Rosa Mountains
Exchange Parcel in Section 23

FIGURE

S-5



SOURCE: Wiley Well & Palo Verde Peah USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Chuckwalla Bench Exchange Parcels

FIGURE

S-6

Regional Landfill Site (Alternative III), and (4) Larger Project (i.e., increased daily MSW residue volumes and larger landfill footprint) (Alternative IV). The required No Action Alternative is also analyzed in this document.

No Action Alternative

The No Action Alternative is defined as the condition where the proposed Mesquite Regional Landfill project would not be developed at the proposed site. Under this alternative, the proposed Mesquite Regional Landfill would not be located on and adjacent to the existing Mesquite Mine property, the four- to five-mile rail spur would not be constructed, and the land exchange would not occur. Instead, MSW would be disposed at existing or new landfills in the Los Angeles Basin or other coastal areas, or at other regional landfills.

Alternative I - Smaller Landfill Footprint

This alternative analyzes the construction and operation of a landfill with a smaller footprint than the Proposed Action (Figure S-7). The Lead Agencies examined this alternative because it would reduce, but not eliminate, the significant impacts to cultural, visual, and biological resources. Also, a CDCA Plan Amendment would not be required. Under Alternative I, the project area would consist of 2,240 acres of land located almost entirely on property already owned by Gold Fields. The landfill area for Alternative I would be approximately 1,834 acres and would require a land exchange of approximately 135 acres. The exchange parcels would be selected from the property near the SRMNSA (Figures S-4 and S-5).

The operation of Alternative I would be very similar to that for the Proposed Action, except that Alternative I would have a capacity of 500 million tons of MSW residue and an operational life of approximately 85 years. The on-site intermodal facilities at the rail unloading intermodal would be very similar to the intermodal identified for the Proposed Action. For Alternative I, the mine access road would be rerouted to a separate, new road, around the eastern end of the intermodal. Rights-of-way for the short distance of new access road outside of the project boundary would be obtained from BLM. Other design aspects of Alternative I, such as landfill liner design and drainage controls, would also be essentially the same as those required for the Proposed Action.

Alternative II - Reduced Daily Volumes

Alternative II would be similar to the Proposed Action except the maximum disposal rate would be reduced from 20,000 to 12,000 tpd. The Lead Agencies examined this alternative because it would reduce, but not eliminate, cumulative impacts on traffic during winter weekends and/or holidays and air quality from dust generated on-site. Implementation of this alternative would result in less train traffic. The estimated rate of growth to achieve this condition would be as follows:

- 4,000 tpd for year 1;
- 8,000 tpd for year 2; and
- 12,000 tpd after year 2.

Under Alternative II, the Mesquite Regional Landfill would have an operational life of 165 years compared to the estimated 100-year operational life of the Proposed Action. Alternative II would require three trains per day, compared to the five trains per day required for the Proposed Action. In addition, the railroad intermodal facility at the landfill would be reduced in size from that identified for the Proposed Action.

Alternative III - Alternative Mesquite Regional Landfill Site

The Alternative Mesquite Regional Landfill Site is located approximately 3.75 miles southeast of Glamis and 1.75 miles south of SR 78, east of the SP Main Line. In accordance with the requirements of NEPA and CEQA, the Lead Agencies have identified a reasonable alternative site for comparison to the proposed Mesquite Regional Landfill site. This alternative site is

located approximately four miles southwest of the proposed site. This site contains portions of Township 13 South, Range 19 East, and Township 14 South, Range 19 East, San Bernardino Meridian. The entire site consists of approximately 5,200 acres, all but one section of which are federal lands managed by the BLM. The remaining section is privately owned. The landfill footprint contains approximately 2,080 acres. The configuration of the alternative site is presented on Figure S-8.

A land exchange, similar to that described for the Proposed Action, would be required for the Alternative Mesquite Regional Landfill Site (Alternative III). The exchange would involve private land in the SRMNSA and near the Chuckwalla Bench ACEC, to be exchanged for the BLM managed land at this alternative site. In addition, the Applicant would also have to acquire the privately-owned parcels within the alternative site.

Highway access would be provided via SR 78 at a new intersection east of the existing intersection with Ted Kipf Road. The access road would loop south, connecting with Ted Kipf Road approximately one mile south of SR 78. Rail access would be provided by a short rail spur that would connect with the SP Main Line, approximately 4.25 miles southeast of Glamis. The rail spur would connect to an approximately 1.5 mile long intermodal area that would roughly parallel the SP Main Line. The rail spur would continue south of the intermodal and reconnect with the SP Main Line approximately seven miles southeast of Glamis.

The alternative site would have approximately the same maximum capacity (600 million tons) and operational life (100-years) as the Proposed Action. In addition, landfill operation and construction of the proposed landfill at the alternative site would be similar to that described for the proposed site. The proposed landfill at the alternative site would be constructed and operated to meet all federal, state and county standards regarding design, construction, and operation of a Class III landfill.

It is assumed that suitable materials do not exist at the alternative site for construction of the clay portion of the liner. Therefore, clay or an equivalent material would be trucked or rail hauled to the site. A potential source of clay would be the claystone that is stock-piled at the Mesquite Mine. Suitable cover material is assumed to be available at the alternative site.

The provision of landfill closure and post-closure monitoring and funding for the Alternative Mesquite Regional Landfill Site (Alternative III) would be similar to that provided for the Proposed Action.

Alternative IV - Larger Project

This alternative analyzes the construction and operation of a landfill with a larger footprint and an increased maximum disposal rate than the Proposed Action. The Larger Project Alternative (Alternative IV) could be implemented to avoid or reduce the cumulative environmental impacts associated with multiple future regional landfills or future local landfills.

The configuration for this alternative is shown in Figure S-9. The arrangement would include the same property boundaries as the Proposed Action, but the landfill would be expanded to also cover portions of the property to the east and south.

The landfill area for the Larger Project Alternative (Alternative IV) would be approximately 4,322 acres in size, with a landfill footprint of approximately 3,100 acres. The operation of Alternative IV would be similar to that of the Proposed Action, except that Alternative IV would have a capacity of 800 million tons of MSW residue and an operational life of 90 years. In addition, the maximum disposal rate would be increased from 20,000 to 30,000 tpd and the landfill area would be increased by approximately 35 percent. The maximum rate could be efficiently handled without major modification to the proposed design. The estimated rate of growth to achieve this maximum condition is as follows:

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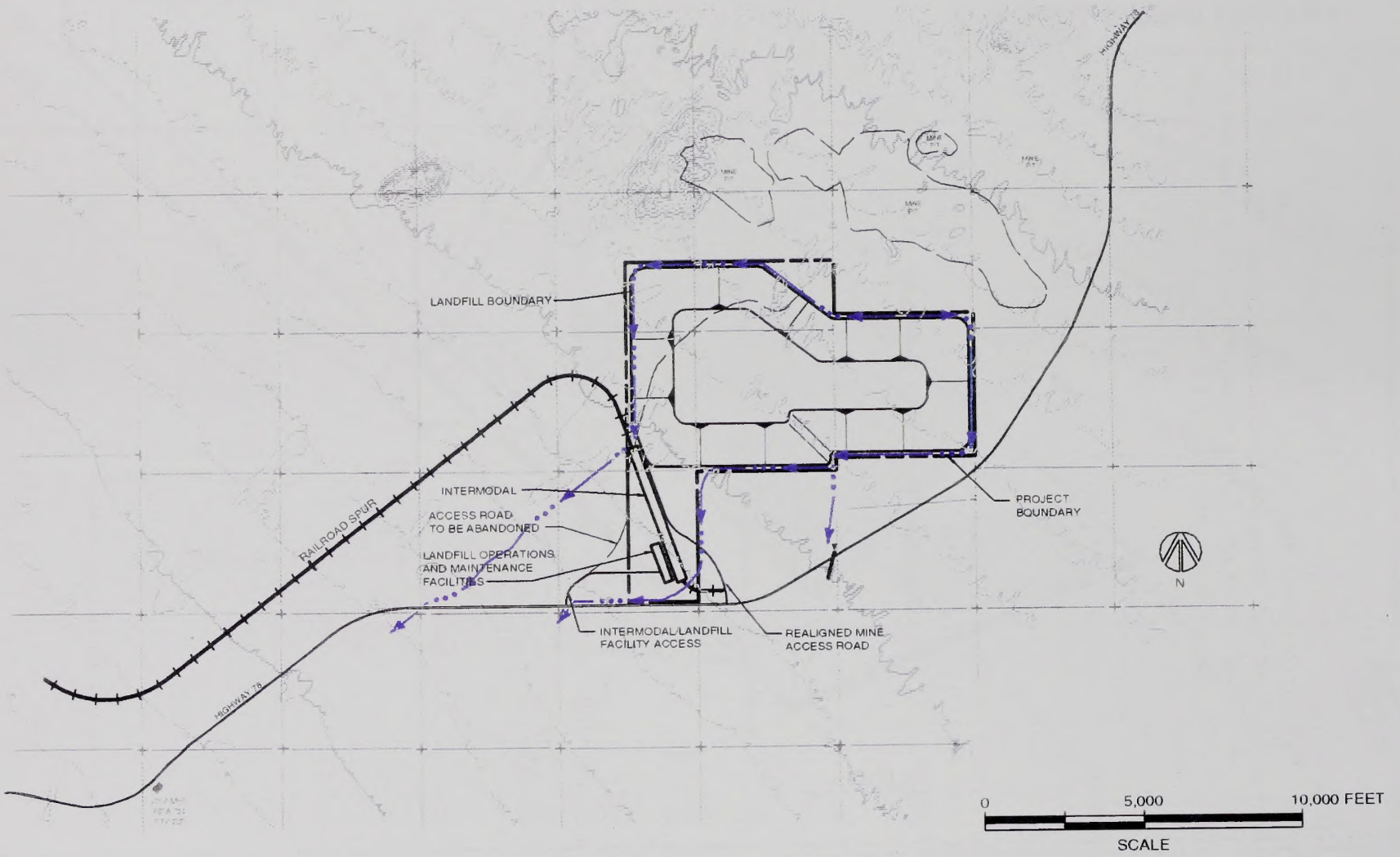

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Alternative I Landfill Configuration, Intermodal Configuration, and Drainage Plan

FIGURE

S-7

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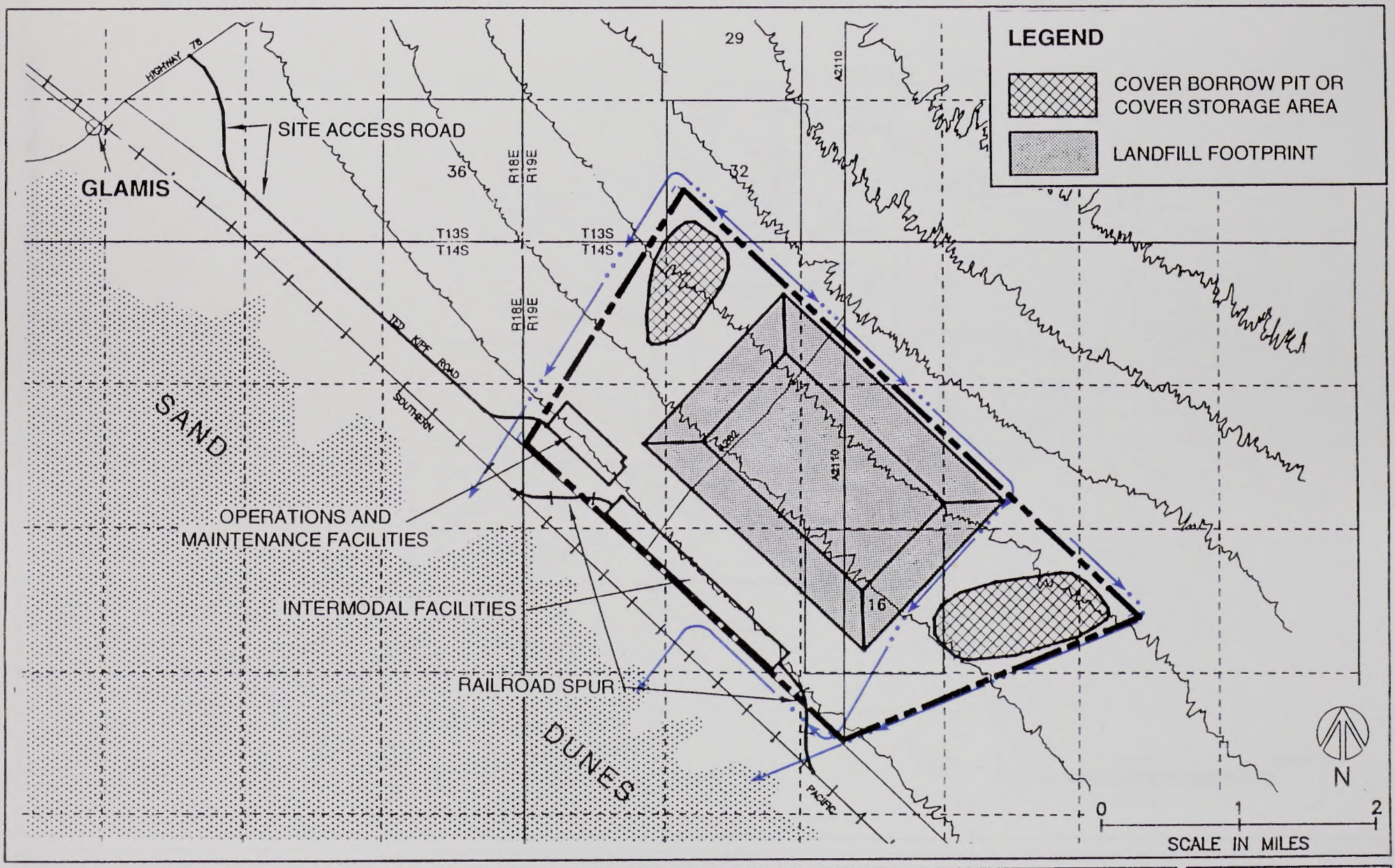

SOURCE: Environmental Solutions, Inc., 1993.

Proposed Mesquite Regional Landfill

Alternative Regional Landfill Site and Drainage Plan

FIGURE

S-8

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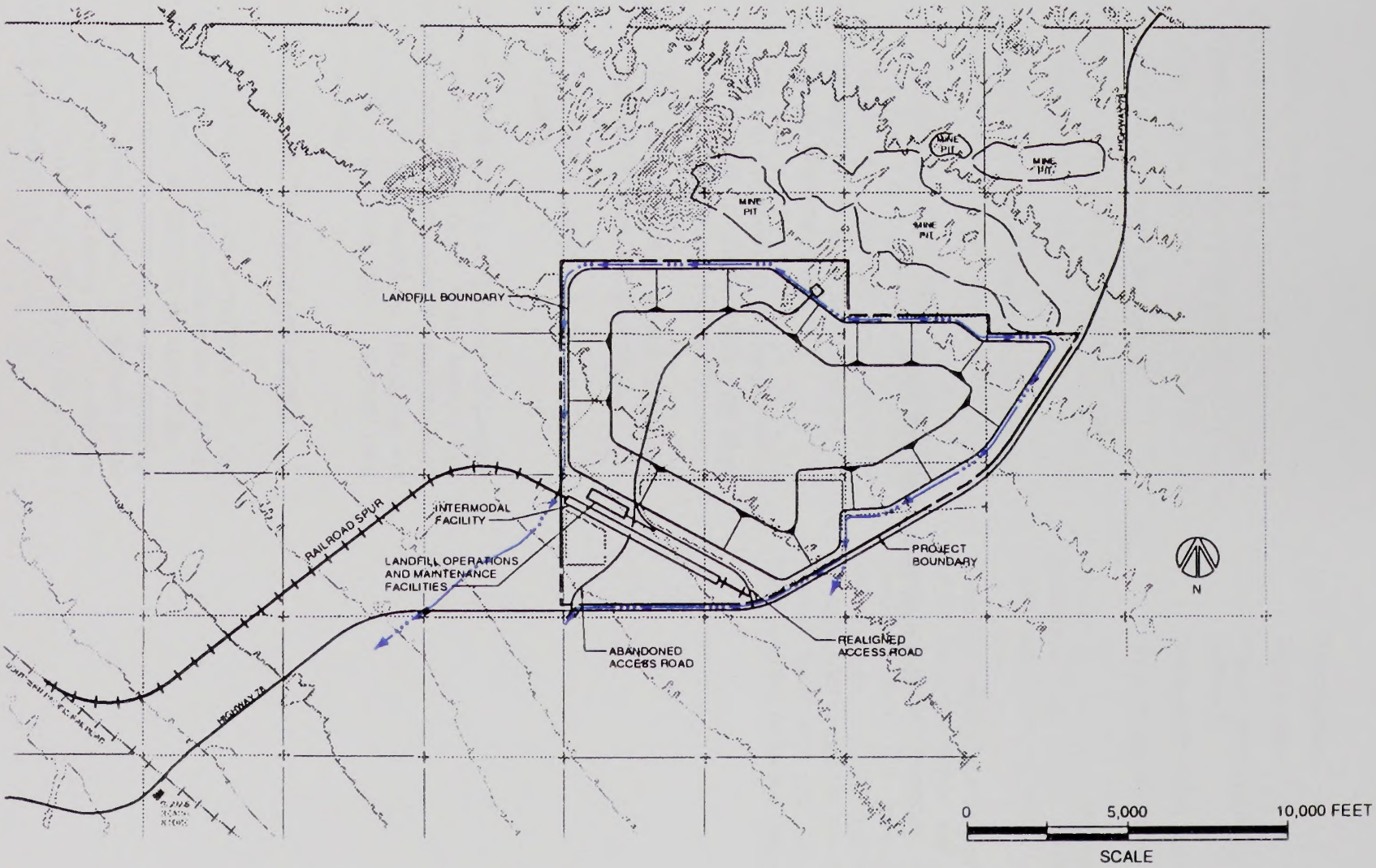

SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Alternative IV Landfill Configuration, Intermodal Configuration, and Drainage Plan

FIGURE

S-9

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- 4,000 tpd for year 1;
- 8,000 tpd for year 2;
- 12,000 tpd for years 3 through 6;
- 16,000 tpd for year 7;
- 20,000 tpd for years 8 through 13;
- 24,000 tpd for years 14 through 17; and
- 30,000 tpd after year 17.

The primary differences between Alternative IV and the Proposed Action are shown below:

- An average of 7.5 trains per day, each hauling 4,000 tons of MSW residue would be required for long-term operations, compared to 5 trains per day for the Proposed Action.
- The rail intermodal at the landfill would be enlarged in approximately year 14 to handle the additional train traffic.
- The landfill staff would ultimately increase to about 385 employees.

IMPACTS THAT CANNOT BE MITIGATED

All Alternatives except the No Action Alternative would result in significant visual impacts that cannot be mitigated, cumulatively significant air quality impacts that cannot be mitigated, and cumulatively significant traffic impacts that cannot be mitigated.

SUMMARY OF PROJECT IMPACTS

The environmental consequences of the Proposed Action and its alternatives are evaluated in Chapter 4.0 of this EIS/EIR for each of the 15 elements of the human environment identified through the scoping process. No impacts to the following critical elements of the human environment would occur for any of the project alternatives (Section 1-8):

- Farm Lands.
- Floodplains.
- Native American Religious Concerns.
- Wetlands/Riparian Zones.
- Wild and Scenic Rivers.

Chapter 4.0 includes a discussion of mitigation measures that would eliminate or reduce significant adverse impacts.

Table S-1 summarizes the environmental effects of the Proposed Action and alternatives. The summary table describes potential impacts resulting from the proposed project and alternatives, significance of impacts, recommended mitigation measures, and resulting level of significance after implementation of the recommended mitigation measures.

Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Geology, Soils and Mineral Resources			
Proposed Action			
• Possible erosion on landfill slopes.	S	• The landfill slopes and drainage system shall be designed and maintained to limit erosion.	NS
• Possible damage to landfill slopes; foundation; and structures for controlling leachate, surface drainage, erosion and landfill gas (LFG) due to seismic shaking.	S	• The landfill slopes, foundation and structures for controlling leachate, surface drainage, erosion, and landfill gas shall be constructed to withstand ground motions associated with an event between the maximum credible and the maximum probable earthquake without damage that could result in environmental impairment or health and safety impacts.	NS
• Potential damage to project structures that are not critical to landfill integrity, due to seismic shaking.	S	• Uniform Building Code (UBC) Seismic Zone 4 requirements, the most stringent in the UBC, shall be met during the design and construction of all facilities and structures that are subject to the UBC.	NS
• Potential changes to natural desert erosion conditions.	S	• Construct and operate the proposed project, the proposed rail spur, optional energy recovery facilities, and the potential gas pipeline to Niland in accordance with the State of California National Pollution and Discharge Elimination System (NPDES) general permit for storm water management. • Precipitation runoff shall be directed to the approximate locations where they would have occurred without the project to the greatest extent possible. • Peak flow shall be substantially the same as those that would have occurred without the project. • Diversion ditches not associated with the landfill shall incorporate slopes and/or protection such as rip rap to limit erosion to the greatest extent possible.	NS
• Loss of gravel or other mineral resources or impacts to geothermal resources.	NS	• Existing gravel resources would be purchased according to applicable law. Areas containing gold or other mineralization would not be impacted by the proposed project. No geothermal resources exist at the proposed site.	NS
• Potential impacts to existing plans for mine reclamation.	NS	• The appropriate modifications to the Mesquite Mine Reclamation Plan would be made. However, because the use of overburden does not require a discretionary approval, modification of the reclamation plan would not be an action related to the proposed project. Thus, no mitigation would be required.	NS
No Action Alternative			
• Without construction of a regional landfill within the proposed project area, overburden piles and ore residue from mining activities would not be used for proposed landfill-related construction and cover. Clay resources of the overburden mining areas would not be used for the proposed liner system. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Geology, Soils and Mineral Resources (continued)			
Alternative I - Smaller Landfill Footprint			
• Impacts similar to those identified for the Proposed Action except that less sand and gravel resources would be impacted.	S	• Same as identified for Proposed Action.	NS
Alternative II - Decreased Disposal Rate			
• Impacts similar to those identified for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Potential for settlement caused by deep alluvium underlying site	S	• Landfill subgrade shall be compacted or otherwise improved to minimize settlement-related damages. Flexible tubing or shall be used for the leachate collection system.	NS
• No impacts to mineral resources	NS	• None required	NS
• Possible erosion on landfill slopes.	S	• Same as for Proposed Action	NS
• Possible damage to landfill slopes, foundation, and structures for controlling leachate, surface drainage, erosion and gas due to seismic shaking.	S	• Same as for Proposed Action	NS
• Potential damage to project structures that are not critical to landfill integrity due to seismic shaking.	S	• Same as for Proposed Action	NS
Alternative IV - Larger Project			
• Impacts similar to those identified for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Water Resources			
Proposed Action			
• Potential degradation of water quality due to increased local runoff from landfill slopes, the paved intermodal facility, and permanent road systems.	S	• Diversion and drainage facilities shall be provided to accommodate precipitation conditions associated with the 100-year, 24-hour precipitation event. • Landfill and related containment structures shall be provided to limit, to the greatest extent possible, erosion. • Substantially eroded surfaces shall be promptly repaired and steps shall be taken to prevent further occurrence. • Precipitation onto the landfill that is not diverted by covers or drainage control systems shall be collected and managed through a leachate control and recovery system (LCRS) constructed to accommodate the 100-year, 24-hour precipitation event. • Diversion channels shall be constructed to discharge flows at approximately the same locations and flow rates that occur presently of historically occurred prior to development of the Mesquite Mine.	NS
• Potential degradation of precipitation runoff due to leaching of reagents (during infrequent storms or as a result of moisture in MSW) from ore used for daily cover.	S	• Leached ore residue shall only be used for cover or landfill construction if it meets standards established by the Regional Water Quality Control Board (RWQCB).	NS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Water Resources (continued)			
Proposed Action (continued)			
• Potential degradation of ground water quality as a result of MSW leachate or LFG seepage.	S	• Precipitation onto the landfill that is not diverted by covers or drainage control systems shall be collected and managed through a LCRS designed and constructed to accommodate the 100-year, 24-hour precipitation event.	NS
• Potential degradation of ground water quality as a result of MSW leachate or LFG seepage (continued).	S	• Moisture infiltration from precipitation into the MSW residue shall be controlled by: - Totally covering all refuse left exposed at the end of the working day with Local Enforcement Agency (LEA) and RWQCB-approved daily cover material. - The total area of exposed refuse at the facility shall be no more than 3.0 acres. • A minimum five-foot separation between the highest anticipated level of underlying ground water and the waste shall be ensured. • A leachate collection system and triple composite clay and synthetic material liner (or its equivalent using available technology that satisfies the intent of RCRA Subtitle D requirements) shall be provided under the base of the entire landfill area. A leachate and LFG subsurface monitoring system shall be provided in accordance with California Code of Regulation (CCR) Chapter 15, Article 5. • The proposed landfill shall not located within 200 feet of any Holocene faults that could rupture and damage the composite liner and leachate collection system. • The proposed landfill shall be closed using closure procedures and design approved by the RWQCB. • Fuels and other liquids with the potential to contaminate ground water shall be stored in aboveground containers within containment berms. Monitored double-containment systems shall be provided for any below ground sumps for collection of leachate. • The landfill shall only accept nonhazardous solid waste, as defined in CCR Article 23, Chapter 15, except that agricultural plant material would be accepted at the proposed regional landfill to provide offsets for landfill-related air emissions. • A LFG collection system shall be provided at the base, and throughout the landfill, to collect methane and related trace gases, sufficient to prevent the potential contamination of ground water due to subsurface gas migration. • Collection, treatment and reuse of gas condensate water shall occur in aboveground systems. • Only MSW previously sorted at a transfer station (or MRF) shall be accepted. Transport containers shall be watertight (e.g., have seals at doors).	NS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Water Resources (continued)			
Proposed Action (continued)			
• Potential degradation of precipitation runoff and/or ground water quality due to spills of fuels, solvents and other liquids.	S	• Fuels, recovered solvents and other liquids with the potential to contaminate ground water shall be stored in aboveground containers within containment areas.	NS
		• Fuel loading and unloading stations shall be located in lined areas designed and constructed to prevent releases of accidental spills.	
	S	• Procedures for the rapid remediation of minor petroleum hydrocarbon spills from vehicles used for construction or waste handling on the project site shall be developed with the RWQCB staff and included in the Water Discharge Order (WDO) Permit.	NS
• Potential contamination from intermodal facility runoff	S	• Runoff containment and treatment for the first 0.1 inches of rainfall on the intermodal facility shall be provided during any storm event.	NS
• Landfill gas condensate could represent a potential threat to ground water quality if conditions existed where the subsurface materials were subjected to continuous source of leakage or hydrostatic head for a long period.	S	• Collection, treatment and reuse of gas condensate water shall occur in above-ground systems to avoid the potential for long-term leaks to enter into the subsurface materials.	NS
• The potential storage of recyclable materials in unlined portions of the landfill footprint could also represent a potential source of contaminated water that could impact ground water quality.	S	• Weather protection shall be installed for temporarily stored recyclable materials to avoid the potential for infiltration of infrequent precipitation into those materials, with the potential for subsequent subsurface leaching to occur at unlined portions of the ultimate landfill footprint.	NS
		• Temporary storage of recyclable materials shall be in accordance with procedures agreed upon with the LEA prior to receipt of the materials.	
		• The Applicant shall furnish certification from transfer station/MRFs that temporarily stored materials shipped to the site do not contain hazardous materials.	
		• The ground surface in areas used for recyclable materials storage shall be inspected by a person qualified to identify signs of contamination. Any contamination shall be treated in-situ, on-site, or disposed off-site at a permitted facility.	
• Potential decline in level of Amos/Ogilby alluvial basin due to project-related water use.	NS	• Container wash water and mobile equipment wash down water shall be treated and recycled.	NS
		• Collected leachate and condensate shall be treated and used as wash water or for dust control if feasible.	
No Action Alternative			
• Without construction of a regional landfill within the proposed project area, none of the previously identified impacts to water resources would occur. Impacts from future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Water Resources (continued)			
Alternative I - Smaller Landfill Footprint			
• Impacts would be similar to those of the Proposed Action except that less water would be withdrawn from the Amos/Ogilby Basin and a smaller lined area would result in an incremental decreased potential for a leak to occur.	S	• Same as identified for Proposed Action.	NS
Alternative II - Decreased Disposal Rate			
• Impacts would be similar to those of the Proposed Action except that more water would be withdrawn from the Amos/Ogilby Basin.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Similar to the impacts of the Proposed Action except greater potential for ground water contamination because the site overlays readily permeable alluvium of the Amos/Ogilby Basin rather than overlaying the poorly permeable Bear Canyon Conglomerate of a subbasin of the Amos/Ogilby Basin. Also, additional surface water controls would be necessary.	S	• Same as identified for Proposed Action.	NS
Alternative IV - Larger Project			
• No change from Proposed Action except that more water would be withdrawn from the Amos/Ogilby Basin and a larger, lined area would result in an incremental increased potential for a leak to occur.	S	• Same as identified for Proposed Action.	NS
Biological Resources			
Proposed Action			
• Habitat Loss.	NS	• The Applicant shall notify BLM 90 days prior to land clearing activities to the extent feasible. BLM and the Applicant will jointly coordinate removal of specific plants. To the extent feasible, the plant salvage shall be conducted in late winter to early spring, or in late summer. Subsequently, the Applicant may provide the public the opportunity to salvage desert vegetation. • The Applicant shall establish an off-site wildlife guzzler, in coordination with BLM and Imperial County, to assist in offsetting impacts to mule deer and bighorn sheep. • The Applicant shall implement weed control measures such that introduced plants (e.g., tumbleweed, salt cedar, and black mustard) would not become established on-site or along the proposed rail spur. Manual or mechanical means of control would be the preferred methods employed. Use of other methods (e.g. herbicides) would require approval by appropriate managing agencies. • The Applicant shall minimize disturbance of vegetation to the extent possible. Storage of materials shall be in areas previously impacted to the extent feasible. • Desert vegetation salvage shall be provided as described for the proposed landfill site.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Habitat Loss (continued)	NS	• The proposed contingency plan for a potential spill or derailment along the SP Main Line (See Section 4.1.12, Health and Safety) shall be approved by the appropriate managing agency. The Applicant shall work in conjunction with SP to ensure that impacts to sensitive species, and their habitats, are addressed in the plan. • For spills or derailments in sensitive species' habitat, particularly within the Salt Creek ACEC, the Applicant shall ensure that a biologist knowledgeable with the species to be potentially affected is available, as necessary, to support the activities of SP clean up crews and environmental specialists. The Applicant will not be required to provide this biologist if SP has such an expert already on-site to assist with clean up activities. As discussed in Section 4.1.12, the Applicant will also have its own 24-hour clean-up contractor on call to assist SP's crews, as necessary, for containment of spilled MSW residue (if any). A full discussion of SP clean-up activities is contained in Section 4.1.12. The biologist shall be dispatched to the site immediately following an accident, as necessary, to the extent that a potential impact to a sensitive species exists, and shall work with clean up crews to ensure that sensitive species and their habitats are avoided to the maximum extent possible.	NS
• Threatened and Endangered Species	S	• The Applicant shall complete a 100% coverage preconstruction clearance of each part of the landfill property prior to disturbance using a desert tortoise biologist approved by the appripriate managing agency, either after or concurrent with placement of the landfill tortoise exclusion fence. If the desert tortoise survey/removal occurs prior to the tortoise barrier being in place, an additional clearance survey shall be conducted after the exclusion barrier is completed. If the desert tortoise survey/removal occurs after the tortoise proof fencing is constructed, all tortoises shall be removed from the fenced area of the project site as soon as practicable in coordination with the supervising biologist. All desert tortoise burrows and other suitable burrows for this species shall be excavated. All tortoise that are encountered shall be removed and relocated as determined by Section 7 consultation. • Desert tortoise habitat clearance may occur in phases as the landfill project expands and additional tortoise proof project fencing is required. At no time shall any remaining uncleared area be less than 160 acres (1/4 of a standard survey section). These procedures shall continue throughout the remaining years of landfill operation, or until such requirements are suspended by BLM and/or USFWS.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued)	S	• The Applicant shall provide a qualified biologist to direct the capture, marking, recording, and moving off-site of all tortoises that are found, as determined appropriate by the Section 7 consultation. The qualified biologist may be assisted by other qualified biologists or field contact representatives (FCR) who are specifically trained to handle desert toroise. All FCRs shall be approved by the BLM and USFWS. Relocations will be to a site determined appropriate by the appropriate managing agency. All tortoises shall be handled in accordance with approved procedures, such as those outlined by USFWS in the *Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats* (Arizona Game and Fish Department, et al., 1990), Chapter III, "Protocols for Handling Live Tortoises," which identifies specific handling techniques and precautions to be employed to protect tortoises. Tortoises shall be either relocated, or otherwise handled in accordance to the requirements of the Section 7 consultation. It is preferred that the animals be relocated off-site so that they may remain part of the local breeding population. The preferred time of year to relocate tortoises is during their spring and fall activity seasons. • The authorized biologist on-site during the initial clearance survey(s) shall provide a full report to BLM and USFWS of all desert tortoise that are found and relocated. This information shall include: (1) the locations (narrative and maps) and dates of observations/relocations; (2) general conditions and health, any apparent injuries and state of healing and whether animals voided their bladders when handled; (3) locations moved from and locations moved to, and (4) diagnostic markings (e.g., identification numbers or previously marked lateral scutes). • The Applicant shall minimize wildlife access to the site by a 6 to 8 foot chain link fence designed to BLM tortoise fence specifications to deter raven perching (e.g., topped by porcupine wire, or equivalent). The bottom of the fence shall be designed to BLM tortoise fence specifications to exclude predators such as coyotes and kit fox, and to restrict tortoise entry.	NS

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Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued)	S	• The Applicant shall construct a fence initially encompassing only the portion of the project area that is west of the existing mine access road. As landfill operations develop eastward, fencing shall be added to maintain enclosure of the landfill site (Figure 2-33). Existing mine fencing may be incorporated. Where necessary, the existing mine fence shall be improved to bring it up to BLM standards for tortoise fencing. Fencing shall be maintained or erected around the entire active landfill boundary. Any mine facilities that are used by the landfill after mine closure shall also be fenced. All new fences shall be constructed according to BLM tortoise fence specifications to preclude entry by tortoises. To minimize the potential loss of tortoise to road traffic on the landfill/mine access road, either the road shall be within the fenced area, or appropriate tortoise-proof barriers shall be installed (see Project Description, Section 2.1.13). • A biologist or FCR authorized by the appropriate managing agency shall monitor the construction of the perimeter fence to ensure that no occupied tortoise burrows, or tortoises, would be directly impacted by fence construction. Any tortoise encountered during construction shall be relocated in accordance with procedures established by the formal Section 7 consultation. • The Applicant shall monitor the fence line in conjunction with routine security patrols, and after every precipitation event, checking for breaches under or through the fence that could enable a tortoise to pass to the other side. Such breaches include cuts in the chain link, holes or tunnels, and gaps. A discovered breach shall be marked on a map and reported to supervisory personnel. Repairs shall be made immediately, generally within two days. In the event that extensive damage is discovered that requires the use of materials that are not kept on-site, temporary repairs shall be made immediately, with permanent repair initiated upon receipt of the proper materials (such as new fencing or posts). The temporarily repaired fence shall be monitored by routine security patrols until permanent repairs can be made.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued)	S	• The Applicant shall provide a program of instruction to all employees regarding the desert tortoise. The program shall train employees in tortoise identification and proper procedures to be employed in the event a tortoise is encountered. The program shall be developed by the project Applicant prior to implementing the Proposed Action. The content of the education program shall be submitted to the BLM for review at least 30 days prior to first presentation to employees. At a minimum, the program shall include the following topics: occurrence of the desert tortoise and general ecology, sensitivity of the species to human activities, legal protection for desert tortoises, penalties for violations of federal and state laws, reporting requirements, and project features designed to reduce the impacts to desert tortoises and promote the long-term survival of the species. • The Applicant shall develop and distribute to all employees a Desert Tortoise Procedures Card that shall reflect the actions necessary to comply with the threatened status of the tortoise and the prohibition of take. The card shall identify person(s) authorized to handle this species. The card shall also be developed in accordance with BLM and USFWS, based on the conclusions of the formal Section 7 consultation. • The Applicant shall instruct and require that employees strictly limit their activities and vehicles to the landfill area or designated routes of travel. Parking and storage shall be allowed only within the perimeter fence to the extent feasible. The Applicant shall require that its employees, contractors, or agents adhere to a 30 mph maximum speed limit on the landfill's access road. If speed limits are not adhered to, the Applicant shall install speed bumps or other speed reduction devices (with prior BLM and USFWS approval). • The Applicant shall require that, during project construction, employees inspect underneath parked vehicle(s) when within or adjacent to desert tortoise habitat immediately prior to moving the vehicle(s). If a desert tortoise is beneath the vehicle, the vehicle shall not be moved. An authorized biologist or FCR shall be contacted to remove the animal from harm's way if avoidance is not possible. • The Applicant shall require that all personal trash and food items be promptly contained within raven- and coyote-proof containers and disposed of appropriately to reduce the attractiveness of the area to tortoise predators.	NS

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Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued)	S	• The Applicant shall provide, install, and maintain tortoise awareness signs to remind employees and inform first time visitors of desert tortoise issues. Signs indicating the following shall be posted along the landfill access road and at main intersections on the landfill site; the area is a desert tortoise area, desert tortoises are protected by law, it is illegal for unauthorized persons to handle or remove desert tortoises. • A designated FCR shall be responsible for overseeing compliance with protective measures for the desert tortoise and for coordination of compliance with BLM's stipulations. The FCR shall have the authority to halt any landfill activities that pose an imminent threat to the desert tortoise. The FCR shall receive specific instruction from a BLM- and USFWS-approved desert tortoise expert in the handling, marking, data collection, and release procedures for desert tortoise, prior to engaging in such activities. • The Applicant shall require that only authorized persons handle desert tortoise. Authorized persons shall be approved prior to activities that would impact desert tortoise. • The Applicant shall protect any desert tortoises that are found to be in harm's way along the access road between SR 78 and the landfill boundary, either by access road traffic control, relocation, or other removal from the area in accordance with USFWS protocols (See *Tortoise Clearance and Relocation*). • The Applicant shall implement landfill activities to mitigate potential impacts to tortoises (see Section 4.1.3.3 for a complete list of mitigation measures). • The Applicant began a raven monitoring program in January of 1994 to provide data on raven populations in the general landfill area. The program conforms to methodologies outlined by the BLM. The population baseline monitoring shall continue for a minimum period of one year prior to the landfill operations phase. Once operations have begun, raven population monitoring shall continue throughout the life of the landfill, or until the appropriate managing agency determines that it is no longer necessary. The Applicant shall implement a Raven Control Plan should it be determined that raven populations are increasing because of the Proposed Action. The specifics of the Raven Control Plan shall be determined during Section 7 consultation. All programs shall be undertaken in conjunction with the appropriate managing agency and the *Raven Management Plan for the California Desert Conservation Area.*	NS

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Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued).	S	• The Applicant shall begin a passive raven control program as soon as the landfill begins operation. Passive control shall include the placement of cover at the end of each workday (which also would control insects and rodents), and other nonlethal measures to minimize raven feeding at the project site. The active landfill facility shall be fenced with chain link fencing to minimize access by other wildlife species, such as coyotes and foxes that have the ability to dig and expose buried trash, thereby providing ravens with access to the previously buried materials. All project-related facilities, including fences, shall be designed and constructed to minimize raven perch sites. In addition, there shall be prompt removal of road-killed wildlife along the access road by the Applicant. If planned measures are inadequate, others shall be evaluated and implemented by the Applicant, as necessary. Potential alternatives include thicker cover, passive and active bird control measures, and alternative cover material. If necessary (as determined by the raven monitoring plan), monofilament line shall be suspended by the Applicant over one or more working faces of the landfill to discourage birds from scavenging. • The Applicant shall implement an active raven control plan, should monitoring indicate that the raven population is significantly increasing because of the Proposed Action, including one or more of the following: conditioned taste aversion, nest destruction, perch site reduction, and hazing. If necessary, other measures will be used, developed in consultation with the appropriate managing agency. • The Applicant shall conduct rail spur construction activities in a manner that minimizes potential impacts to tortoises. Precautions shall include a preconstruction survey, removal of found tortoises, monitoring by a BLM- and USFWS-approved biologist, and establishment of temporary fencing to exclude tortoises from the active construction site. Further, the Applicant shall instruct construction personnel as to the importance of protecting tortoises and to notify a supervisor in the event a tortoise is found within the construction area. The location of such an individual shall be marked, and activity in the vicinity would cease until the animal had moved out of the area or been removed in accordance with approved procedures. To the extent feasible, the Applicant shall complete construction outside of the desert tortoise activity period. • The Applicant shall provide boardwalks or broad gravel "beaches" between the tracks at appropriate intervals along the rail spur. They shall also be placed outside the rails to prevent tortoises that attempt to crawl over the rails from flipping onto their backs. The Applicant shall also provide a minimum of three culverts to provide safe tortoise access under the proposed rail spur.	NS

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Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued).	S	• An FCR would monitor the rail spur prior to the arrival and departure of each train. Monitoring shall be only required during periods of tortoise activity. The inspection shall precede the train by no more than one-half hour or other time agreed to during Section 7 consultation. Any tortoise found on or in close proximity to the tracks, shall be marked (if unmarked) and captured by the approved inspector and the tortoise's markings, location, and activities prior to collection shall be noted. The approved inspector shall relocate the tortoise at least 300 feet distance from the track, or as determined during Section 7 consultation. Two years after the start of operations, the BLM, USFWS, and Applicant shall review the results of the monitoring and develop a long-term mitigation plan that protects desert tortoise. At this time, it is anticipated that the mitigation plan could include elements ranging from no mitigation required, to continued pre-train monitoring, to providing fencing and a system of additional culverts to prevent tortoise access to the tracks, but allow tortoises to safely cross under the tracks. The Applicant shall fully implement the long-term mitigation plan. • The Applicant shall require that, during rail spur rehabilitation and routine maintenance activities, the storage of equipment and material, parking of vehicles, and other staging activities shall be confined to currently disturbed sites. Repair and replacement of all permanent structures or features, such as railroad tracks and culverts, shall be monitored by a qualified biologist or approved FCR. • To prevent the take of tortoises inhabiting the 150-foot proposed rail spur ROW during significant track maintenance activities, the Applicant shall conduct a survey for occupied tortoise burrows along each section of track to be repaired. Any occupied burrows within 100 feet of the track shall be examined by a qualified biologist for the presence of tortoises and conspicuously marked for avoidance. Also, tortoise burrows that are within the railroad berm shall be located and monitored during repair and maintenance activities. • The Applicant shall move tortoises, that are found either above ground or in burrows north of the tracks and in jeopardy from track rehabilitation activities, to a place at least 300 feet north of the rail corridor or as determined in the Section 7 consultation. Those found on the south side of the tracks shall be moved to a place that is equidistant between the rail spur and SR 78, or as determined during Section 7 consultation.	NS

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Biological Resources (continued)			
Proposed Action (continued)			
• Threatened and Endangered Species (continued).	S	• The Applicant shall construct the potential gas pipeline in a manner that minimizes the potential for impacts to the desert tortoise. Vehicles shall be restricted to existing disturbed areas. Because of the short duration required for pipeline construction in any given area, and the length of pipeline to be constructed, use of fencing to exclude tortoises from the right-of-way during construction of the pipeline is not practical. Installation of the pipeline shall be completed during the desert tortoise inactive period (as specified in the formal Section 7 Endangered Species Act consultation) to the extent feasible. Prior to disturbance, the construction area shall be surveyed by an approved biologist for the presence of tortoises, and relocation would occur, as necessary. When appropriate, burrows shall be marked for avoidance or, if occupied, temporarily fenced. An approved biologist shall be retained by the Applicant to exclude tortoises from the construction area, to move or protect any tortoise that may be in the area, and to assure compliance with BLM-designated limits of access. Incidental take limits for the potential gas pipeline to Niland shall be stated established in the formal Section 7 consultation.	NS
		• The Applicant shall instruct construction personnel as to the importance of protecting tortoises and to notify a supervisor in the event a tortoise is encountered within the construction area. Instruction would meet objectives stipulated through formal Section 7 consultation.	
		• To offset direct impacts to 3,657 acres of BLM Category III desert tortoise habitat, the project Applicant shall deed an equal (1:1 ratio) or higher number of acres of Category I habitat to the BLM, acquired in the Chuckwalla Bench ACEC. Acquisition areas will be approved by the BLM, and shall be transferred to the BLM prior to commencement of surface disturbing activities.	
		• The Applicant shall establish a MSW residue spill contingency plan, and provide a spill containment contractor. These activities supplement the procedures outlined in 4.1.12. The Applicant shall provide a biologist to respond to MSW residue spills in the event SP does not already provide one and the MSW spill proves a threat to impact listed species or its habitat. No additional mitigation measures are warranted to eliminate adverse impacts.	
• Potential impacts to displaced mule deer and bighorn sheep through loss of habitat and foraging area.	NS	• Establish a guzzler off-site.	NS

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Biological Resources (continued)			
No Action Alternative			
• Without construction of a regional landfill within the proposed project area, none of the previously identified biological impacts would occur. Impacts from future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Impacts would be similar to those of the Proposed Action, except that the proposed land exchange would not occur and the Applicant would not exchange the offered parcels.	S	• Similar to those identified for Proposed Action except that proposed land exchange would not occur.	NS
Alternative II - Decreased Disposal Rate			
• Impacts would be the same as for the Proposed Action because additional disturbance outside of the area of disturbance for the Proposed Action would not occur. However, the implementation of mitigation measures would be necessary for an additional 65 years.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Similar to those identified for Proposed Action except an additional 1,543 acres of undisturbed desert tortoise habitat would be removed.	S	• Site specific biological surveys shall be conducted according to all applicable regulations. Mitigation likely to be the same as identified for Proposed Action except a larger land and compensation exchange shall be provided.	NS
Alternative IV - Larger Project			
• No change from Proposed Action.	S	• Same as identified for Proposed Action.	NS
Cultural Resources			
Proposed Action			
• Disturbance to ten cultural resources that are recommended as eligible for inclusion on the National Register of Historic Places.	S	• A data recovery program, as outlined in Section 4.1.4.3, shall be implemented and shall include Native American participation.	NS
• Disturbance to World War II army camp sites.	NS	• None required.	NS
• Disturbance to other cultural resource that are not recommended as eligible for inclusion on the National Register of Historic Places.	NS	• None required.	NS
• Project-related effects to that portion of the Singer Geoglyphs ACEC that lies north of SR 78.	NS	• None required.	NS
No Action Alternative			
• Significant impacts to ten cultural resources identified at the proposed landfill site would be avoided. Impacts from future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Alternative I would impact three cultural resources that are recommended as eligible for inclusion on the National Register of Historic Places.	S	• Same as identified for Proposed Action.	NS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cultural Resources (continued)			
Alternative II - Decreased Disposal Rate			
• Impacts same as those identified for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• A potentially significant short-term prehistoric camp site (CA-IMP-4623) would be impacted by a regional landfill at the alternative site. Additional significant cultural resources could also exist at the alternative site.	S	• Site specific cultural resource surveys shall be conducted and fully compliance with Section 106 and all other applicable laws shall be completed prior to taking any discretionary action related to the alternative site.	*
Alternative IV - Larger Project			
• Impacts same as those identified for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Paleontological Resources			
Proposed Action			
• No paleontological resources exist at the proposed site. Therefore, no paleontological impacts would occur as a result of the proposed project.	NS	• None required.	N/A
No Action Alternative			
• Impacts of Future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• No change from Proposed Action.	NS	• None required.	N/A
Alternative II - Decreased Disposal Rate			
• No change from Proposed Action.	NS	• None required.	N/A
Alternative III - Alternative site			
• No change from Proposed Action.	NS	• None required.	N/A
Alternative IV - Larger Project			
• No change from Proposed Action.	NS	• None required.	N/A
Transportation			
Proposed Action			
• Potential impacts due to increased project-related traffic in the vicinity of the project area.	NS	• Design and construct intersection of new access road according to requirements of a Caltrans Encroachment Permit.	NS
• Potential impact to winter weekend recreational traffic on SR 78 at the Imperial Sand Dunes Recreational Area (ISDRA).	S	• Local MSW residue truck delivery shall not be scheduled beginning on the afternoon before and ending on the morning after weekends and/or holidays from October 1st to May 31st each year. Employee vehicle trips would occur during this period.	CS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation (continued)			
Proposed Action (continued)			
• Potential impacts to at-grade railroad crossing traffic along the SP rail-haul route and proposed rail spur.	S	• The Applicant shall provide the local funding share (not to exceed an aggregate of $500,000 per separation) for each of two grade separations selected by the PUC and implemented according to priorities established by the PUC's Grade Separation Programs shall be provided by the Applicant. The funding for the first separation shall be provided when MSW residue volume reaches 12,000 tpd and for the second when MSW residue volume reaches 20,000 tpd. • The local funding share (10 percent of cost or $25,000, whichever is less) for each of eight at-grade railroad crossing improvements selected by the PUC and implemented according to priorities established by the U.S. DOT Section 130 Program shall be provided by the Applicant. The funding of up to $50,000 for two crossing improvements shall be provided when MSW residue volume first reaches each of the following values: 8,000; 12,000; 16,000; and 20,000 tpd. • At least three at-grade railroad crossings with warning signage at existing unpaved roads along the proposed rail spur shall be provided.	NS
• Potential safety impacts due to transport of liquefied methane gas produced at an optional on-site energy recovery plant. (See discussion under Health and Safety.)	S	• Follow appropriate state and federal laws pertaining to the loading and off-site transfer by truck or train of liquefied methane gas produced at an on-site energy recovery plant. • Only DOT-certified transport trucks and rail cars shall be used. • The Applicant shall not knowingly allow the transportation of liquefied methane gas to occur except according to federal hazardous material transportation regulations contained in 49 CFR Subtitle C.	NS
• Potential for accidents of trucks and trains hauling MSW residue.	S	• A project-specific MSW residue contingency plan shall be prepared and provided to SP as guidance for response procedures. • Prior to project startup, the Applicant shall work with the appropriate state and local agencies to define a truck route that avoids population centers and minimizes potential environmental effects related to a temporary interruption of rail service that requires truck transport of MSW residue.	NS
No Action Alternative			
• The previously identified transportation impacts would not occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Impacts similar to those identified for the Proposed Action except landfilling-related transportation activities would only last for 85 years.	S	• Same as identified for Proposed Action.	NS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Transportation (continued)			
Alternative II - Decreased Disposal Rate			
• Project-related traffic would be reduced by about 40 percent as compared to the Proposed Action. Landfilling-related transportation would occur for approximately 165 years.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Increased landfill-related traffic on SR 78, as compared to the Proposed Action, and up to 200 truck trips, 60 days per year to haul clay from the Mesquite Mine to the alternative site.	S	• Ted Kipf Road shall be improved to handle landfill-related traffic. Appropriate improvements to the Mine access road/SR 78 intersection, and the landfill access road/SR 78 intersection shall be made, including left hand turn pockets and acceleration lanes. Truck deliveries shall be scheduled to avoid the period beginning the Friday afternoon before and ending the Monday morning after weekends and/or holidays from October 1st to May 31st each year.	CS
• Construction of rail-spur and loss of Vista Mine Road and A2110, substantially reducing access south of the alternative site.	S	• Two at-grade railroad crossings with appropriate signage on Ted Kipf Road shall be provided. Vista Mine Access Road and A2110 shall be relocated.	NS
• Other impacts associated with rail-haul and project generated traffic.	S	• Same as identified for Proposed Action except no improvements needed for Proposed Action Rail-spur and realignment of the Mesquite Mine Access Road would not be required.	NS
• Use of existing at-grade railroad crossing of SR 78 near Glamis.	NS	• None required.	NS
Alternative IV - Larger Project			
• Impacts similar to those identified for the Proposed Action .	S	• In addition to the grade-crossing funding contributions included as mitigation for the Proposed Action (Section 4.1.6), the Applicant would contribute the local funding portion (10 percent) of the cost of two additional PUC-administered at-grade railroad crossing improvements or up to $50,000 for each improvement, whichever is less, within one year of the time MSW residue volume reached 25,000 tpd and 30,000 tpd (i.e., the Applicant would contribute to a total of four additional at-grade railroad crossing improvements). The Applicant would also provide 10 percent of the local funding portion (up to $500,000) for one additional grade-separation project that received the $5 million award in state funding (Section 4.1.6) as part of the PUC's administration of state subsidized grade separations. These funds would be made available in the year the landfill operations reached 30,000 tpd.	NS
Noise			
Proposed Action			
• Landfill operations could potentially impact nearby receptors.	NS	• The on-site vehicles and equipment shall use noise suppression equipment, such as mufflers. • Stability berms around the working face shall minimize noise emissions from landfill construction activities.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Noise (continued)			
Proposed Action (continued)			
• Landfill operations could potentially impact nearby receptors (continued).		• The project's remote location would minimize impacts to surrounding land uses. On-site vehicles and equipment shall use noise suppression equipment such as mufflers to minimize noise impact to on-site personnel and surrounding land uses. Stability berms around the working face would minimize noise emissions from that area.	
• Potential noise impacts along the proposed rail spur.	S	• The rail spur shall be located at least 2,500 feet from SR 78 to minimize impacts to SR 78 and people in the ISDRA. • To the extent practical, landfill-related train trips shall be distributed throughout each 24-hour period to minimize disturbances.	NS
• Noise impacts from the use of the SP Main Line	NS	• None required.	NS
• Potential on-site impacts to employees and visitors could occur from landfill operations	S	• Safety equipment and procedures to prevent noise impacts to employees and visitors shall be implemented.	NS
No Action Alternative			
• Noise impacts would not occur at the proposed site. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• No change from Proposed Action except landfill-related noise, including MSW delivery by train, would only occur for 85 years, compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative II - Decreased disposal Rate			
• Approximately 4 fewer train trips per day would occur as compared to the Proposed Action. Landfill-related noise, including MSW delivery by train, would occur for 165 years, compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• On-site impacts from landfill activities and along rail-haul route and rail-spur would be similar to Proposed Action.	S	• Same as identified for Proposed Action.	NS
• Impacts to the receptors in the ISDRA.	NS	• None required.	NS
• Impacts from trucking clay.	NS	• None required.	NS
Alternative IV - Larger Project			
• Approximately 5 more train trips per day would occur as compared to the Proposed Action. Landfill-related noise, including MSW delivery by train, would occur for 90 years, compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Air Quality			
Proposed Action			
• Potential impacts to air quality from criteria pollutants generated by flare station.	S	• PM_{10} monitoring stations and an on-site meteorological station shall be installed and operated as agreed upon with the ICAPCD. Offsets shall be obtained as required by ICAPCD Rule 207.	CS for PM_{10} NS otherwise
• Potential impacts to air quality from on-site fuel storage tanks.	S	• Fuel storage tanks shall be constructed with submerged fill pipes to control formation of vapors during filling.	NS
• Potential on-site impacts to air quality from fugitive LFG.	S	• The LFG collection system shall be designed and operated to collect at least 80 percent of the generated LFG at location where the waste is deep enough (i.e., 20 feet over collector) to avoid excess air infiltration. Also, offsets shall be obtained as described above.	NS
• Potential on-site air quality impacts of criteria pollutants generated by vehicles and heavy equipment.	S	• On-site vehicles shall be routinely maintained.	NS
• Potential odor impacts for on-site, and from rail haul.	S	• Daily, intermediate, and final cover shall be applied and a LFG collection system, as described above, shall be implemented. • All MSW residue containers shall be fully covered. Carbon filters for two train loads of containers shall be available for covering vents within 12 hours during any prolonged rail delay. • Empty containers shall be washed periodically to remove residual MSW. The wash water shall be treated to remove organics before reuse on-site.	NS
• Potential fugitive dust emission impacts generated by vehicles traveling on paved and unpaved roads and from operation areas of the working face and cover borrow areas	S	• Install and operate PM_{10} monitoring stations and an on-site meteorological station shall be installed and operated as agreed upon with the ICAPCD. • Implement the three tiered fugitive dust control plan described in Section 4.1.8. Fugitive dust emissions from paved roads shall be controlled by constructing two-lane roads with wide paved shoulders, and constructing an apron at the transition between the paved and unpaved roads. • A street cleaning program shall be implemented consisting of flushing the paved road with water once or twice a week or more frequently during windy periods. The apron shall be flushed with water approximately one time per day or more frequently during periods when excessive trackout is observed. • Fugitive dust emissions from unpaved roads shall be controlled using dust-suppressing stabilizers such as resins during the construction of the road. Other measures to achieve an overall control efficiency of 75 percent when the emissions rate is estimated based on paved road emissions shall be implemented.	CS

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Air Quality (continued)			
Proposed Action (continued)			
• Potential fugitive dust emission impacts generated by vehicles traveling on paved and unpaved roads and from operation areas of the working face and cover borrow areas (continued).		• For the impermanent segment of the road, the selected control strategy shall be watering of the road for the low-speed segment, and use of dust suppressant on the high-speed portion. Additional treatment shall include the resin-type stabilizers or other dust-suppressing treatments such as lignin sulfonate. • Fugitive dust emissions from the operations areas of the working face and the cover borrow areas shall be controlled using a combined strategy of limiting the area of operations and by using traditional dust-suppression techniques such as area watering.	
No Action Alternative			
• No new project-related direct emissions would be added to Coachella Valley or Imperial County under the No Action Alternative. Landfill-related emissions could continue in the SOCAB, a source of transported ozone into Imperial County, or in other air basins if other regional landfills are approved. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	S	• Required mitigation measures cannot be determined at this time.	S
Alternative I - Smaller Landfill Footprint			
• Similar to the Proposed Action except landfilling and MSW residue transportation would only occur for 85 years as compared to 100 years for the Proposed Action.	S	• Same mitigation measures as required for Proposed Action.	CS for PM_{10} NS otherwise
Alternative II - Decreased Disposal Rate			
• Daily emissions would be approximately 40 percent less than Proposed Action emissions. Landfilling and MSW transportation emissions would occur for 165 years as compared to 100 years for the Proposed Action.	S	• Same mitigation measures as required for Proposed Action.	CS for PM_{10} NS otherwise
Alternative III -Alternative Site			
• No change from Proposed Action.	S	• Same mitigation measures as required for Proposed Action.	CS for PM_{10} NS otherwise
Alternative IV - Larger Project			
• Daily emissions would be increased by about 50 percent as compared to the Proposed Action. Landfilling and MSW residue transportation would occur for 90 years as compared to 100 years for the Proposed Action.	S	• Same mitigation measures as required for Proposed Action.	CS for PM_{10} NS otherwise
Land Use			
Proposed Action			
• Proposed landfill would conform with the BLM multiple use, Class M Policy, and the 1985 CDCA Amendment that prohibits the establishment of waste disposal sites on public lands, except by disposal of public lands through a land exchange.	S	• A land exchange to transfer ownership of federally owned lands within the project area for lands of at least equivalent resource value and equivalent appraised value within the Santa Rosa Mountains National Scenic Area and near the Chuckwalla Bench ACEC shall be executed.	NS

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Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Land Use (continued)			
Proposed Action (continued)			
• The proposed landfill would not conform to the current BLM CDCA Plan because a portion of the project site is located within the mapped boundary of the Singer Geoglyphs ACEC.	NS	• The proposed action includes an amendment to the CDCA Plan that would revise the boundaries of the Singer Geoglyphs ACEC, and remove the area north of SR-78 from the ACEC. This area does not contain cultural resources.	NS
• The proposed landfill would not be consistent with the current Imperial County General Plan, or the County Zoning Ordinance.	S	• Implementation of the mitigation measures identified in this EIS/EIR would mitigation land use impacts to below a level of significance. The proposed General Plan Amendment, and zone change, would make the proposed landfill consistent with the Imperial County General Plan, and the Imperial County Zoning Ordinance.	NS
No Action Alternative			
• Impacts identified for the Proposed Action would not occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Impacts less than proposed project because acquisition of BLM lands would be substantially reduced and a CDCA Plan Amendment for the Singer Geoglyphs ACEC.	S	• Less land would be exchanged because fewer BLM lands would be required. Same as for the proposed action except that no CDCA Plan Amendment would be required.	NS
Alternative II - Decreased Disposal Rate			
• Similar to the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Impacts would be very similar to impacts described for the Proposed Action except a larger land exchange would be required and a CDCA Plan Amendment to revise the boundaries of the Singer Geoglyphs ACEC would not be required.	S	• Same as for the Proposed Action except additional acres of exchange land in the SRMNSA and near the Chuckwalla Bench ACEC would be required. No CDCA Plan Amendment to revise the Singer Geoglyphs ACEC would be required.	
Alternative IV - Larger Project			
• No change from Proposed Action.	S	• Same as identified for Proposed Action.	NS
Recreational Resources			
Proposed Action			
• Loss of a portion of the Mesquite Mine overlook trail	S	• The applicant shall maintain public access to the existing Mesquite Mine overlook trail as long as practicable. The Applicant shall establish a new (relocated) interpretive trail once public access to the trail is impacted, or once the landfill impacts the existing Mesquite Mine overlook trail. The applicant shall enter into an agreement with BLM similar to the existing Mesquite Mine overlook trail agreement, regarding the relocated trail.	NS
• Loss of approximately 1,750 acres of federally-owned land designated for recreational uses.	NS	• None required.	NS
• No impacts to wilderness areas or wilderness study areas would occur.	NS	• None required.	NS

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Recreational Resources (continued)			
No Action Alternative			
• Impacts identified for the Proposed Action would not occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Most of the federal land on the proposed landfill site would not be impacted by this alternative. Impacts to the Mesquite Mine overlook trail would be similar to those described for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative II - Decreased Disposal Rate			
• No change from Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Loss of 5,200 acres of recreational lands	NS	• Exchange parcels in the SRMNSA with BLM for lost land, per Federal Land Policy and Management Act (FLPMA).	NS
• Closure of Vista Mine Road and A2110 and impact of Ted Kipf Road landfill-related traffic.	NS	• Provide improvement to Ted Kipf Road described in Section 4.5.6. Relocate Vista Mine Road and A2110.	NS
Alternative IV - Larger Project			
• No change from Proposed Action.	S	• Same as identified for Proposed Action.	NS
Visual Resources			
Proposed Action			
• Landform alteration would result in a strong degree of contrast, impacting public views.	S	• The proposed landfill shall be constructed to mimic a natural landform to the extent possible. Side slopes shall not exceed 5:1 and, along with the top of the landfill, shall be "contoured" to resemble a natural formation.	SU
• Night-lighting would be provided at the landfill to facilitate 24 hour operations. The use of night-lighting is a concern because of the potential for fugitive illumination to interfere with the visibility of drivers along SR 78, the recreational experience of users of the ISDRA, and military pilots using night vision devices.	S	• Night-lighting shall be designed to minimize impacts to sensitive receptors (e.g., arranged to avoid significant off-site fugitive illumination). Only a moderate change to the existing nighttime character shall result. Impacts to military pilots shall be mitigated by providing the military with a landfill lighting plan thereby allowing pilots to avoid areas of concern.	NS
No Action Alternative			
• Under this alternative, the existing overburden piles would not be used for cover material. Mine-related impacts from night lighting would end in 10 to 15 years. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*
Alternative I - Smaller Landfill Footprint			
• Slightly reduced landform alteration compared to the Proposed Action. Night lighting impacts would last 85 years compared to 100 years for the Proposed Action.	S	• Same mitigation requirements as for the Proposed Action.	SU

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Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Visual Resources (continued)			
Alternative II - Decreased Disposal Rate			
• Same landform as the Proposed Action. Night lighting impacts would last 165 years compared to 100 years for the Proposed Action.	S	• Same mitigation requirements as for the Proposed Action.	SU
Alternative III - Alternative Site			
• Landform alteration would result in a strong degree of contrast, impacting public views.	S	• Same mitigation requirements as for the Proposed Action.	SU
• No impact to military pilots at this site.	NS	• None required.	NS
Alternative IV - Larger Project			
• The larger landfill that would be constructed under this alternative would result in an even stronger degree of contrast as compared to the Proposed Action. Night lighting impacts would last for 90 years compared to 100 years for the Proposed Action.	S	• Same mitigation requirements as for the Proposed Action.	SU
Environmental Health and Public Safety			
Proposed Action			
• Potential public health affects from vectors attracted to the landfill.	S	• Vectors shall be controlled by the placement of daily cover in accordance with the requirements of CCR Title 14 and a Facilities Permit to be obtained from the Imperial County Department of Health and Services (LEA).	NS
• Aircraft interference at Chocolate Mountains Aerial Gunnery Range due to landfill related increase in birds, blowing debris.	S	• The U.S. Marines shall be provided a map identifying the location of the proposed landfill and defining an areas that may be lit at night. All lighting shall be shielded to minimize fugitive emissions. The exposed trash area shall be no greater than 3.0 acres. If necessary, special bird controls (e.g., monofilament lines) shall be implemented. Moveable fencing shall be provided when necessary to prevent excess blowing trash. On high-wind days, the operation shall be restricted to special locations protected from wind by higher portions of the landfill.	NS
• Potential hazardous waste in MSW stream.	NS	• The landfill shall accept only MSW (Class III) waste, as defined in CCR Titles 14 and 23, except agricultural plant material would be accepted a necessary to provide offsets for project-related air quality impacts. Only MSW from transfer stations and material recovery facilities would be accepted. • All landfill employees with access to MSW residue shall be trained to identify suspicious materials that could possibly be in MSW residue emptied from containers. • A safe location for temporarily storing hazardous materials removed from MSW residue shall be provided at the landfill site.	NS
• Potential exposure to toxic air contaminants.	NS	• LFG shall be controlled as required by the ICAPCD.	NS
• Potential for ground water, precipitation runoff or soils contamination due to escape of leachate or LFG from MSW.	S	• The landfill shall be constructed above a liner and leachate collection system acceptable to the RWQCB and a LFG collection and destruction/ transformation system shall be implemented.	NS

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Environmental Health and Public Safety (continued)			
Proposed Action (continued)			
• Potential for ground water, precipitation runoff or soils contamination due to escape of leachate or LFG from MSW (continued).		• Ore residue from the Mesquite Mine shall meet standards established by the RWQCB, before being used for landfill cover.	
• Potential fires in MSW material.	NS	• Fire hydrants shall be designed and constructed according to regulatory standards.	NS
		• A LFG control system shall be provided that includes collection trenches distributed throughout the MSW so that high vacuums at localized areas would not be necessary.	
		• The LFG stream being collected shall undergo continuous operational monitoring to ensure that excess air is not being drawn into the system.	
• Potential risk to worker safety through landfill activity-related accidents.	NS	• The landfill operation shall abide by appropriate OSHA and Cal OSHA worker safety regulations.	NS
		• Structures shall be designed and constructed to appropriate standards (e.g., uniform building code, Underwriter Laboratories, etc.).	
		• Well-equipped first aid kits shall be available at appropriate on-site locations.	
		• Designated emergency coordinators shall be on-site for all operating shifts.	
		• An emergency vehicle shall be maintained on-site for transporting employees suffering from injuries or illness to medical facilities.	NS
		• The existing Mesquite Mine helipad shall be maintained for medical emergencies.	
• Potential flooding due to storm flows crossing SR 78.	S	• Drainage control facilities shall be constructed such that peak flows at the SR 78 washes are within parameters previously accepted by Caltrans.	NS
• Increased potential for railroad safety hazards including derailments and conflicts at railroad crossings resulting in potential for spilled MSW.	S	• Appropriate at-grade railroad crossing signs shall be provided along the proposed rail spur.	NS
		• The applicant shall provide SP with a MSW residue spill contingency plan to respond to MSW residue-related aspects of train accidents. (For additional mitigation measures, please refer to Section 4.1.12.3.)	
• Potential for spilled MSW, increased accidents due to possible truck transport of MSW.	S	• Prior to project startup, the Applicant shall work with the appropriate state and local agencies to define a truck route that avoids population centers and minimizes potential environmental effects related to a temporary interruption of rail service that requires truck transport of MSW residue.	NS
• Potential MSW container explosions.	NS	• None required.	NS
• Potential LFG explosions.	NS	• None required.	NS
No Action Alternative			
• Without construction of a regional landfill within the proposed project area, none of the potential impacts identified above would occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Required mitigation measures cannot be determined at this time.	*

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Environmental Health and Public Safety (continued)			
Alternative I - Smaller Landfill Footprint			
• Impacts would be similar to the Proposed Action except landfilling activities would cease after 85 years as compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative II - Decreased Disposal Rate			
• Impacts would be similar to the Proposed Action except project-related trips would be reduced by about 40 percent but landfilling activities would occur for about 165 years as compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action.	NS
Alternative III - Alternative Site			
• Impacts would be similar to the Proposed Action except Ted Kipf Road would be crossed by the rail spur and leached ore would not be used for cover.	S	• Same as for the Proposed Action except the new at-grade railroad crossings shall be built on Ted Kipf Road, and appropriate warning signs shall be provided.	NS
Alternative IV - Larger Project			
• Impacts would be similar to the Proposed Action except landfilling activities would increase by about 50 percent but would only occur for 90 years as compared to 100 years for the Proposed Action.	S	• Same as identified for Proposed Action except additional funding shall be provided for improvement of at-grade railroad crossings as described in Section 4.6.6.	NS
Socioeconomics			
Proposed Action			
• Potential public liability for landfill closure, post closure care, and environmental impairment.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
• The project will create 150 temporary direct construction jobs and 268 direct long-term jobs through the life of the project with a projected reduction in Imperial County's unemployment rate.	B	• None required.	B
• Project-related direct wages will exceed the average wages per job paid in Imperial County, resulting in an increase in the average earnings for wage and salaried jobs.	B	• None required.	B
• Proposed Action would be a net revenue generator for Imperial County	B	• None required.	B
No Action Alternative			
• If the proposed project is not approved, the beneficial socioeconomic effects described above would not occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*
Alternative I - Smaller Landfill Footprint			
Potential public liability for landfill closure, post closure care, and environmental impairment.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
• Similar to Proposed Action, except that job creation and most county revenues would only occur for 85 years as compared to 100 years for the Proposed action.	B	• None required.	B

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Socioeconomics (continued)			
Alternative II - Decreased Disposal Rate			
• Potential public liability for landfill closure, post closure care, and environmental impairment.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
• Similar to Proposed Action, except that fewer jobs would be created and project-related yearly county revenues would be reduced by about 40 percent as compared to the Proposed Action. Project-related jobs and revenues would occur for 165 years as compared to 100 years for the Proposed Action.	B	• None required.	B
Alternative III - Alternative Site			
• Potential public liability for landfill closure, post closure care, and environmental impairment.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
• Similar to Proposed Action, except that more jobs would be created but county revenues would be about the same as compared to the Proposed Action.	B	• None required.	B
Alternative IV - Larger Project			
• Potential public liability for landfill closure, post closure care, and environmental impairment.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
• Similar to Proposed Action, except that more jobs would be created and project-related yearly county revenues would be increased by about 50 percent as compared to the Proposed Action. Project-related jobs and revenues would occur for 90 years as compared to 100 years for the Proposed Action.	B	• None required.	B
Public Services and Utilities			
Proposed Action			
• No significant impacts to public services and utilities were identified for the proposed landfill or the proposed BLM exchange properties.	NS	• The Applicant shall recycle or dispose of all regulated Proposed Action-generated wastes and HHW removed for the MSW residue received at the proposed landfill according to all applicable regulations. • The Applicant shall supply all OSHA- and Cal OSHA-required training, supplies, and equipment. • The Applicant shall provide precipitation drainage facilities as described by Section 4.1.2 of this EIS/EIR. • The Applicant shall dispose of all Proposed Action-generated MSW at the proposed landfill. • The Applicant shall provide on-site security, fire protection services, and medical services.	NS
No Action Alternative			
• Impacts associated with the Proposed Action would be avoided. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*
Alternative I - Smaller Landfill Footprint			
• Similar to the Proposed Action except public service and utility requirements would essentially end after 85 years as compared to 100 years for the Proposed Action.	NS	• None required.	NS

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Public Services and Utilities (continued)			
Alternative II - Decreased Disposal Rate			
• Similar to the Proposed Action except public service and utility requirements would be reduced by about 40 percent and would essentially end after 165 years as compared to 100 years for the Proposed Action.	NS	• None required.	NS
Alternative III - Alternative Site			
• Impacts similar to the Proposed Action except water would be obtained from on-site wells, Ted Kipf Road would have to be improved, and electricity would have to be brought in along the SP ROW.	NS	• The Applicant shall provide the necessary water wells, improvements to Ted Kipf Road, and an electrical transmission line.	NS
Alternative IV - Larger Project			
• Similar to the Proposed Action except public service and utility requirements would be increased by about 50 percent and would essentially end after 90 years as compared to 100 years for the Proposed Action.	NS	• None required.	NS
Energy Consumption/ Conservation			
Proposed Action			
• No significant impacts to energy consumption/ conservation were identified for the Proposed Action.	NS	• None required.	NS
No Action Alternative			
• Without construction of a Regional landfill within the proposed project area, the opportunity to generate electricity from LFG production at the proposed landfill would not occur. Energy usage for the disposal of 20,000 tpd of MSW residue in the Los Angeles Basin would be about 72 percent of that required for the Proposed Action.	NS	• None required.	NS
Alternative I - Smaller Landfill Footprint			
• Similar to the Proposed Action in terms of energy use per ton of MSW residue disposal.	NS	• None required.	NS
Alternative II - Decreased Disposal Rate			
• Similar to the Proposed Action in terms of energy use per ton of MSW residue disposal.	NS	• None required.	NS
Alternative III - Alternative Site			
• Similar to the Proposed Action in terms of energy use per ton of MSW residue disposal except that additional energy would be needed to haul clay from the Mesquite Mine to the alternative site and to excavate daily cover material.	NS	• None required.	NS
Alternative IV - Larger Project			
• Similar to the Proposed Action in terms of energy use per ton of MSW residue disposal.	NS	• None required.	NS
Cumulative Impacts			
Proposed Action			
• Potential cumulative impact on regional water resources due to quantity of use.	NS	• Mitigation measures set forth in Chapter 4.1.2, Water Resources, and cited above, shall be implemented.	NS

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Table S-1

Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cumulative Impacts (continued)			
Proposed Action (continued)			
• Potential impact due to cumulative loss of desert tortoise habitat.	S	• Mitigation measures set forth in Chapter 4.1.3, Biological Resources, and cited above, shall be implemented.	NS
• Cumulative impacts from project-related air emissions.	S	• Mitigation measures set forth in Chapter 4.1.8, Air Quality, and cited above, shall be implemented.	CS for PM_{10} NS otherwise
• Cumulative impacts from project-related traffic on SR 78 in the vicinity of the proposed site beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st through May 31st. Employee vehicle trips would occur during this period.	S	• Mitigation measures set forth in 4.1.6, Transportation, and cited above, shall be implemented.	CS
• Potential cumulative impacts to noise and environmental health and public safety primarily due to combined use of rail-haul route by potential concurrent landfill operations.	S	• Mitigation measures cited above and set forth in Chapters 4.1.7, Noise; and 4.1.12, Environmental Health and Public Safety shall be implemented.	NS
• Potential cumulative socioeconomic impacts associated with potential concurrent landfill operations due to loss of employment and revenues for Imperial County.	S	• Financial assurance shall be provided during project life as required by prevailing regulations.	NS
No Action Alternative			
• Without construction of a regional landfill within the proposed project area, cumulative impacts from concurrent operation of Mesquite Regional Landfill, and other regional landfills would not occur. Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*	• Impacts of future No Action Alternative-required landfills cannot be reasonably predicted at this time.	*
Alternative I - Smaller Landfill Footprint			
• Similar to the Proposed Action.	S	• Same as for the Proposed Action, except the mitigation measures required are described in section 4.3.2, Water Resources; 4.3.3, Biological Resources; 4.3.6, Transportation; 4.3.7, Noise; 4.3.8, Air Quality; and 4.3.12, Environmental Health and Safety.	CS for PM_{10} and traffic NS otherwise
Alternative II - Decreased Disposal Rate			
• Similar to the Proposed Action.	S	• Same as for the Proposed Action, except the mitigation measures required are described in section 4.4.2, Water Resources; 4.4.3, Biological Resources; 4.4.6, Transportation; 4.4.7, Noise; 4.4.8, Air Quality; and 4.4.12, Environmental Health and Safety.	CS for PM_{10} and traffic NS otherwise
Alternative III - Alternative Site			
• Similar to the Proposed Action.	S	• Same as for the Proposed Action, except the mitigation measures required are described in section 4.5.2, Water Resources; 4.5.3, Biological Resources; 4.5.6, Transportation; 4.5.7, Noise; 4.5.8, Air Quality; and 4.5.12, Environmental Health and Safety.	CS for PM_{10} and traffic NS otherwise

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Summary of Potential Environmental Effects and Mitigation Measures
Proposed Mesquite Regional Landfill

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation
Cumulative Impacts (continued)			
Alternative IV - Larger Project			
• Similar to the Proposed Action.	S	• Same as for the Proposed Action, except the mitigation measures required are described in section 4.6.2, Water Resources; 4.6.3, Biological Resources; 4.6.6, Transportation; 4.6.7, Noise; 4.6.8, Air Quality; and 4.6.12, Environmental Health and Safety.	CS for PM_{10} and traffic NS otherwise

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A-1 SCOPING DOCUMENT
Prepared by The Butler Roach Group, Inc., May 27 and May 28, 1992.

A-2 NOTICE OF PREPARATION/NOTICE OF INTENT AND RESPONSES
Prepared by The Butler Roach Group, Inc., May - July, 1992.

A-3 ALTERNATIVE IMPERIAL COUNTY LANDFILL SITE SELECTION STUDY
Prepared by The Butler Roach Group, Inc., June 24, 1993.

B HYDROGEOLOGY TECHNICAL REPORT
Prepared by Environmental Solutions, Inc., December 1993.

C FAULTING AND SEISMICITY REPORT
Prepared by Environmental Solutions, Inc., December 1993.

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D-1 Botanical and Wildlife Analysis of the proposed Mesquite Regional Landfill Study Area. Prepared by the University of Arizona Office of Arid Land Studies, June 1993.

D-2 Biological Assessment of the proposed Gosser Exchange Properties. Prepared by Western Ecological Services Company, Inc., May 29, 1992.

D-3 Desert Tortoise Assessment/Survey of the proposed Mesquite Regional Landfill Site. Prepared by Alice E. Karl, September 28, 1992.

D-4 Desert Tortoise Assessment of the proposed Gosser Exchange Properties and Mesquite Mine - Section 15. Prepared by Alice E. Karl, July 17, 1992.

D-5 Biological Assessment: Desert Tortoise Habitat Evaluation: Proposed Gas Pipeline. Prepared by Alice E. Karl, December 1992.

D-6 Biological Resources Tables. Prepared by the Butler Roach Group, Inc., January 1994.

E CULTURAL RESOURCE INVENTORIES AND EVALUATIONS

E-1 Results and Recommendations of a Class III Inventory of the Proposed Mesquite Arid Landfill Project Area. Prepared by Brian F. Mooney Associates, December 1993.

E-2 Results and Recommendations of a Class III Inventory of the Proposed Gosser Properties/Gold Fields/BLM Land Exchange. Prepared by Brian F. Mooney Associates, December 1993.

E-3 Confidential Appendices to Cultural Resource Inventories for the Proposed Mesquite Landfill Project Area and the Proposed Gosser Properties, December 1993.

F AIR QUALITY ANALYSIS
Prepared by Environmental Solutions, Inc., December 1993.

G VISUAL RESOURCES CONTRAST RATING SHEETS
Prepared by The Butler Roach Group, Inc., January 1994.

H SOCIOECONOMICS TECHNICAL REPORT
Prepared by The Butler Roach Group, Inc., January 1994.

1.0

CHAPTER 1.0

INTRODUCTION

Gold Fields Mining Corporation (Gold Fields), Western Waste Industries, and SP Environmental Systems have entered into an agreement to permit and begin development of a new regional Class III sanitary landfill in eastern Imperial County (Proposed Action) (Figure 1-1). Arid Operations Inc., a wholly owned subsidiary of Gold Fields has been engaged by these parties to permit and operate the landfill and is the Applicant (Applicant) for the Proposed Action. The proposed Mesquite Regional Landfill would be located adjacent to the existing Mesquite Gold Mine and Ore Processing Facility (Mesquite Mine). The proposed landfill would accommodate up to 600 million tons of municipal solid waste (MSW) residue and would have a life span of approximately 100 years.

The project would also include a four- to five-mile railroad spur that would extend from the existing Southern Pacific Transportation Company (SP) Main Line track to the landfill site. The MSW residue would be transported to the proposed landfill from various Southern California communities via the existing SP Main Line track and new railroad spur.

This EIS/EIR examines the potential environmental impacts of receipt of MSW residue from Southern California. In the future, some volumes of MSW residue could come from communities outside of the Southern California area. This EIS/EIR does not analyze this possibility and future environmental analysis would be required before communities outside of Southern California could ship MSW residue to the proposed Mesquite Regional Landfill.

1.1 PURPOSE AND NEED FOR THE PROJECT

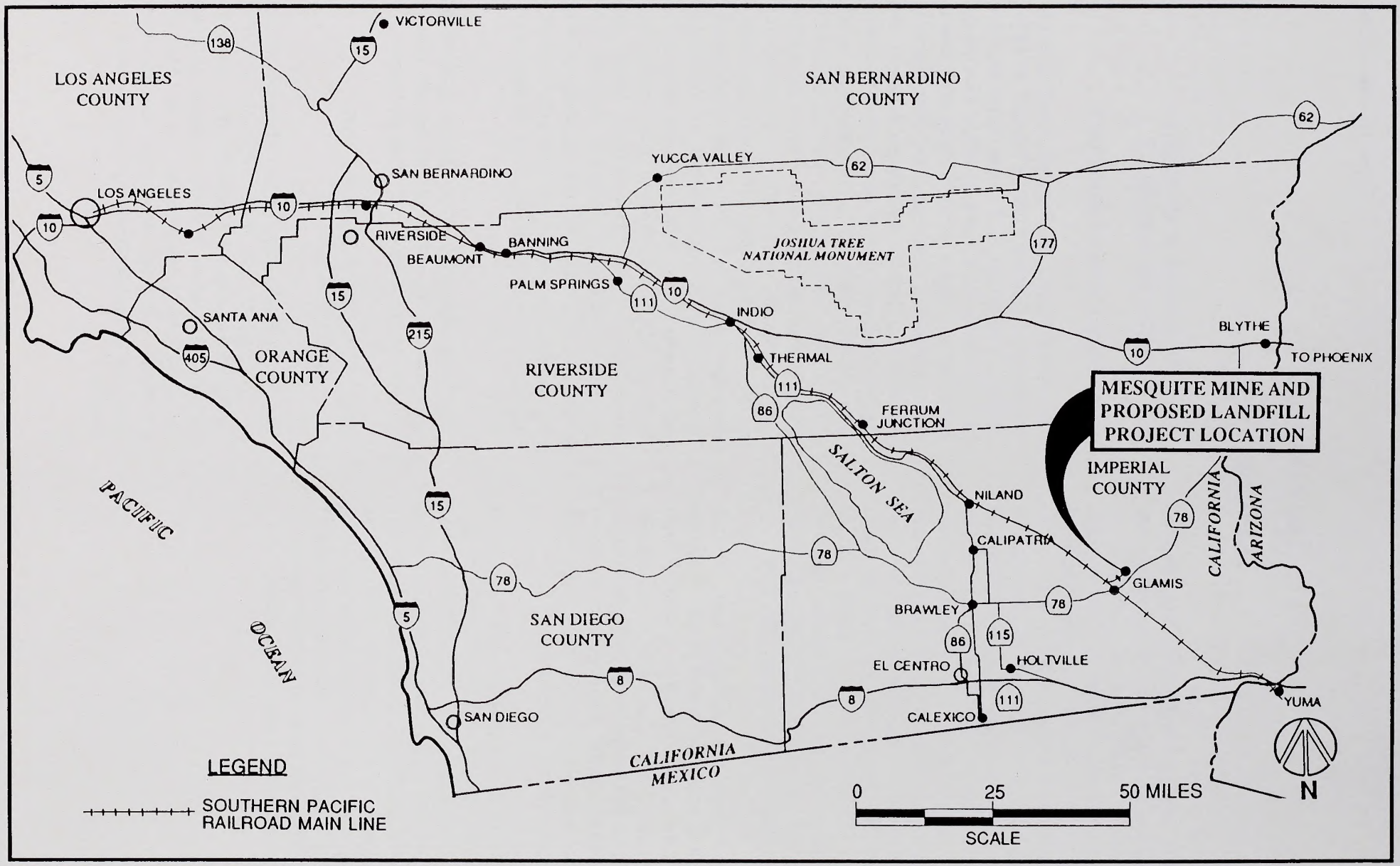
1.1.1 MSW CHARACTERISTICS

The proposed Mesquite Regional Landfill would operate as a California Class III landfill, for MSW residue. Title 23 § 25223 of the California Code of Regulations (CCR) defines MSW as garbage, trash, refuse, paper, rubbish, industrial waste, ashes, appliances, food waste, and other materials provided that they do not contain wastes which must be managed as hazardous waste or wastes with soluble pollutants in concentrations which exceed state water quality objectives. MSW residue is the remaining solid waste after sorting and processing at transfer stations/material recovery facilities (MRFs) to remove recyclables, hazardous materials, and other unacceptable wastes. Very small quantities of household hazardous materials occasionally can be mixed in with the MSW residue even after sorting and processing. State and federal laws and regulations regarding landfills require that environmental control systems be designed with the expectation that small amounts of these household hazardous wastes can be present in MSW.

The proposed landfill would divert agricultural plant material from burning to provide offsets for project-related emissions of air pollutants.

1.1.2 ASSEMBLY BILL 939 AND RECYCLING

The California Integrated Waste Management Act of 1989, as revised, State Assembly Bill 939 (AB 939), was enacted to establish the framework for development of a comprehensive program for solid waste management for the State of California. This law encourages the following solid waste management practices in order of priority.



SOURCE: Environmental Solutions, Inc. 1992

Proposed Mesquite Regional Landfill

Regional Location Map

FIGURE

1-1

- Source reduction
- Recycling and composting
- Environmentally safe transformation and environmentally safe land disposal

To further encourage these priorities, AB 939 requires that, through a combination of source reduction, recycling and composting, cities and counties throughout the state must reduce the MSW stream from each of their communities by 25 percent as of 1995 and by 50 percent as of the year 2000. These goals must be accomplished through development of solid waste management plans, which are updated each year. Cities and counties are authorized to place the MSW residue, after completion of these recycling activities, in environmentally safe landfills. AB 939 created the California Integrated Waste Management Board (CIWMB) to oversee implementation of AB 939's requirements.

The Applicant plans to develop the proposed Mesquite Regional Landfill to provide cities and counties throughout Southern California with the ability to plan for long-term environmentally safe landfill capacity as they develop local waste management programs. The Mesquite Regional Landfill would not accept containers of MSW residue that have not been sorted and processed at transfer stations. In addition, the proposed landfill would not accept containers of MSW residue from transfer stations in communities that cannot demonstrate that they are in compliance with AB 939 waste diversion and recycling goals or that they are operating under a CIWMB exemption from these requirements.

1.1.3 MSW SOURCES

This EIS/EIR examines the potential impacts of receipt of MSW residue from the Southern California area. The analysis assumes that MSW residue could be received from as far north as San Bernardino County to as far south as San Diego County. However, it is possible that MSW residue could also be received from other areas outside of Southern California sometime in the future. Because the details of receipt of MSW residue from other areas are speculative at this time, analysis of environmental impacts is left for future analysis. The following discussion provides some details for the potential MSW residue sources in the Southern California area.

1.1.3.1 Initial MSW Sources

It is anticipated that initial MSW residue for the Mesquite Regional Landfill operations would originate in Los Angeles County. Western Waste Industries, one of the participants in the proposed Mesquite Regional Landfill Project, has an extensive collection system within Los Angeles that could serve as an initial MSW source. In addition, MSW residue could be provided by one of the many transfer stations currently operating in Los Angeles County. The current total permitted capacity of transfer stations operating in Los Angeles County is approximately 20,000 tons per day (tpd). Another potential source could be associated with current plans of the Los Angeles Sanitation District to divert 3,400 tpd of MSW residue from a transfer station that would be sited at the Puente Hills Landfill (L.A. Sanitation District, 1992).

1.1.3.2 Future MSW Sources

According to data provided to the CIWMB, remaining permitted landfill capacity in Southern California as of January 1, 1990, varied from a low of four years in Los Angeles County to a high of 35 years in Imperial County (Table 1-1). Future volumes of MSW residue would come from one or more of these counties as existing MSW disposal capacity is used up.

Recently, counties in California have been preparing the AB 939-required integrated waste management plans and have begun implementing source reduction and recycling programs. Therefore, the information presented in Table 1-1 does not provide an accurate description of existing MSW generation rates and landfill capacity. In an effort to update the 1990 CIWMB data, letters were sent to each County's designated AB 939 contact requesting updated solid waste generation and landfill disposal rates,

TABLE 1-1

Existing Population, MSW Disposal Rates, and Permitted Capacity, Southern California Proposed Mesquite Regional Landfill

County	1990 Population	Annual Disposal		Remaining Permitted Capacity		Years (1)
		Tons	Cubic Yards	Tons	Cubic Yards	
Imperial	108,300	99,000	297,000	4,500,000	13,500,000	35
Los Angeles	8,832,500	13,500,000	22,500,000	100,000,000	165,000,000	4
Orange	2,398,000	4,000,000	8,100,000	122,500,000	203,400,000	20
Riverside	1,144,400	1,900,000	3,500,000	74,800,000	136,000,000	21
San Bernardino	1,396,600	2,000,000	3,400,000	23,400,000	39,000,000	11
San Diego	2,480,100	4,000,000	6,700,000	43,600,000	72,700,000	10
Ventura	666,800	1,270,000	2,110,000	14,000,000	23,000,000	11
Regional Total	17,027,100	26,769,000	46,607,000	382,800,000	652,600,000	

Note:

(1) Years remaining by county cannot be determined by simply dividing remaining cubic yards or tons by annual disposal due to variation among county methodologies.

Source: CIWMB, 1992.

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existing and planned, landfill capacity, and how the implementation of AB 939 is expected to affect these rates and capacities. The information received is as follows:

Imperial County

The most recent year for which MSW disposal data are available for Imperial County is 1992. In that year, 105,230 tons of MSW were landfilled (pers. comm., Quick, G., 1993). An additional 1,084 tons of recyclables were diverted from landfills (Imperial County, 1993a). The overall per-capita waste generation rate was 0.89 tons per year. The per-capita MSW disposal rate was 0.88 tons per year. It is estimated that existing permitted landfills provide 35+ years of remaining landfill capacity at present yearly disposal rates and 52+ years of remaining landfill capacity assuming the successful implementation of AB 939. Within the County, approximately 120 million tons of additional landfill space are proposed, pending permitting, exclusive of the proposed Mesquite Regional Landfill.

Orange County

The most recent year for which MSW disposal data are available for Orange County is Fiscal 1991-92. In that year, 3,479,251 tons of MSW were landfilled (Orange County, 1993). An additional 773,988 tons of recyclables were diverted from landfills. The overall per-capita waste generation rate was 1.7 tons per year. The per-capita MSW disposal rate was 1.4 tons per year. It is estimated that existing permitted landfills provide over 30 years of remaining landfill capacity at present yearly disposal rates. The successful implementation of AB 939 would likely increase the number of years of remaining landfill capacity. Within the County, approximately 40 million tons of additional landfill space are currently proposed, pending permitting. Assuming the successful permitting of this space, the County has over 40 years of landfill capacity at present yearly disposal rates and over 54 years of capacity assuming the successful implementation of AB 939 (pers. comm., Atkins, S., 1993).

Los Angeles County

The most recent year for which MSW disposal data are available for Los Angeles County is 1992 (Los Angeles County, 1993). In that year, approximately 12.4 million tons of MSW were landfilled. An additional 3.3 million tons of recyclables were diverted from landfills. Los Angeles County has been considering the expansion of the existing Puente Hills Landfill. Without this expansion, Los Angeles County projected it would begin to experience a shortfall in MSW disposal capacity of 8,849 tpd in 1992. Without additional landfills, this shortfall would increase to 34,841 tpd by the year 2013. With the expansion of the Puente Hills Landfill, it is projected that the disposal shortfall would not occur until 1994. At this time, the shortfall is projected to be approximately 6,265 tpd, increasing to 19,341 tpd by the year 2013. Both sets of numbers assume the successful implementation of AB 939.

San Diego County

The most recent year for which MSW disposal data are available for San Diego County is 1991. In that year, approximately 2 million tons of MSW were landfilled (San Diego County, 1993). The overall per-capita waste generation rate was 1.8 tons per year. The per-capita MSW disposal rate was 1.4 tons per year. It is estimated that existing permitted landfills provide 10 years of remaining landfill capacity at present yearly disposal rates and 12 years of remaining landfill capacity assuming the successful implementation of AB 939. Within the County, more than 33 million tons of additional landfill space are currently proposed, pending siting and permitting (pers. comm., Minner, J., 1993). The County is attempting to site two additional landfills in the next 5 to 10 years. Each of these landfills would have a minimum capacity of approximately 15 million tons.

City of San Diego

The most recent year for which MSW disposal data are available for the City of San Diego is

fiscal year 1992. In that year, 1,589,404 tons of MSW were landfilled. An additional 715,997 tons of recyclables were diverted from landfills. The overall per capita waste generation rate was 2.03 tons per year. The per capita MSW disposal rate was 1.4 tons per year. It is estimated that existing permitted landfills provide 10 years of remaining landfill capacity at present yearly disposal rates and 14 to 24 years of remaining landfill capacity assuming the successful implementation of AB 939. Within the City, 4.8 million cubic yards of additional landfill space are currently proposed, pending permitting. Assuming the successful permitting of this space, the City has 24 years of landfill capacity at present yearly disposal rates, and 24 years of capacity assuming the successful implementation of AB 939.

1.1.4 PURPOSE AND NEED FOR THE PROPOSED ACTION/ PROJECT OBJECTIVES

The purpose of the Mesquite Regional Landfill is to provide an option for communities to dispose of MSW residue remaining after recyclable and hazardous materials have been removed from the waste stream. In particular, landfill capacity in the Southern California area has been and continues to be a critical issue for solid waste management authorities. As a result, the purpose and need for the Proposed Action/project objectives include local and regional goals. These goals influence the analysis of alternatives in later chapters, primarily because the California Environmental Quality Act (CEQA) requires that the Environmental Impact Report (EIR):

> "Describe a range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic objectives of the project . . ." (Guidelines § 15126(d)).

The National Environmental Policy Act (NEPA) not only requires that an Environmental Impact Statement (EIS) describe a range of alternatives, but an EIS must:

> "[r]igorously explore and objectively evaluate all reasonable alternatives" 40 Code of Federal Regulations (CFR) § 1502.14.

The purpose and need/objectives identified for this project are divided into separate categories because State and Regional Objectives are different from BLM Objectives, which are different from those of Imperial County and are also different than those of the Applicant. The following objectives are defined, in their totality, as the Project Objectives.

1.1.4.1 Applicant's Objectives

- Continue environmentally sound and economically feasible activities at the site, such as a regional landfill.
- Efficiently reuse the overburden generated by past, present, and future mining operations at the Mesquite Mine.
- Utilize existing infrastructure (e.g., power lines and water supply system).

1.1.4.2 Imperial County Objectives

- Maintain and continue to build Imperial County's economy by approving an environmentally and economically sound project that provides long-term employment opportunities.
- Reuse disturbed sites with existing infrastructure to allow continued employment, yet avoid undue degradation of existing desert environment.
- Permit construction and operation of a site capable of receiving MSW residue from Imperial County.
- Offset expected socioeconomic loss from future closure of the Mesquite Mine.

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1.1.4.3 State and Other Regional Agencies' Objectives

- Find long-term solutions to the solid waste disposal crisis projected for the mid-1990s by helping to provide cities and counties with long-term (up to 15 years) landfill disposal options as required by AB 939 (Assembly Bill 939, 1989).
- Meet reduction and recycling goals as set forth in AB 939. (SCAG, 1988.)
- Locate and develop a site that can commence receiving waste by 1994 (Los Angeles County, 1993).
- Locate and develop a site that avoids incompatible land uses and avoids or mitigates significant environmental impacts to the greatest extent feasible.

1.1.4.4 U.S. Bureau of Land Management (BLM) Objectives

- Manage lands in the California Desert Conservation Area (CDCA) to assure sound management of all natural resources.
- Identify and preserve, through the exchange process, lands in the Santa Rosa Mountains containing important natural resource values and lands in the Chuckwalla Bench that are capable of providing high quality habitat for sensitive species.
- Ensure that all new waste disposal sites (landfills) are not located on BLM managed lands.

1.2 PROJECT BACKGROUND

1.2.1 GENERAL LOCATION

The proposed Mesquite Regional Landfill would be located partially on the southern portion of the existing Mesquite Mine property, north of State Route 78 (SR 78), in eastern Imperial County. The Glamis Beach Store and Boardman Store are approximately 3.5 and 3 miles to the southwest, respectively. The cities of Brawley and Palo Verde are approximately 35 miles to the west and northeast, respectively. The Chocolate Mountain Aerial Gunnery Range (CMAGR) lies immediately north of the Mesquite Mine. The CMAGR is actively used by the U.S. Marine Corps for military aircraft training, including the delivery of live ordinance.

The 4,245-acre project configuration would encompass all or parts of Sections 7, 8, 15, 16, 17, 18, 19, 20 and 21, and Tract 38 in Township 13 South, Range 19 East, San Bernardino Meridian, on the United States Geological Survey (USGS) Acolita and Quartz Peak 15-minute series quadrangles. This area includes federal land, which is the subject of a proposed land exchange in order to allow the Applicant to consolidate ownership of land within the project boundary and to satisfy BLM objectives.

The proposed railroad spur would extend along an approximate 150-foot wide corridor, an estimated four to five miles through federal land in Sections 13, 22, 23, 24, 27, and 28 in Range 18E, Township 13S. The entire spur would be on a right-of-way obtained from the BLM.

The proposed Mesquite Regional Landfill is described in detail in Chapter 2.0 of this EIS/EIR.

1.2.2 RELATIONSHIP TO EXISTING FACILITIES

This section provides a brief description of the Mesquite Mine, existing gravel borrow operations, and the regional rail facilities. A full description of how these existing facilities and operations would be affected by the proposed Mesquite Regional Landfill is provided in Chapters 2.0 (Alternatives Including the Proposed Action) and 4.0 (Environmental Consequences) of this EIS/EIR.

1.2.2.1 Mesquite Mine

The proposed landfill would be located partially on a portion of the existing Mesquite Mine. The Mesquite Mine is expected to close no later than 10- to 15-years from now (approximately 2008), given existing and reasonably foreseeable gold prices and mining technology. Though earlier closure is likely based on current market conditions, a 10- to 15-year mine operation is assumed in this EIS/EIR as a maximum likely condition. Once closed, the Mesquite Mine would require new permits to reopen and operate. As currently permitted, key elements at the Mesquite Mine include the following items, illustrated in Figure 1-2:

- Four open pits, from which approximately 440 million tons of gold-bearing ore and barren rock will be removed between the project startup in 1985 and the anticipated closure within the next 10 to 15 years.
- Approximately ten overburden piles planned for the disposal of an estimated 350 million tons (200 million cubic yards) of barren rock (i.e., rock with no measurable gold content) excavated from the pits. The piles are projected to extend to heights of about 280 feet.
- An electric power supply, constructed by Gold Fields and then dedicated to the Imperial Irrigation District (IID) including:
  - A 161/92-kilovolt (kV) tap substation, approximately six miles east of the Mesquite Mine, used to obtain power from a previously existing 161-kV transmission line owned and operated by the U.S. Department of Energy (U.S. DOE).
  - An approximately six-mile-long, 92-kV transmission line from the tap substation to the Mesquite Mine.
  - A 92/13.2-kV substation located at the Mesquite Mine.
- Approximately 1,000 acres of lined heap leach pads where gold is recovered by percolating a dilute cyanide solution through piles of ore. Prior to abandonment, the ore residue is rinsed with fresh water to the extent necessary to comply with the existing permit issued by the Regional Water Quality Control Board (RWQCB) (i.e., 90 percent of samples contain a maximum free cyanide residue of 5 milligrams per liter (mg/l) and no sample contains more than 10 mg/l free cyanide). The heap leach pads are permitted to extend to heights up to about 200 feet.
- Lined ditches and ponds for collecting the gold-bearing leach solution.
- A variety of administration, maintenance and process structures.
- A mine access road from SR 78.
- A water supply system consisting of the three 2,500-gallon per minute (gpm) capacity Mesquite Mine water wells located approximately three miles south of the mine, and a pipeline to on-site storage tanks near the solution ponds and process facilities.
- Chain link or barbed wire fences around all process areas.

Mining operations at Mesquite primarily consist of:

- Drilling and blasting of rock from the mine pits.
- Hauling of overburden materials from the pits to stockpiles.
- Hauling of ore from the pits to a crushing facility, storage pile or leach pad.

Mining activities are conducted on a 20-hour-per-day, seven-day-per-week schedule. This

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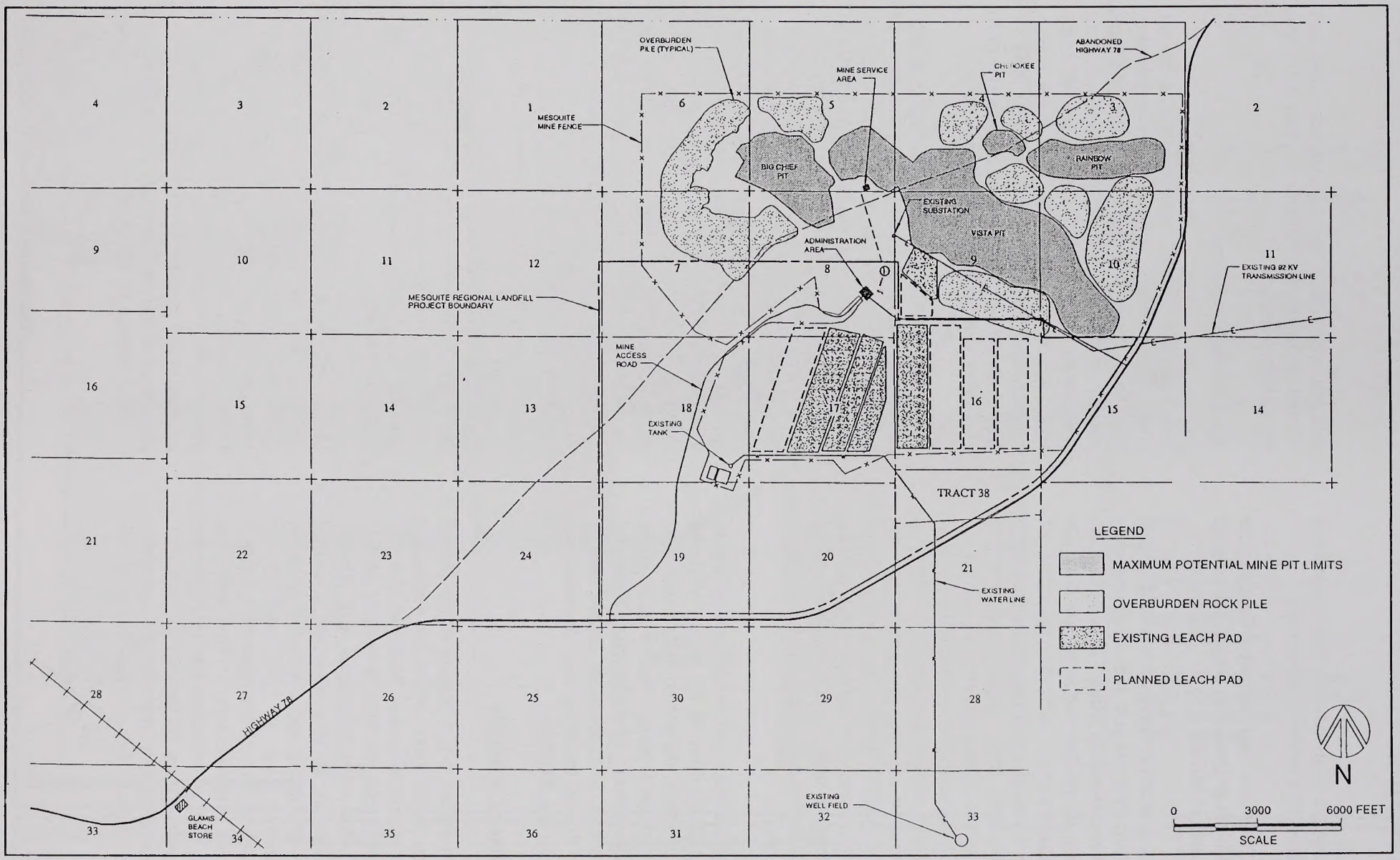

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Plan of Mesquite Mine

FIGURE

1-2

schedule changes from time to time, depending upon operating or economic conditions.

The mine pits are not included within the proposed landfill project, and would not be used for the disposal of MSW.

The proposed landfill operations would utilize the overburden disposal pile and ore residue pile materials at the Mesquite Mine. It is anticipated that all of the ore residue that meets the RWQCB permit requirements and the majority of overburden material would be used for daily, intermediate, and final landfill cover unless alternative cover materials could be used more efficiently. Claystone removed from the mine pit areas and stored separately from the overburden would be used to construct sections of the low permeability landfill liner. These clayey type materials have been successfully incorporated into the composite liner for the newest leach pad at the Mesquite Mine (constructed in 3rd quarter 1992).

Other mining facilities that would be used for the landfill include portions of the access road, the water supply system, the power transmission line, and portions of the fencing. One or more of the mine's administration and maintenance structures may also be used to supplement certain landfill facilities. These facilities are discussed in Chapter 2.0 of this EIS/EIR.

1.2.2.2 Mineral Materials

As shown in Figure 1-3, a portion of the project area overlaps public lands which are segregated under the Classification and Multiple Use Act from location under the mining laws to protect saleable mineral materials (sand and gravel). Mineral materials in this area are currently extracted by permittees and contractors pursuant to the Materials Act of 1947, and by the California Department of Transportation under a material site right-of-way. The applicant proposes to use all saleable mineral materials within the project area for project construction. This includes the mineral materials located within the corridor of the proposed right-of-way for the railroad spur. Existing mineral resources and current users are described in Section 3.1.1 and 4.1.1, respectively.

1.2.2.3 Rail Facilities

The regional landfill concept is based on transporting MSW residue from population centers in Southern California to the proposed landfill by railroad. The MSW residue would be transported to the landfill site via the SP Main Line, which connects with SP's West Coast, Southern and Midwestern rail systems. The SP Main Line passes to the west of the proposed site at a distance of between four and five miles.

Initial rail loading operations would occur at SP's City of Industry Intermodal. The City of Industry Intermodal is a railroad shipping container loading and unloading area. MSW residue containers would be brought by truck from local transfer stations to the intermodal. There, the containers would be loaded by crane onto an empty train consisting of flatbed railcars for transfer to the Proposed Regional Landfill. The City of Industry Intermodal has sufficient operational capacity to handle the entire proposed daily waste volume load (20,000 tpd) for the Mesquite Regional Landfill. Future MSW residue volumes could be loaded on trains at the existing Los Angeles Transportation Center (LATC) if sufficient loading capacity exists. For analysis purposes, it is assumed that rail operations would occur at the LATC. This assumption is used for analysis purposes because the LATC is further from the proposed site than the City of Industry Intermodal, and has the potential for greater impacts related to the length of the haul route.

In the future, much smaller rail intermodal facilities may be utilized in other Southern California communities that choose to use the Mesquite Regional Landfill for the disposal of MSW residue. Rail transportation from such facilities likely would be along existing tracks to an appropriate juncture with the SP Main Line. Regardless of the MSW residue's point of origin, the total volume of MSW residue shipped to the

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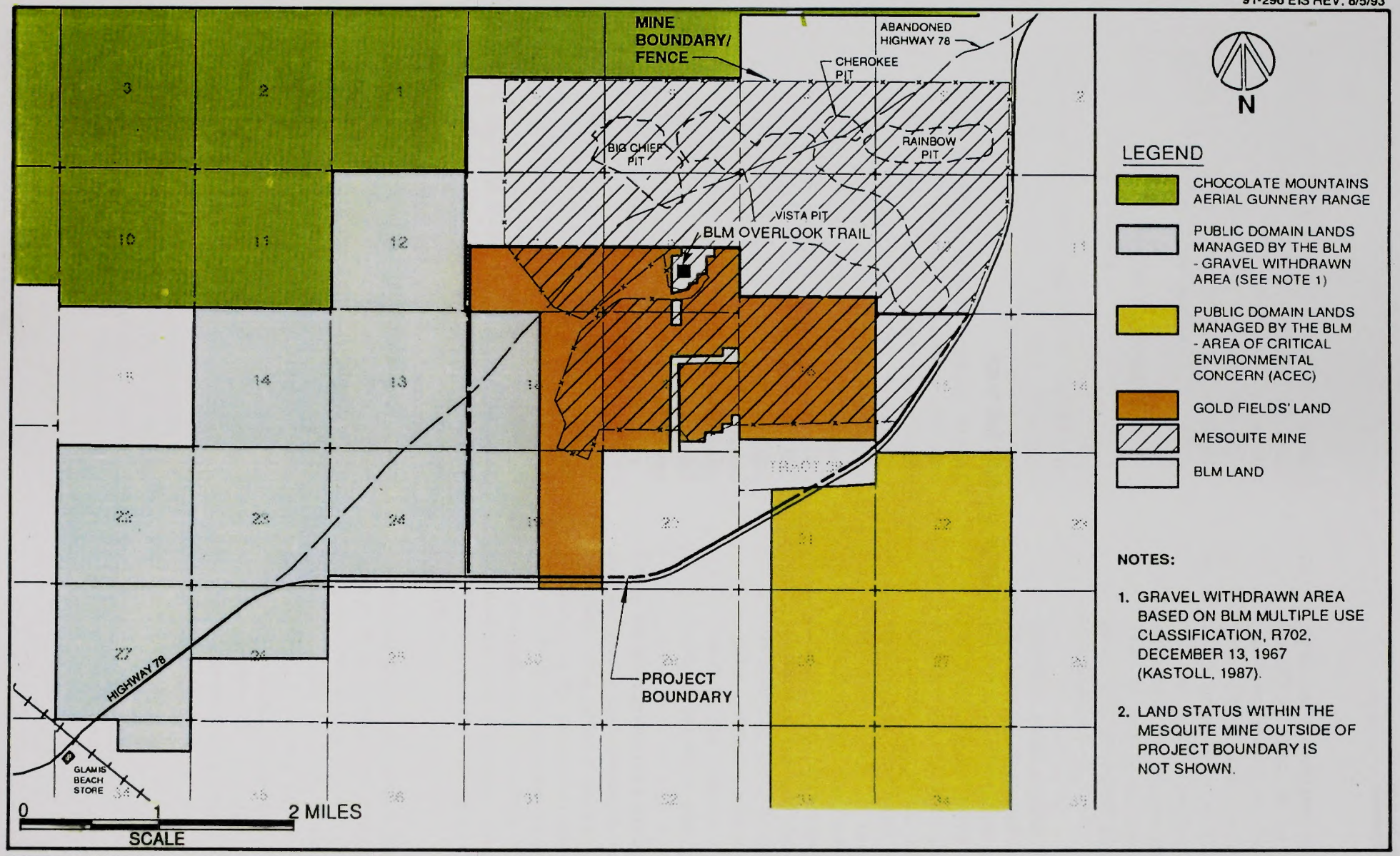

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Project Area Land Use

FIGURE **1-3**

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Mesquite Regional Landfill would not exceed a two-week (12-day) average of 20,000 tpd (i.e., it is possible that daily delivered volumes may fluctuate by 4,000 tons or one train per day if delays are encountered between the transfer stations and the proposed landfill).

1.2.3 PREVIOUS ENVIRONMENTAL DOCUMENTS

The following environmental documents were previously prepared for the Mesquite Mine/Landfill site:

1. *Final Environmental Impact Report/ Environmental Assessment for the Mesquite Project, Imperial County, California* (SCH No. 84040408); prepared for and under the supervision of the BLM and the County of Imperial by The Butler Roach Group, Inc. and St. Clair Research Systems, Inc. dated December 12, 1984. This EIR/EA addressed the construction and operation of an open-pit gold mine and on-site ore processing facilities, located near Glamis in Imperial County, using the heap leaching/carbon absorption process.

2. *Final Environmental Assessment, EA No. CA 067-85-10, for the 161/92 kV TAP Substation and ROW Permit, No. CA 17187, for a 92 kV Transmission Line to the Gold Fields Operating Co.-Mesquite Site, Imperial County, California;* prepared for and under the supervision of the BLM and County of Imperial by The Butler Roach Group, Inc., and Environmental Solutions, Inc., dated May 10, 1985. This EA addressed the construction of electric transmission facilities to supply power to the Mesquite Project near Glamis in Imperial County, California.

3. *Final Environmental Impact Report/Environmental Assessment, EA No. CA-067-87-48, for the VCR Mining Project, Imperial County, California* (SCH No. 87052709); prepared for and under the supervision of the BLM and County of Imperial by Environmental Solutions, Inc., dated October 28, 1987. This EIR/EA addressed the approximate 2,000 acres to be developed with four open-pit mines, overburden and protore stockpiles, and modifications to SR 78. This project is an expansion of the previously proposed Mesquite mining operation.

4. Mesquite Mine Section 7 Consultation: The primary document associated with the Section 7 Consultation process is the Mesquite Mine Operations Biological Assessment for the Desert Tortoise (*Gopherus agassizii*), Bureau of Land Management, El Centro Resource Area, November 1991. The *Biological Opinion for the Continued Operations of Gold Fields Operating Company's Mesquite Mine* (BO No. 1-6-92-F-22) was issued by the U.S. Fish and Wildlife Service, Southern California Field Station, Carlsbad, on March 26, 1992 (as amended, per BLM, July 21, 1992).

These environmental documents are the most recent and comprehensive environmental documents that address existing environmental conditions in the vicinity of the proposed site. This EIS/EIR incorporates information from these environmental documents. Where specific information from a previous document is used, the reference is identified within the text of this EIS/EIR.

All environmental documents listed above are hereby incorporated by reference and are available for public review during normal business hours at the Bureau of Land Management El Centro Resource Area, 1661 South Fourth Street, El Centro, California 92243 and the County of Imperial Planning and Building Department, 939 Main Street, El Centro, California 92243.

1.3 RELATIONSHIP TO BLM POLICIES, PLANS, AND PROGRAMS

The project area is located within the BLM CDCA. BLM manages activities on federal lands within the CDCA through the 1980 California Desert Conservation Area Plan as amended, prepared under the Federal Land Policy and Management Act of October 21, 1976 (43 U.S.C. 1701 et seq., herein, FLPMA). BLM is the lead agency for NEPA review of the Proposed Action.

As described in BLM Manual 2450 and the Amendment Four, Record of Decision to the *1985 Plan Amendment to the California Desert Plan and the Eastern San Diego MFP (January 15, 1987)*, public lands managed by BLM may not be used for waste disposal (either hazardous or non-hazardous). Where locations suitable for disposal are found on BLM-managed lands, consideration will be given to transfer of such sites through sale or exchange to other ownership for this use. Land exchanges are authorized under the FLPMA. Accordingly for the proposed project to conform with BLM's plans, policies, and programs, a publicly beneficial land exchange would be required. A land exchange is "publicly beneficial" when the lands to be acquired by the BLM are of equal or greater appraised fair market value and possess greater environmental values than the lands to be disposed of.

The majority of the federal land within the project area is managed by the BLM for multiple uses (Class M). The Class M lands designation provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Its objective is a controlled balance between higher intensity uses and the protection of public lands. The California Desert Conservation Area Plan, as amended, permits the disposal of Class M lands through exchange.

The California Desert Conservation Area Plan, as amended, identifies a small area of the Singer Geoglyphs Area of Critical Environmental Concern (ACEC) within the proposed site (Figure 1-3). This area is located north of SR 78 and does not contain geoglyphs. BLM policy does not allow for the disposal or exchange of ACECs. Therefore, a plan amendment would be required before this portion of the proposed site could be exchanged for parcels offered by the Applicant. A more detailed description of the proposed exchange can be found in Section 2.1.3.

Portions of the gravel resources on-site are committed to specified users through long-term contracts or material site rights-of-way. These contracts and rights-of-way would be modified to allow for the construction and operation of the proposed project in these areas.

1.4 RELATIONSHIP TO IMPERIAL COUNTY POLICIES, PLANS, AND PROGRAMS

1.4.1 IMPERIAL COUNTY PLANNING AND BUILDING DEPARTMENT

The Imperial County Planning and Building Department is responsible for setting policies to guide land use and development in Imperial County. The proposed regional landfill would require a Change of Zone from "S" (Open Space) to "M2" (Industrial), Comprehensive General Plan Amendment from "Recreation" to "Special Purpose Facility," Conditional Use Permit (CUP), Distance Finding, and Building Permit from the Imperial County Planning and Building Department before it can begin operation in Imperial County. A separate CUP would also be required to provide for joint usage of the existing Gold Fields water wells by the Mesquite Mine and the proposed regional landfill. The County of Imperial is the lead agency for CEQA purposes.

The CUP would regulate the overall project and would include conditions of approval to ensure implementation of the project design features and mitigation measures identified in this EIS/EIR and additional mitigation measures required for permitting of the proposed project.

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A substantial violation of the CUP conditions could result in revocation of the CUP.

1.4.2 IMPERIAL COUNTY DEPARTMENT OF HEALTH SERVICES, DIVISION OF ENVIRONMENTAL HEALTH SERVICES

The Imperial County Board of Supervisors designated the Division of Environmental Health Services as the Local Enforcement Agency (LEA) for solid waste handling, collection and disposal of waste at Class II and Class III landfills. The CIWMB has certified the County's LEA to carry out enforcement of the solid waste statutes and the CCR, Division 7, Title 14, as an agent of the State.

1.4.3 IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT

The Imperial County Air Pollution Control District (ICAPCD) is responsible for issuing permits that satisfy all district, state, and federal air quality rules and regulations, including new and modified stationary source review (APCD Rule 207). For the Mesquite Regional Landfill, the applicable permits are an Authority to Construct and a Permit to Operate.

1.4.4 IMPERIAL COUNTY DEPARTMENT OF PUBLIC WORKS

AB 939 requires, among other things, that each county develop integrated waste management plans that must identify solid waste management issues for the county. The solid waste facility component of the plan must identify present and planned solid waste facilities within the county's jurisdiction. The Imperial County Department of Public Works is currently drafting its County Integrated Waste Management Plan (CIWMP). The proposed Mesquite Regional Landfill would be included in the CIWMP. Also, AB 939 requires that exporting counties must have their export program included in the CIWMP of host counties. Therefore, export programs would be prepared and included in Imperial's CIWMP for each county exporting MSW to the proposed Mesquite Regional Landfill.

1.5 RELATIONSHIP TO OTHER GOVERNMENTAL POLICIES, PLANS, AND PROGRAMS

1.5.1 FEDERAL AGENCIES

1.5.1.1 Environmental Protection Agency

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for developing and implementing many aspects of environmental policy in the United States. The following major laws, implementation of which is administered by the U.S. EPA, would apply to the Proposed Action.

- Resource Conservation and Recovery Act (RCRA), Subtitle C - This law and supporting regulations apply to the management of hazardous wastes. Though hazardous wastes would not be deposited at the proposed Mesquite Regional Landfill, procedures to handle any of these materials that are discovered in MSW at transfer stations or in additional checks prior to disposal at the landfill would be implemented in accordance with RCRA Subtitle C.

- RCRA Subtitle D - This law, and its supporting regulations contained in 40 CFR Parts 257 and 258, provide comprehensive guidelines for landfill siting, design and environmental control. 40 CFR Part 258, Subpart G requires effective April 9, 1994, that owners and operators of all MSW landfills, except owners or operators who are state or federal government entities whose debts and liabilities are the debts and liabilities of a state or the United States, must have the following: financial assurance for closure (§258.71), financial assurance for post-closure (§258.72), and financial assurance for corrective action (§258.73).

- Clean Air Act (CAA) - This law sets standards for air emissions throughout the country. Applicable programs established by this law include the National Ambient Air Quality Standards (NAAQS), which set maximum allowable concentrations for certain criteria pollutants; Prevention of Significant Deterioration (PSD) Program, which is designed to protect areas that have not exceeded NAAQS; New Source Performance/Review Program, which sets standards for stationary source emissions; and the Mobile Source Emission Standards, which set standards for vehicles. Under the provisions of the federal CAA, the California Air Resources Board (CARB) and the ICAPCD administer the federal CAA in California.

- Clean Water Act - This law establishes maximum contaminant levels (mcls), among other things, for protection of water resources throughout the United States. The California State Water Resources Control Board (SWRCB) and the RWQCB administer the federal Clean Water Act in California.

1.5.1.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has been charged with the responsibility of monitoring the status of wild populations of certain flora and fauna, and to identify those that are in danger of extinction (endangered species) or are likely to become endangered in the foreseeable future (threatened species). Potential impacts to federal listed species requires consultation with the USFWS, as stated under Section 7 of the federal Endangered Species Act (ESA). If the USFWS advises a federal agency that a listed species may be present in the area of a proposed agency action, the agency must conduct a biological assessment to determine whether its proposal is likely to affect any listed species. On lands administered by the BLM, policy directs that candidate species be treated as though they were listed. If the assessment concludes that a protected species may be affected, the agency must initiate formal consultation with USFWS. Based upon the results of the formal consultation, USFWS must issue a written biological opinion. In its written opinion, USFWS determines if an action would jeopardize the continued existence of a listed species. Any "incidental take" of a listed species must be authorized by USFWS.

1.5.1.3 Advisory Council on Historic Preservation

Section 106 of the National Historic Preservation Act of 1964 requires federal agencies to provide the Advisory Council on Historic Properties (ACHP) an opportunity to comment on any project on federal lands, or projects that are federally funded or permitted, that have a potential to affect properties included in or eligible for inclusion in the National Register of Historic Places (NRHP). BLM has an agreement with ACHP that limits ACHP's involvement in BLM actions unless BLM cannot reach a determination of No Adverse Effect with the State Historic Preservation Officer (SHPO).

1.5.1.4 U.S. Department of Labor

The U.S. Department of Labor is responsible for labor policy, among other things, throughout the United States. The Occupational Health and Safety Act, which established the Occupational Health and Safety Administration in the U.S. Department of Labor, would be one of the important laws concerning worker safety at the proposed landfill.

1.5.2 STATE AGENCIES

1.5.2.1 State Water Resources Control Board

The SWRCB is the responsible agency for implementing the federal Clean Water Act in the State of California. In California, the Clean Water Act, as it pertains to landfills, is implemented through Title 23, Chapter 15, Discharges of Waste to Land, and Chapter 3, Water Resources Control Board, CCR, as adopted

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on October 18, 1984. The Porter Cologne Water Quality Control Act, updated in 1989, regulates contaminants in surface or ground water in the State of California.

The SWRCB oversees the regulatory activities of the nine RWQCBs in California. For the proposed Mesquite Regional Landfill, the Lower Colorado River RWQCB is the responsible agency for the Waste Discharge Orders (WDOs) and National Pollution Discharge Elimination System (NPDES) Permits.

CCR Title 23, Chapter 15, Article 5 was recently established to require that holders of WDOs provide financial assurance of their ability to fund potential corrective action programs in the event that contamination of waters of the state occur from their actions.

1.5.2.2 California Integrated Waste Management Board

The CIWMB was officially established as of January 1, 1990. The board's purpose is to oversee the integrated waste management plans that are to be prepared by the various California counties and to ensure implementation of AB 939 and to administer Title 14, Division 7, CCR.

The proposed landfill would conform to the mandates of AB 939 by only accepting MSW residue from jurisdictions with up-to-date Solid Waste Management plans that have been approved by the CIWMB and that the jurisdictions are making good faith efforts (as determined by the CIWMB) to comply with these plans. This bill mandates 25 percent recycling by 1995 and 50 percent by the year 2000. However, AB 939 recognizes that landfill capacity will also be necessary within the state. Recycling activities are not planned to occur at the proposed Mesquite Regional Landfill. All recycling would occur prior to the placement of MSW into the rail containers and would be the responsibility of the originating jurisdiction.

CCR Title 14, Division 7, provides the state's minimum standard for the management of facilities that handle and/or dispose of solid waste. CCR Title 14, Division 7, is administered by the CIWMB and the designated LEAs. Unlike CCR Title 23, Chapter 15, which establishes requirements and specifications, CCR Title 14, Division 7, establishes general standards to provide required levels of performance for facilities that handle and/or dispose of solid waste. This regulation covers various solid waste facilities including, but not limited to:

- Landfills
- MRFs and transfer stations
- Composting facilities

For landfills, CCR Title 14, Division 7, requires specific closure plans, and post-closure monitoring and maintenance plans. The regulation includes specific requirements for owners/operators of landfills to provide financial assurance of their ability to pay the full cost associated with closure and post-closure.

1.5.2.3 California Air Resources Board

CARB is responsible for enforcing state air pollution regulations. CARB has established 41 air quality management districts (AQMDs) and air pollution control districts (APCDs) to formulate and implement rules and regulations for stationary sources of air pollution. CARB is also responsible for regulating mobile sources. The ICAPCD is the agency responsible for air quality permitting in Imperial County.

1.5.2.4 California Department of Fish and Game

The California Department of Fish and Game (CDFG) is responsible for state policies concerning fish contained in the state's waters and wildlife within the state borders. The CDFG will evaluate potential streambed alteration issues for the desert washes in the project area in accordance with Section 1603 of the California Fish and Game Code and will consult with the USFWS regarding endangered species. CDFG is also responsible for the implementation and

enforcement of the California Endangered Species Act of 1984 and the California Native Plant Protection Act of 1977.

1.5.2.5 State Historic Preservation Officer

Section 106 of the National Historical Preservation Act of 1964 requires federal agencies to provide the SHPO an opportunity to comment on any project on federal lands, or projects that are federally funded or permitted, that have the potential to affect properties included in or eligible for inclusion in the NRHP.

1.5.2.6 California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over state highways throughout California. Caltrans issues encroachment permits to land within its jurisdiction to ensure that the encroachments are compatible with the primary uses of the state highway system; to ensure the safety of the permittee and highway users; and to protect the State's investment in the highway facility that would be encroached upon. The Applicant would submit an application for an encroachment permit to allow the construction of a new access road to the project site from SR 78. Construction of the proposed railroad spur across an existing material site right-of-way would also require consultation with Caltrans.

1.5.3 INCORPORATED CITIES IN IMPERIAL COUNTY

Public Resources Code (§ 50000 et seq.) requires that any new or expanded solid waste facility must receive the approval of the majority of the incorporated cities with the majority of the population. Furthermore, comments must be received from the Imperial County Solid Waste Task Force, chaired by the Director of Public Works.

1.5.4 SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

The Southern California Association of Governments (SCAG) is a regional planning organization consisting of counties and cities from throughout Southern California (except in San Diego County). In a recent study entitled *The Feasibility of Hauling Solid Waste By Railroad from the San Gabriel Valley to Remote Disposal Sites* (SCAG, 1988), SCAG analyzes regional landfills as a possibility for solving long-term waste disposal needs. The report concludes that transportation of solid waste by railroad is technically feasible. Certain aspects of this report are referred to in the analysis of the Mesquite Regional Landfill. SCAG has also developed a growth management plan, a regional mobility plan, and an air quality management plan, which have been considered in this analysis and SCAG has recently prepared a Regional Comprehensive Plan.

1.6 AUTHORIZING ACTIONS

Based on responses from federal, state, and local governmental agencies during the scoping process and in response to the "Notice of Intent to Prepare an EIS" (NOI) and "Notice of Preparation of an EIR" (NOP), a number of authorizing actions have been identified that will be required prior to the implementation of the proposed Mesquite Regional Landfill. Table 1-2 provides a summary of these actions.

1.7 PURPOSE OF THIS DOCUMENT

The purpose of this joint EIS/EIR is to provide the necessary environmental information to the public as well as responsible and cooperating agencies in order to review a proposed new Class III sanitary landfill planned for construction and operation in the eastern portion of Imperial County at a site adjacent to the Mesquite Mine. Criteria for a Class III landfill classification are contained in CCR, Title 23, Chapter 3, Chapter 15, Article 3, § 2533: "Class III: Landfills for Nonhazardous Solid Waste." The environmental

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TABLE 1-2
Summary of Required Permits/Actions for
Proposed Mesquite Regional Landfill

Agencies	Permit/Action
Federal	
Advisory Council on Historic Preservation (Per an existing agreement, only involved if BLM cannot reach a determination of No Adverse Effect with the SHPO)	Complete consultation under Section 106 of the National Historic Preservation Act of 1964.
BLM	Complete Section 7 Consultation in compliance with the Endangered Species Act.
	Complete consultation under Section 106 of the National Historic Preservation Act of 1964.
	Publish Record of Decision on EIS.
	Amend the CDCA Plan to change the boundary of the Singer Geoglyphs ACEC to exclude that portion located north of SR 78. Classify the area Multiple Use Class M.
	Publish Notice of Realty Action that would be required for proposed land exchange.
	Approve a ROW for the rail spur.
	Approve a ROW for the gas pipeline.
USFWS	Issue Biological Opinion
State	
CDFG	Review Tortoise Mitigation Program. CDFG will be a party to the Federal Section 7 Consultation.
RWQCB	Issue the WDO and a NPDES Permit.
	Issue 1603 Streambed Alteration Agreement.
CIWMB	Concur with the Solid Waste Facility Permit. CIWMB administers AB 939.
Caltrans	Issue permits necessary for improvements to state roads (encroachment permit).
	Concur with authorization of proposed railroad spur across existing material site right-of-way.
Department of Parks and Recreation, Office of Historic Preservation, SHPO	Review cultural sites for eligibility for the National Register of Historic Places (see Section 106 Consultation under Federal Actions).

Source: The Butler Roach Group, June 1992.

TABLE 1-2
(Continued)
Summary of Required Permits/Actions for
Proposed Mesquite Regional Landfill

Agencies	Permit/Action
Local	
Imperial County	Certify Final EIR.
	Approve the Mitigation, Monitoring and Reporting Program.
	Make the Distance Finding, in reference to landfill proximity to residential structures.
	Approve the Comprehensive General Plan Amendment.
	Approve the Change of Zone.
	Approve the CUP for a Regional Landfill and related facilities
	Approve the Modified CUP to use water from the Mesquite Mine water wells.
	Approve the Building Permits.
Imperial County Department of Public Works	Modify the Solid Waste Plan.
Imperial County Department of Health Services	Issue the Solid Waste Facilities Permit.
	Approve the on-site sewage disposal system.
	Approve the on-site water supply system.
	Approve the landfill lighting plan.
ICAPCD	Approve the Authority to Construct/ Permit to Operate a Landfill Gas Control System.
Majority of the cities with the majority of the population	Approve the proposed landfill.
Other Required Actions	
IID	Approve the power line modifications.

Source: The Butler Roach Group, June 1992.

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analyses presented in this EIS/EIR are generally conservative. "Best" and "Worst" case analyses were avoided in favor of more balanced "Maximum Likelihood" analyses. This approach was adopted to provide the reader with an understanding of the environmental effects that are likely to occur, and not to affect the reader's understanding by presenting environmental effects that are unlikely to occur. CEQA does not require "worst case" analyses. Maximum likelihood analyses are allowed by NEPA provided they are supported by credible scientific evidence, are not based on pure conjecture, and are within the rule of reason (40 CFR 1502.22(b)(4)).

This document is being prepared as an EIS in compliance with NEPA (Pub. L. 91-90, 42 U.S.C. 4321 et seq.) and the implementing Council on Environmental Quality (CEQ) Regulations (40 CFR Section 1500-1508). The BLM National Environmental Policy Handbook (H-1790-1) was also consulted in preparing this document. The BLM is the lead agency for the purpose of compliance with the requirements of NEPA for the Proposed Action.

In addition, this document is being prepared as an EIR in compliance with CEQA (Public Resources Code, Section 21000, et seq.), the Guidelines for the Implementation of CEQA (CCR, Section 15000, et seq., herein, "State CEQA Guidelines"), and the Imperial County CEQA Guidelines, as amended. The County of Imperial is the lead agency for the purpose of compliance with the requirements of CEQA for the proposed project.

This EIS/EIR addresses the environmental impacts of the construction and operation of a regional landfill at a site in Imperial County proposed by Arid Operations Inc. The proposed landfill is expected to operate for 100 years. During this period, it is likely that many technological and regulatory changes will occur. The operation of the proposed landfill is expected to change in the future in response to technological and regulatory changes. For the most part, these changes and their effect on the proposed project cannot be predicted at this time. The Applicant has not relied on future technological advances to construct and operate their proposed landfill. Therefore, the description of the proposed landfill and related facilities presented in Section 2.1 of this EIS/EIR is based on available technology and on existing regulations. Future changes in landfill operation and specific design details of future facilities would be subject to all applicable regulations and additional environmental review may be required. The decision to require additional environmental review would be made by the federal, state, and local agencies responsible for permitting and for compliance monitoring. Public participation in the decision to conduct future environmental review and in the environmental review would occur, according to applicable laws.

Table 1-3 presents the major project elements associated with the proposed Mesquite Regional Landfill as well as potentially occurring future projects that may be implemented by others. The first column of Table 1-3 provides a listing of each project element, including the section in Chapter 2.0 describing the element, and potentially occurring future projects. The second column identifies project elements that are described at an adequate level of detail to allow for specific environmental review of potential impacts. These elements are addressed in this EIS/EIR. The third column identifies those future project elements that cannot be adequately described at this time. These elements are addressed to the extent possible in this EIS/EIR but may require future environmental review prior to their implementation. The fourth column identifies potentially occurring future projects that may or may not be implemented in the future by communities wishing to transport MSW residue to the proposed Mesquite Regional Landfill.

This EIS/EIR does not analyze environmental impacts of these potentially occurring future projects because they are not required to operate the proposed regional landfill and no information as to location, schedule of implementation, or operational characteristics is available. Without knowing the location,

TABLE 1-3

Project Elements Table
Proposed Mesquite Regional Landfill

Project Element	Project Elements: Addressed in this EIS/EIR	Project Elements: Future Environmental Analysis May Be Required	Speculative Projects, Not a Part of the Proposal (1)
1. Above ground regional landfill accepting a maximum of 20,000 tpd of MSW from Southern California communities. Total capacity of 600 million tons (Section 2.1).	X		
2. BLM land exchange (Section 2.1.2).	X		
3. California Desert Conservation Plan Amendment (Section 2.1.2).	X		
4. Material recovery facilities at point of origin.		X (2)	
5. MSW transfer stations in Southern California communities.		X (2)	
6. Railroad loading intermodal facilities, initially at existing LATC rail yard and existing City of Industry rail yard (Section 2.1.12).	X (3)		
7. Use of SP Main Line between LATC and proposed rail spur (Section 2.1.12).	X		
8. Railroad spur from SP Main Line to landfill site (Section 2.1.12).	X		
9. Railroad unloading intermodal facility (Section 2.1.12).	X		
10. Surface water drainage control facilities (Section 2.1.4).	X		
11. On-Site buildings/facilities/ fencing (Sections 2.1.3, 2.1.13).	X		
12a. Use of Mesquite Mine overburden and leach pile materials as cover material (Section 2.1.4).	X		

Notes shown on last page of table.

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TABLE 1-3
(Continued)

Project Element	Project Elements: Addressed in this EIS/EIR	Project Elements: Future Environmental Analysis May Be Required	Speculative Projects, Not a Part of the Proposal (1)
12b. Use of alternative cover material (Section 2.1.4).		X	
13. Use of Mesquite Mine water wells (Section 2.1.14).	X		
14a. Accepting Imperial County MSW residue and agricultural plant material (Section 2.0).	X		
14b. Use of Mesquite Regional Landfill by Imperial County for MSW delivery.			X
15. Water Reclamation Facility (Section 2.1.14).	X		
16. Temporary on-site storage of recyclable materials (Section 2.1.4).	X		
17. Triple Composite Liner and Leachate collection and recovery system (Section 2.1.5).	X		
18a. Leachate Subsurface Monitoring Systems (Section 2.1.7)	X		
18b. Future modifications to Leachate Subsurface Monitoring Systems (Section 2.1.7)		X	
19a. LFG control and monitoring systems (Section 2.1.7).	X		
19b. Future modifications to landfill gas subsurface monitoring systems (Section 2.1.7)		X	
20. LFG flaring (Section 2.1.6).	X		
21a. LFG energy recovery system (Section 2.1.6). (4)	X	X	
21b. Natural Gas Pipeline (Section 2.1.6). (4)	X	X	

Notes shown on last page of table.

TABLE 1-3
(Continued)

Project Element	Project Elements: Addressed in this EIS/EIR	Project Elements: Future Environmental Analysis May Be Required	Speculative Projects, Not a Part of the Proposal (1)
22. Pilot program for MSW conditioning to increase LFG production (Section 2.1.6).	X		
23. Full scale MSW conditioning for commercial LFG production (Section 2.1.6). (4)		X	
24. Installation of septic tanks/leach fields (Section 2.1.14). (4)	X		
25. Extension of IID electric transmission line (Section 2.1.3).	X		
26. Landfill closure (Section 2.1.17).	X		
27. Post-closure use of site (Section 2.1.17).		X	
28. Landfill access (Section 2.1.11).	X		
29. Use of stockpiled claystone, overburden, and leach pile (Sections 2.1.4 and 2.1.5).	X		
30. New extraction of claystone or cover materials not within landfill footprint or within permitted mining areas.		X	
31. Receipt of MSW residue from communities outside of Southern California			X

Notes:

(1) No information as to location, schedule of implementation, or operational characteristics is available for these projects. Also, they are not required for the operation of the proposed landfill. Therefore, projects identified in this column are deemed speculative and are not addressed in this EIS/EIR.

(2) Existing transfer stations in the Los Angeles Basin have adequate capacity to supply 20,000 tpd of MSW residue for transport to the proposed landfill. The Applicant does not propose to construct new MRFs or transfer stations to supply MSW residue to the proposed landfill.

(3) These facilities are permitted for the loading of containers onto rail cars. They have existing capacity to accommodate project-related containers. Therefore, the use of these facilities is ministerial (i.e., not subject to a discretionary action) and exempt from CEQA/NEPA review.

(4) These elements have been addressed in this EIS/EIR based on existing technology and engineering expectations. Future environmental analysis of detailed design may be required. The scope of future environmental analysis required would be determine by the applicable permitting agency. The public would be given the opportunity to participate as allowed by applicable regulations.

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schedule, and operational characteristics of these potentially occurring future projects, any attempt to quantify their environmental effects would be highly speculative and based on conjecture.

1.8 CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

BLM Handbook H-1790-1 identifies the critical elements of the human environment that must be addressed in Environmental Impact Statements. Table 1-4 presents the critical element, the relevant authority, and a brief discussion of each element as it relates to the proposed action and alternatives. This table identifies the Section in this Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) that discusses each of these elements and also identifies elements that would not be affected by the Proposed Action or Alternatives, and are not further discussed in this EIS/EIR.

1.9 SCOPING

In accordance with NEPA and the BLM Handbook, public scoping meetings were held for the Proposed Action. The first meeting was held on May 27, 1992 at the El Centro Community Center in El Centro, California. The second meeting was held on May 28, 1992 at the Desert Expo Center in Indio, California. Approximately 76 people were in attendance at these meetings. A summary of the key points raised by the public at these meetings is contained in Appendix A-1 of this EIS/EIR.

TABLE 1-4

Critical Elements of the Human Environment
Proposed Mesquite Regional Landfill

ELEMENT	RELEVANT AUTHORITY	DISCUSSION
Air Quality	The Clean Air Act, as amended (42 USC 7401 et seq.)	The Proposed Action would result in the emission of air pollutants. These emissions are analyzed in the Air Quality Section of this EIS/EIR.
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)	The Proposed Action would affect the Singer Geoglyphs ACEC. Impacts are addressed in the Cultural Resources and Land Use Section of this EIS/EIR
Cultural Resources	National Historic Preservation Act, as amended (16 USC 470)	The Proposed Action would affect NRHP recommended eligible cultural resources. Impacts are addressed in the Cultural Resources Section of this EIS/EIR
Farm Lands (prime and unique)	Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)	There are no prime or unique farm lands on the proposed or alternative sites. No further discussion of this element is provided in this EIS/EIR.
Floodplains	Executive Order 11988, as amended, Flood-plain Management, 5/24/77	Storm water runoff effects are addressed in the Geology/Soils/ Mineral Resources and Water Quality Sections of this EIS/EIR.
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 (42 USC 1996)	No Native American religious concerns were identified for the Proposed Action or Alternatives. No further discussion of this element is provided in this EIS/EIR.
Threatened or Endangered Species	Endangered Species Act of 1973, as amended (16 USC 1531)	Threatened and endangered species occur in the vicinity of the Proposed Action Impacts are discussed in the Biological Resources Section of this EIS/EIR.

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TABLE 1-4
(Continued)

ELEMENT (Cont'd)	RELEVANT AUTHORITY (Cont'd)	DISCUSSION (Cont'd)
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.) Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 USC 9615)	The Proposed Action is the landfilling of municipal solid waste (MSW residue. It is likely that operation of the Proposed Action would generate small quantities of hazardous materials. The effects of wastes are discussed in the Water Quality and Environmental Health and Safety Section of this EIS/EIR.
Water Quality Drinking/Ground	Safe Drinking Water Act, as amended (42 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)	The Proposed Action has the potential to affect water quality. These effects are discussed in the Water Quality Section of this EIS/EIR.
Wetlands/Riparian Zones	Executive Order 11990, Protection of Wetlands, 5/24/77	There are no wetlands or riparian zones at the proposed or alternative sites, but wetlands do occur along the proposed rail haul route. Impacts are discussed in the Water Quality and Biological Resources Sections of this EIS/EIR.
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 USC 1271)	There are no wild and scenic rivers in the project area. No further discussion of this element is provided in this EIS/EIR.
Wilderness	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) Wilderness Act of 1964 (16 USC 1131 et seq.)	There are no wilderness areas in the vicinity of the Proposed Action. Wilderness study areas are addressed under the Recreation Section of this EIS/EIR.

2.0

CHAPTER 2.0

ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.0 INTRODUCTION

The Proposed Action consists of a 600-million ton, 100-year life regional Class III municipal solid waste (MSW) residue landfill. The proposed landfill would be located on and adjacent to the site of the existing Mesquite Gold Mine and Ore Processing Facility (Mesquite Mine). A partnership consisting of Gold Fields Mining Corporation (Gold Fields), Western Waste Industries, and SP Environmental Systems would own the facility. Arid Operations Inc., a Gold Fields subsidiary, has been hired by the partnership to develop and operate the landfill and is the applicant for this project (Applicant).

The discretionary actions required to begin construction and operation of the proposed landfill are presented in Table 1-2 of this EIS/EIR.

The purpose of the proposed regional landfill would be to dispose of MSW that has undergone source reduction and recycling (MSW residue) delivered to the site by rail haul from Southern California communities. The proposed facility would also be available to accept MSW residue from Imperial County, if local residents and agencies decide to include the regional landfill as part of their MSW disposal plans. The expected number of trains per day and cars per train and the expected MSW residue volumes to be delivered to the proposed landfill are as follows:

Year of Operation	Cars/ Train	Trains/ Day	MSW Residue (tons per day (tpd))
1	16	1	4,000
2	16	2	8,000
3-6	16	3	12,000
7	16	4	16,000
Years 8 through 100	16	5	20,000

Note: Based on a 2-week (12-day) average, actual daily volumes may vary by up to one train per day depending on rail or other uncontrollable delays. The "average" train would have 16 articulated rail cars; however, it is likely that trains with up to 20 articulated rail cars would occasionally be used to haul MSW residue to the proposed site. Longer trains would be used in the event of operational irregularities (e.g., holiday weeks with one less curbside pickup day). For the purposes of transportation-related analysis, it is assumed that all trains would have 20 articulated cars and would be approximately one mile in length in order to consider the maximum potential environmental impact.

Alternatives to the Proposed Action have been identified in accordance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) guidelines. Feasible alternatives that could meet the objectives of the proposed action to a large degree are further considered in this document. Alternatives determined to be infeasible were eliminated from further discussion. The four feasible alternatives analyzed in Chapters 3.0 and 4.0 of this Environmental Impact Statement/Environmental Impact Report (EIS/EIR) include: (1) Smaller Landfill Footprint (Alternative I), (2) Reduced Daily Volumes (Alternative II), (3) Alternative Mesquite Regional Landfill Site (Alternative III), and (4) Larger Project (increased daily MSW residue volumes and larger landfill footprint) (Alternative IV). The required No Action alternative is also analyzed in this document.

This EIS/EIR has been prepared by the U.S. Bureau of Land Management (BLM) and Imperial County to identify the environmental effects of this proposal and to publicly disclose those effects. On April 27, 1992, Arid Operations Inc., submitted the *Imperial County Change of Zone Application, Comprehensive General Plan Amendment, and Conditional Use*

Permit Application; and U.S. Bureau of Land Management Rail Spur Right-of-Way Application and Proposal for Land Exchange for the Mesquite Regional Landfill to the U.S. Bureau of Land Management El Centro Resource Area and the Imperial County Planning and Building Department.

The following description of the Proposed Action, derived primarily from the April 27, 1992 submittal, identifies the extent and location of activities proposed by the Applicant.

2.1 PROPOSED ACTION

2.1.1 PROPOSED PROJECT SITE

The proposed landfill would be located in eastern Imperial County, primarily on and adjacent to the site of the existing Mesquite Mine (Figure 2-1). The proposed project configuration is shown on Figure 2-2. The proposed site includes portions of Section 7, 8, 15, 16, 17, 18, 19, 20, and 21, and Tract 38 of Township 13 South, Range 19 East, San Bernardino Meridian as shown on the United States Geological Survey (USGS) maps Acolita and Quartz Peak 15 minute series. Approximately 1,750 acres of the proposed site are federally owned, managed by the BLM. The entire project area covers approximately 4,250 acres with the actual landfill footprint covering 2,290 acres. Additional lands would be used for landfill support facilities and other open areas.

2.1.2 REQUESTED REAL ESTATE ACTIONS

The Applicant does not own or have rights to use approximately 1,750 acres of land within the proposed project boundary, the land required for the proposed rail spur, or the land required for the future gas pipeline. Therefore, the Applicant has requested that the BLM conduct the following real estate actions:

- A California Desert Conservation Area (CDCA) Plan Amendment to change the boundary of the Singer Geoglyphs Area of Critical Environmental Concern (ACEC) to exclude the portion north of State Route 78 (SR 78) and redesignate the excluded land Multiple-Use Class M;
- The exchange in fee simple of surface and subsurface rights, including mineral rights, of approximately 1,750 acres of federal land managed by the BLM for lands of equal or greater value;
- The granting of a 150-foot wide, approximately 5-mile right-of-way (ROW) for (1) a rail spur connecting the existing Southern Pacific Transportation Company Main Line (SP Main Line) to the proposed Mesquite Regional Landfill intermodal facility; and (2) a potential future pipeline that would parallel the rail spur and carry methane gas derived from landfill gas (LFG); and
- The granting of a ROW through federal land for a gas pipeline along the SP Main Line between Glamis and Niland that would carry methane gas derived from LFG.

The lands acquired from the BLM would be used for the following purposes after acquisition:

- Landfill operations and maintenance facilities;
- Intermodal facility;
- Class III landfill;
- Realigned access road; and
- Other open areas.

These facilities are fully described later in this chapter.

The proposed federal land exchange would be required because the CDCA Plan's Multiple-Use Class Guidelines do not allow waste disposal on federal lands managed by BLM. Figure 2-3 shows lands within the proposed site that are currently managed by BLM. Land exchanges are allowed under the Federal Land Policy and Management Act of October 21, 1976 (43 United States Code 1701 et seq., and all

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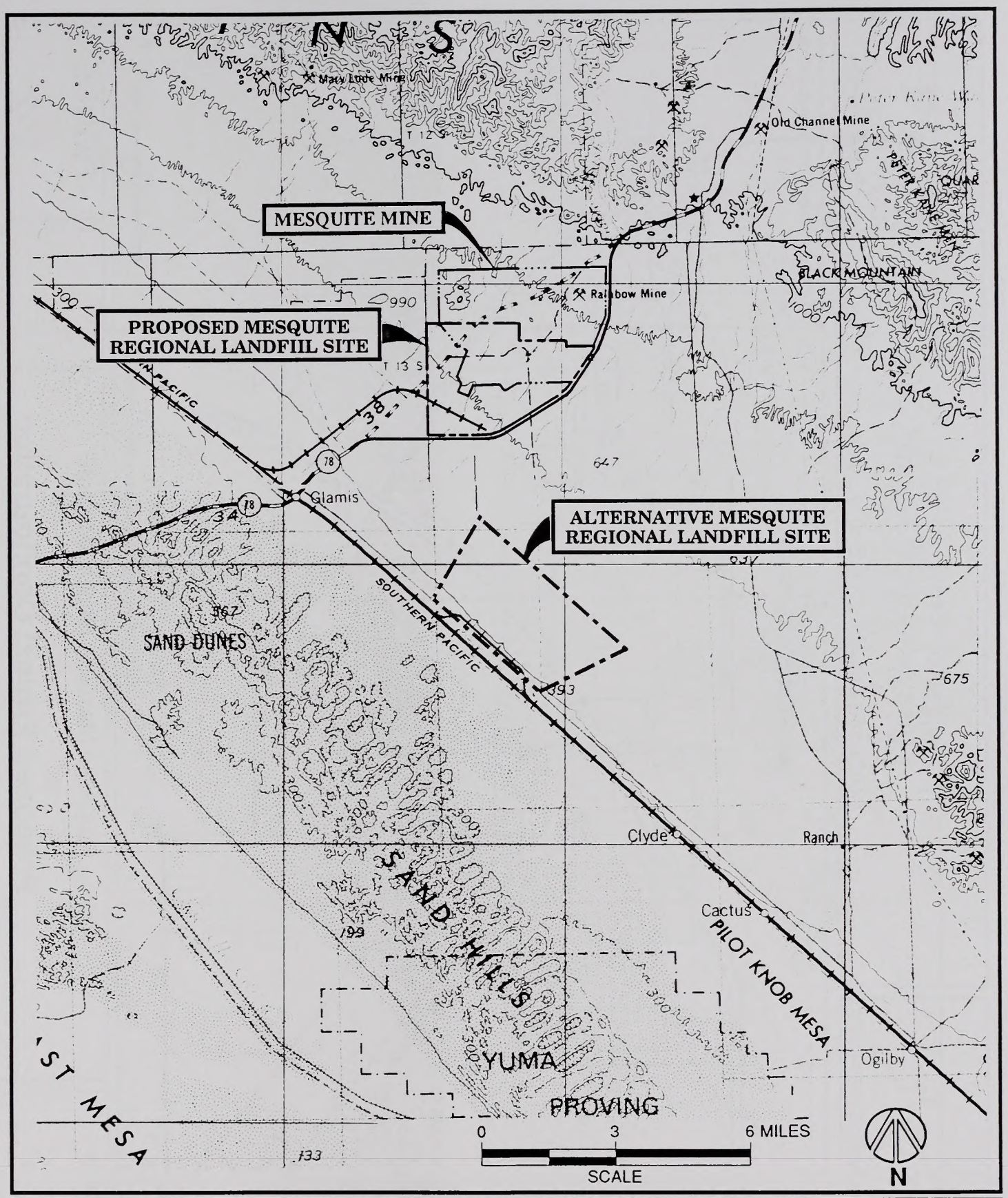


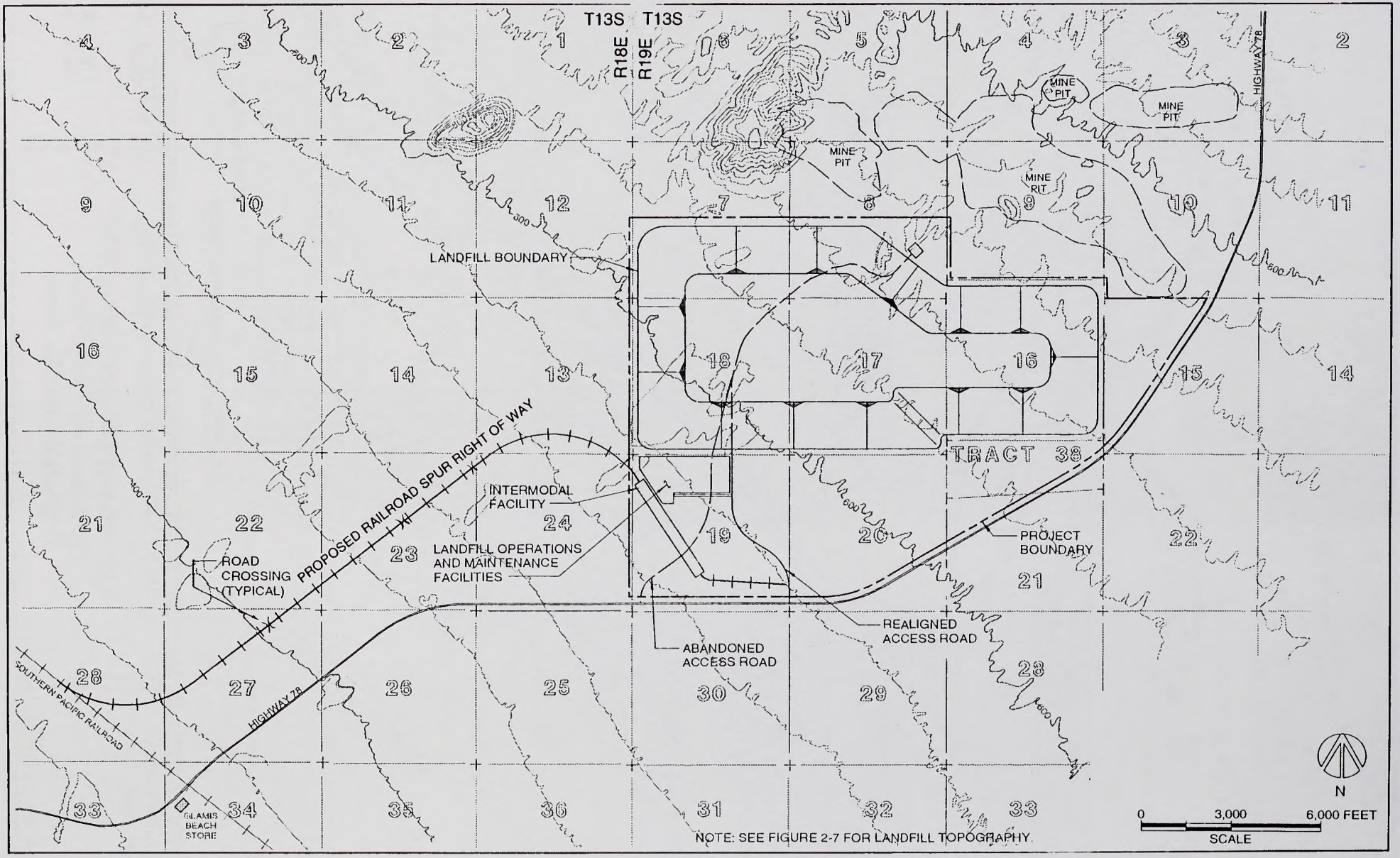
SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Location of Mesquite Mine and Proposed and Alternative Regional Landfill Sites

FIGURE

2-1



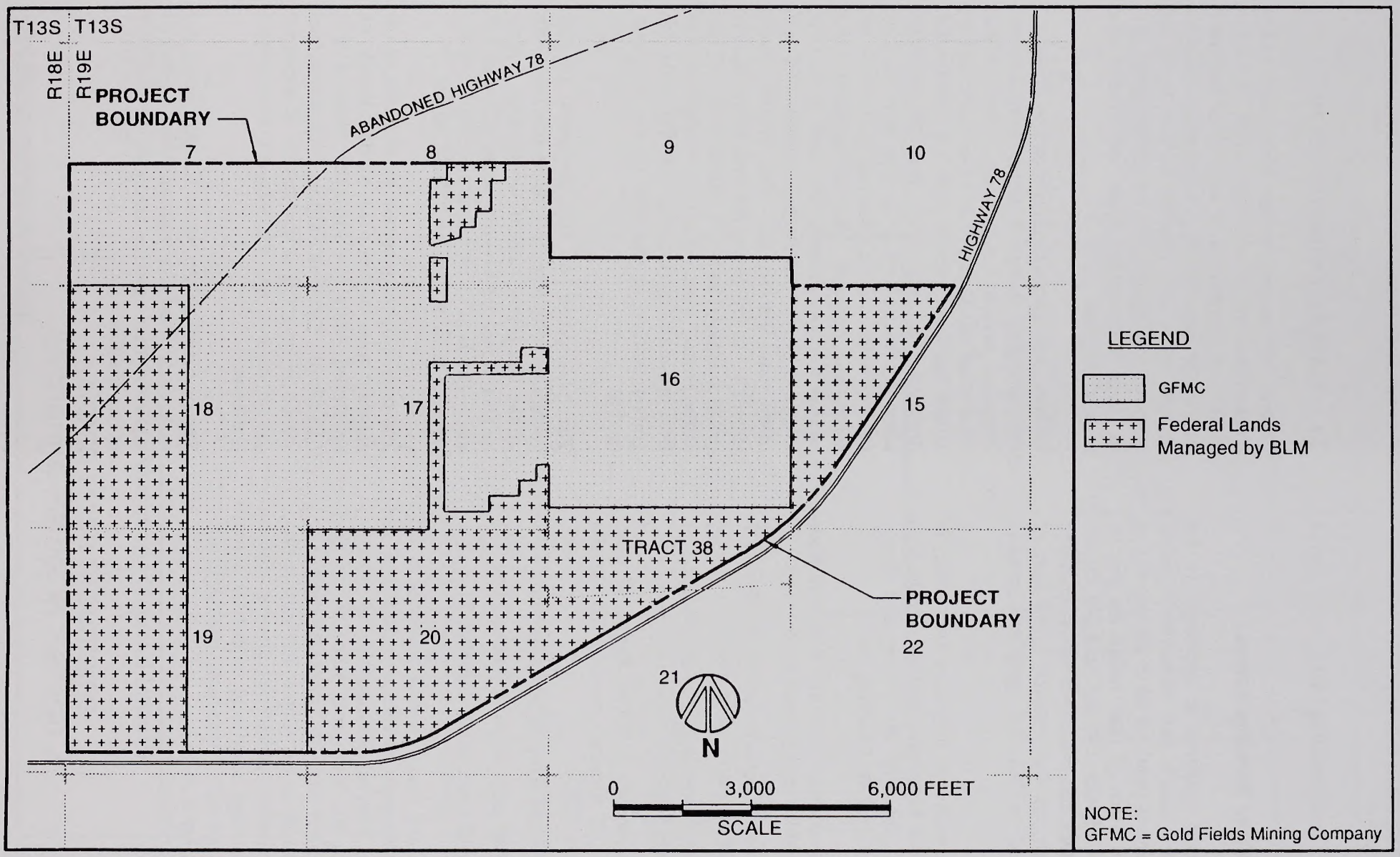
SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Proposed Project Configuration

FIGURE

2-2



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Land Ownership within the Project Boundary

FIGURE **2-3**

regulations implementing this Act, herein "FLPMA").

2.1.2.1 Offered Exchange Parcels

The Applicant proposes to exchange, in fee simple, the surface and subsurface rights, including mineral rights, of all or the majority of the 2,241.96 acres of land within the parcels identified in Figures 2-4, 2-5, and 2-6 for the existing surface and subsurface rights, including mineral rights, on approximately 1,750 acres of federal land within the proposed project boundary.

The offered exchange properties are located in the Santa Rosa Mountains National Scenic Area (SRMNSA) and near the Chuckwalla Bench ACEC and include the following areas:

- In Township 7 South, Range 7 East, Riverside County, within the SRMNSA
  - 160.48 acres located in the North 1/2 of the North 1/2 of Section 7
  - 160 acres located in the North 1/2 of the South 1/2 of Section 23
- In Township 9 South, Range 19 East, Imperial County, near the Chuckwalla Bench ACEC
  - 640.48 acres, or all of Section 1
  - 640 acres, or all of Section 11
  - 640 acres, or all of Section 21

The natural and environmental resources at the proposed exchange parcels are described in Chapter 3.0, Affected Environment. In order to compensate for biological impacts on the proposed project site, the Applicant proposes to convey to BLM in fee simple, the surface and subsurface rights, including mineral rights, additional acreage consisting of critical desert tortoise (*Gopherus agassizii*) habitat in the Chuckwalla Bench ACEC.

2.1.3 LANDFILL CONSTRUCTION

Figure 2-2 illustrates the anticipated final configuration for the proposed landfill. For each of the four alternatives, as well as the Proposed Action, the basic landfill configuration would be formed above the existing surface level, as opposed to being placed in the existing mine pits or deep excavations made specifically for disposal purposes.

Initially, only excavation necessary to construct the specially designed liner and leachate collection system would occur. These initial excavations would extend down to approximately 10 feet below the natural grade. As the landfill develops, the excavations may be extended somewhat deeper (but in no case more than 50 feet below the existing surface) if required for construction purposes. Material excavated would be used to supplement the use of mining overburden and ore residue materials for the daily, intermediate, and final landfill cover materials. In any event, the base of the landfill would always be located a minimum of 100 feet above ground water, which is estimated to vary from about 140 to more than 300 feet below the ground surface in the area of the proposed landfill.

The plan view of the proposed landfill configuration in Figure 2-7 shows how the height of the completed landfill would vary. Final heights would be between about 375 and 475 feet. The landfill side slopes would be varied from 3:1 at the bottom, to 5:1 near the top.

The portion of the proposed landfill west of the existing mine access road would initially be developed while the Mesquite Mine is still operational. Later, the existing mine access road would be removed as the landfill is expanded toward the east and the Mesquite Mine ceases operation.

The proposed landfill would be constructed and operated according to regulatory requirements of the appropriate agencies identified on Table 1-2 of this EIS/EIR.

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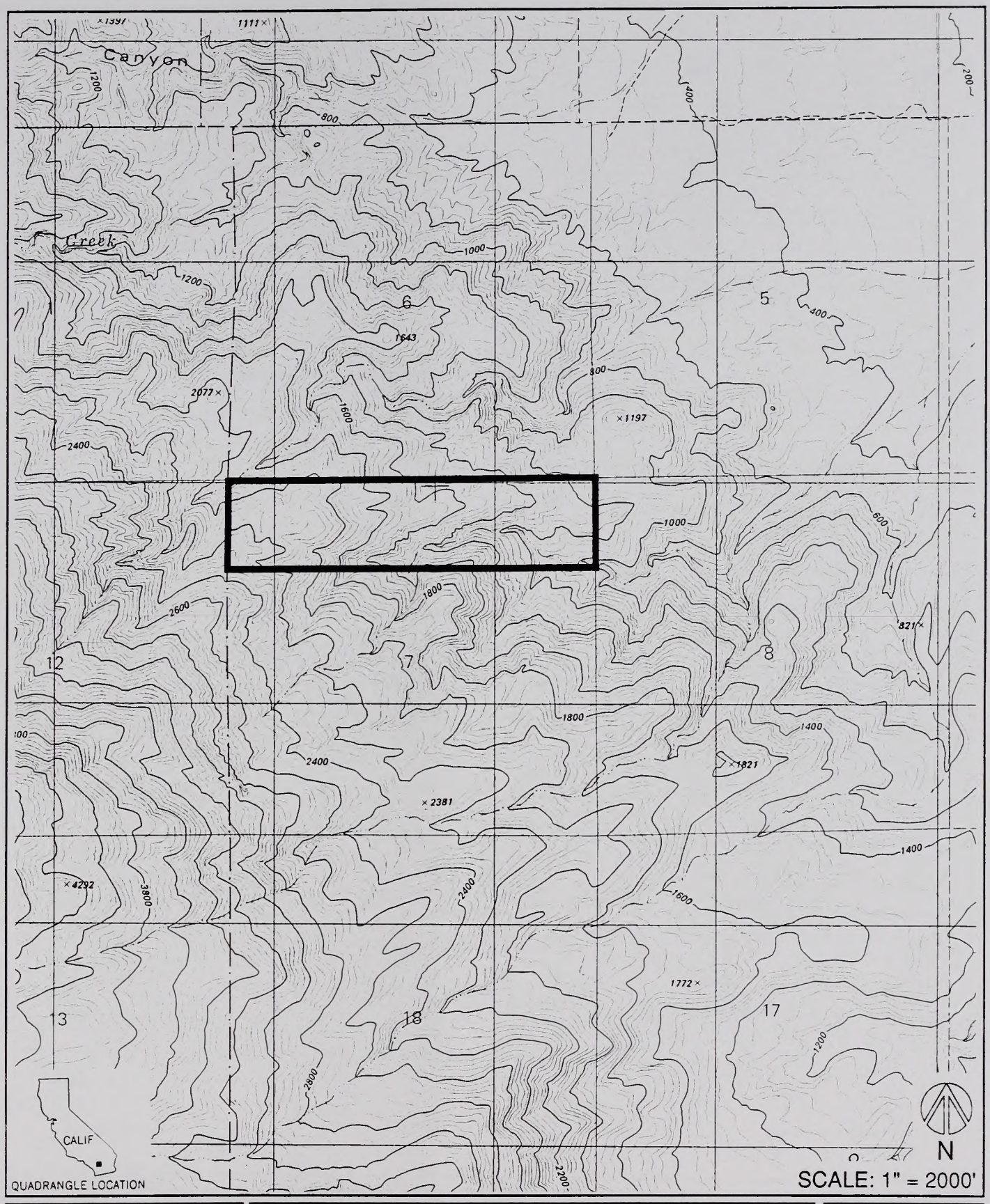


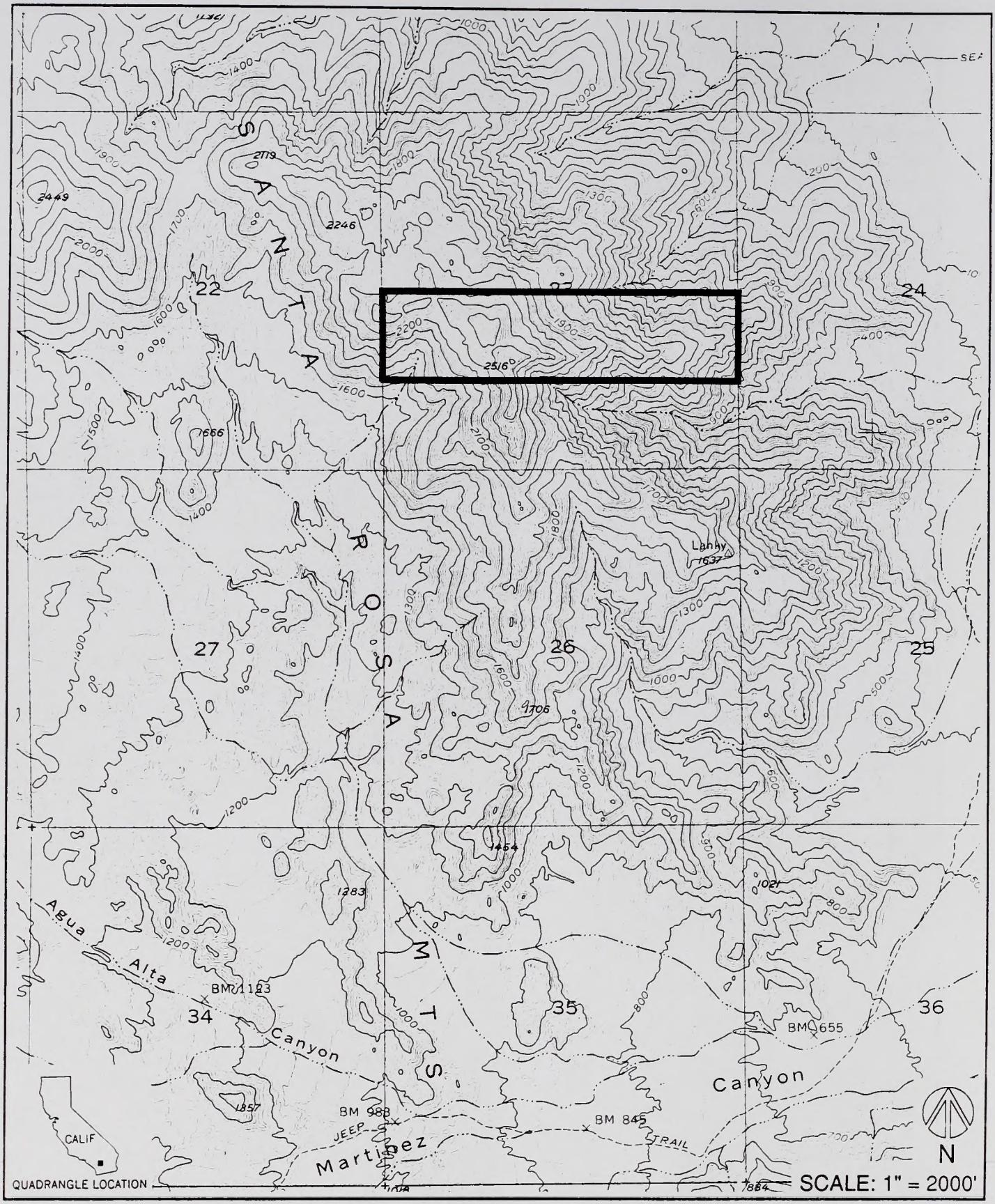
SOURCE: Martinez Mtn.
USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Santa Rosa Mountains
Exchange Parcel in Section 7

FIGURE

2-4



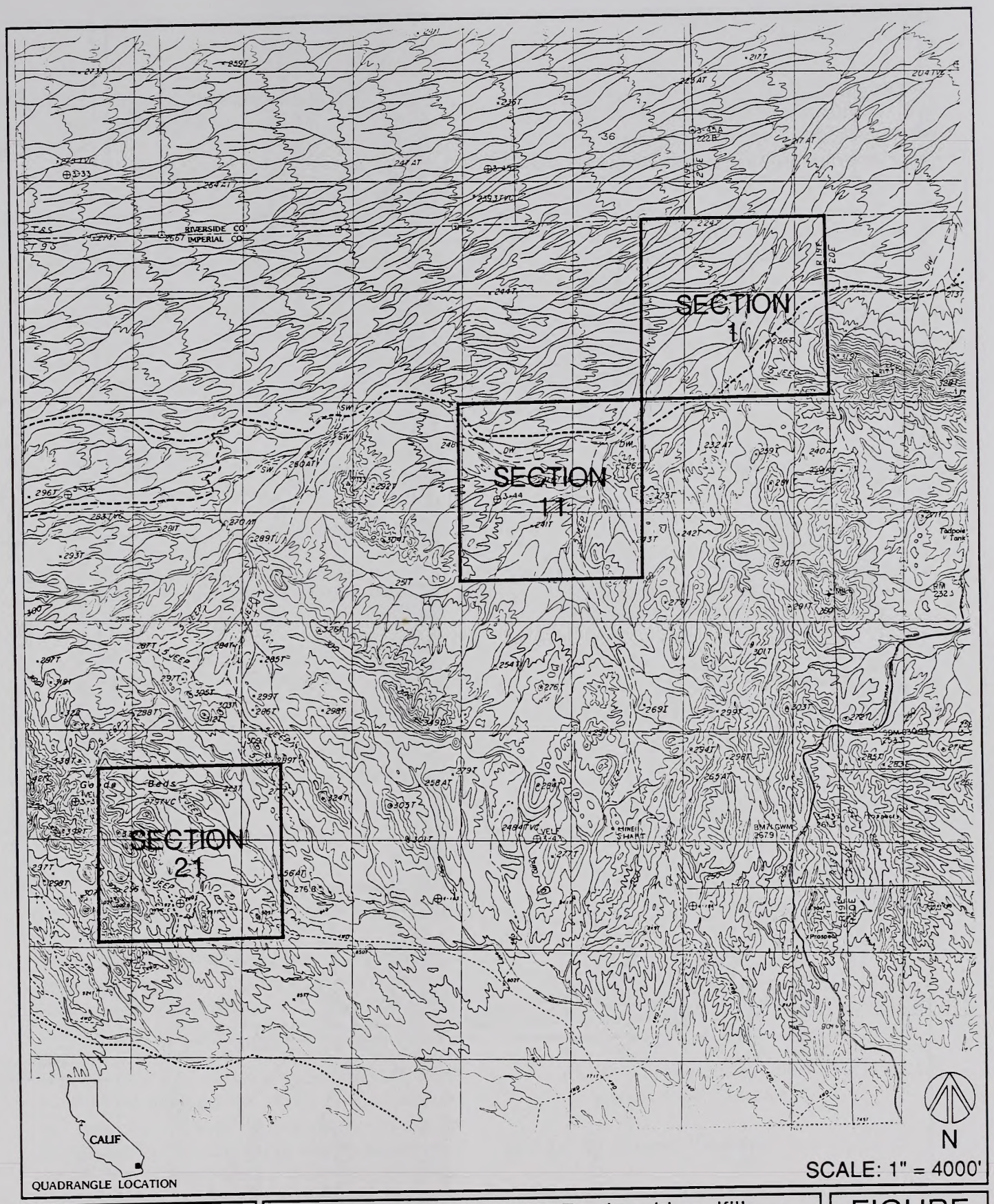
SOURCE: Valerie USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Santa Rosa Mountains
Exchange Parcel in Section 23

FIGURE

2-5



SOURCE: Wiley Well & Palo Verde Peah USGS 7.5' Quad. Map

Proposed Mesquite Regional Landfill

Chuckwalla Bench Exchange Parcels

FIGURE 2-6

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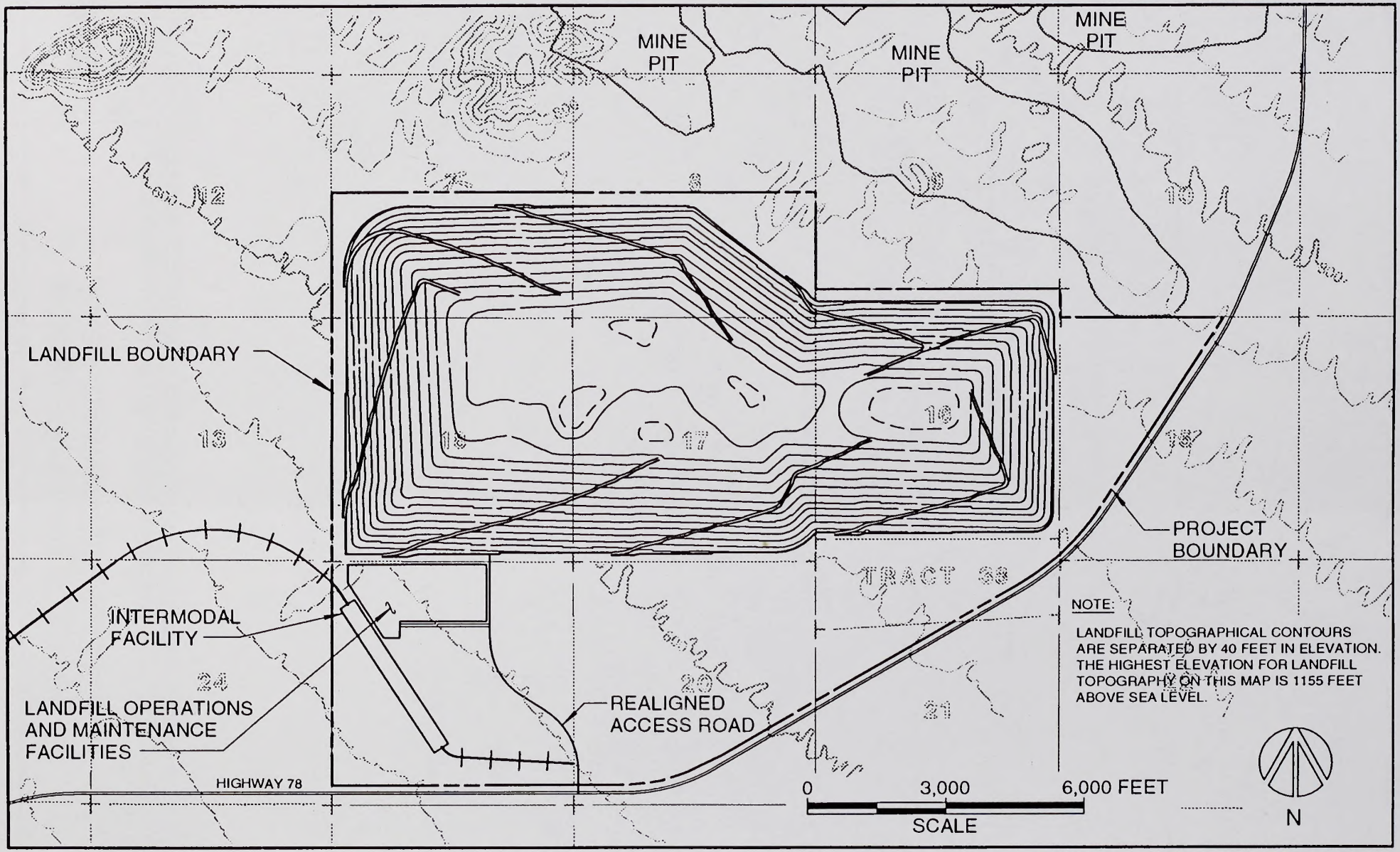

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Proposed Landfill Topography

FIGURE

2-7

2.1.3.1 Schedule/Phasing of Landfill Development

Landfill construction would be an ongoing process, occurring throughout the operational life of the facility. While some portions of the landfill are in active operation, others would be undergoing preliminary closure activities, while still others would be undergoing construction of the base liner system. Approximately 10 months of construction activity would occur prior to the initial delivery of MSW residue to the landfill. This would include, but not be limited to, construction of the following facilities:

- Railroad spur;
- Realigned access road;
- Initial operating section of the intermodal;
- Roads to and from the initial landfilling area;
- Base liner and leachate collection system in the initial landfilling area;
- Drainage facilities for initial operations;
- Initial buildings and facilities (e.g., container wash facility) in the operations and maintenance area;
- Pipelines and power lines;
- Fencing; and,
- Initial environmental monitoring systems.

These construction activities would require approximately 150 construction personnel who would be hired specifically to conduct these tasks during the expected 10-month construction phase. It is estimated that up to 200 one-way trips per day, five days per week, would be made by construction workers. Table B-25, contained in the Air Quality Technical Appendix (Appendix F), presents the estimated construction equipment requirements for the proposed project.

Approximately 10 to 20 people would be required to perform ongoing construction activities as a full-time or intermittent process after landfill operations have commenced. The following types of construction activities would occur during landfill operations and subsequent landfill expansions:

- Construction of base liner and leachate collection and monitoring systems for landfill expansions;
- Expansion of sections of the intermodal as arriving MSW residue volume increases;
- Modification and expansion of drainage facilities;
- Expansion of buildings in the operations and maintenance area;
- Expansion of the LFG collection and monitoring system; and,
- Preliminary closure activities after completion of landfill segments.

As appropriate, subcontractors would be hired to assist full-time personnel in performing certain specialized construction activities, such as the placement of the liner systems.

The following types of construction activities would occur during final closure once the landfill has reached its permitted capacity:

- Removal of the rail spur;
- Closure of the intermodal;
- Removal or closure of unneeded on-site structures;
- Recontouring and regrading of unneeded on-site roads; and,
- Final disposition of utility structures (e.g., electrical and gas lines).

2.1.3.2 Support Facilities

Figure 2-8 illustrates the preliminary configuration of facilities at the intermodal area. An intermodal facility is a rail yard that provides for the transfer of material (i.e., containers)

between modes of transportation, in this case, between trucks and trains. The majority of the structures and employee-related facilities would be located near one end of the intermodal. This is necessary to allow traffic flow across individual rail tracks when trains are parked along the central portion of the intermodal. Also, the container unloading/loading crane maintenance facility would be located near the end of the intermodal to allow cranes to be moved for repair at any time, including when trains are parked. As shown on Figure 2-8 "crane ways" would be provided at both ends of the intermodal to allow for controlled crossing traffic on specially paved areas.

Table 2-1 summarizes preliminary estimates of the types and sizes of structures that would be required for the landfill and intermodal. Each structure would be designed and constructed according to building permits obtained from the Imperial County Planning and Building Department. The structures would be painted "Desert Tan," corresponding to background conditions in the desert area as viewed from ground level, unless a different color is identified during permitting.

Electrical and water service would be obtained by tying into the existing Mesquite Mine electrical and water systems. These tie-ins would occur within the proposed site or existing utility corridors, and no additional off-site disturbance would be required to provide electricity and water to the proposed facilities.

2.1.4 LANDFILL OPERATIONS

2.1.4.1 Landfill Segment Development

The landfill would be developed into approximately 1,500-foot by 1,500-foot segments as illustrated on Figure 2-9. The actual segment configuration may be modified during landfill development to suit actual MSW residue disposal rates. Prior to construction of the proposed landfill, detailed design plans would be submitted to Imperial County and other agencies, as appropriate, for approval.

The segments would provide manageable areas for incremental liner construction and the ability to monitor leachate volumes from generally defined areas within the overall ultimate landfill configuration. Procedures for monitoring and collecting leachate are described in Section 2.1.5. Figure 2-10 illustrates a series of landfill development stages to show how simultaneous operations at two or three segments would occur.

The slope areas for segments that would ultimately form the outside landfill slope would be completed to their final configuration using stability berms (Figure 2-11) of compacted soil and an erosion-resistant rock surface. Intermediate slopes between segments would have an intermediate soil cover at least one-foot thick. This cover could be thicker to allow for construction of temporary drainage and access roads, for enhanced stability, or to ensure MSW residue remains buried. The height of the intermediate slopes would vary up to about 450 feet depending on differences in elevations of the adjacent segments.

The MSW residue for each new segment would be placed directly against the temporary slope for the adjacent area. In this way, the individual segments are ultimately combined into the final overall landfill configuration.

One by one, landfill segments would reach their final elevation. Once each landfill segment reaches its final elevation, a layered soil and flexible membrane liner (FML) system would be placed on top of the segment. A landfill segment that has reached its final elevation and has been covered with the layered soil and FML system would be "completed." The layered soil/FML system would help in reducing surface landfill gas (LFG) emissions. As neighboring segments reach their final height, a layered soil/FML system would be placed over these segments as well. Each segment's FML would be joined to the neighboring, completed segment's FML, to provide a continuous, water-tight seal over the completed landfill segments. Formal closure of the proposed landfill would not occur until every segment was completed and the entire landfill was covered by one continuous layered soil/FML

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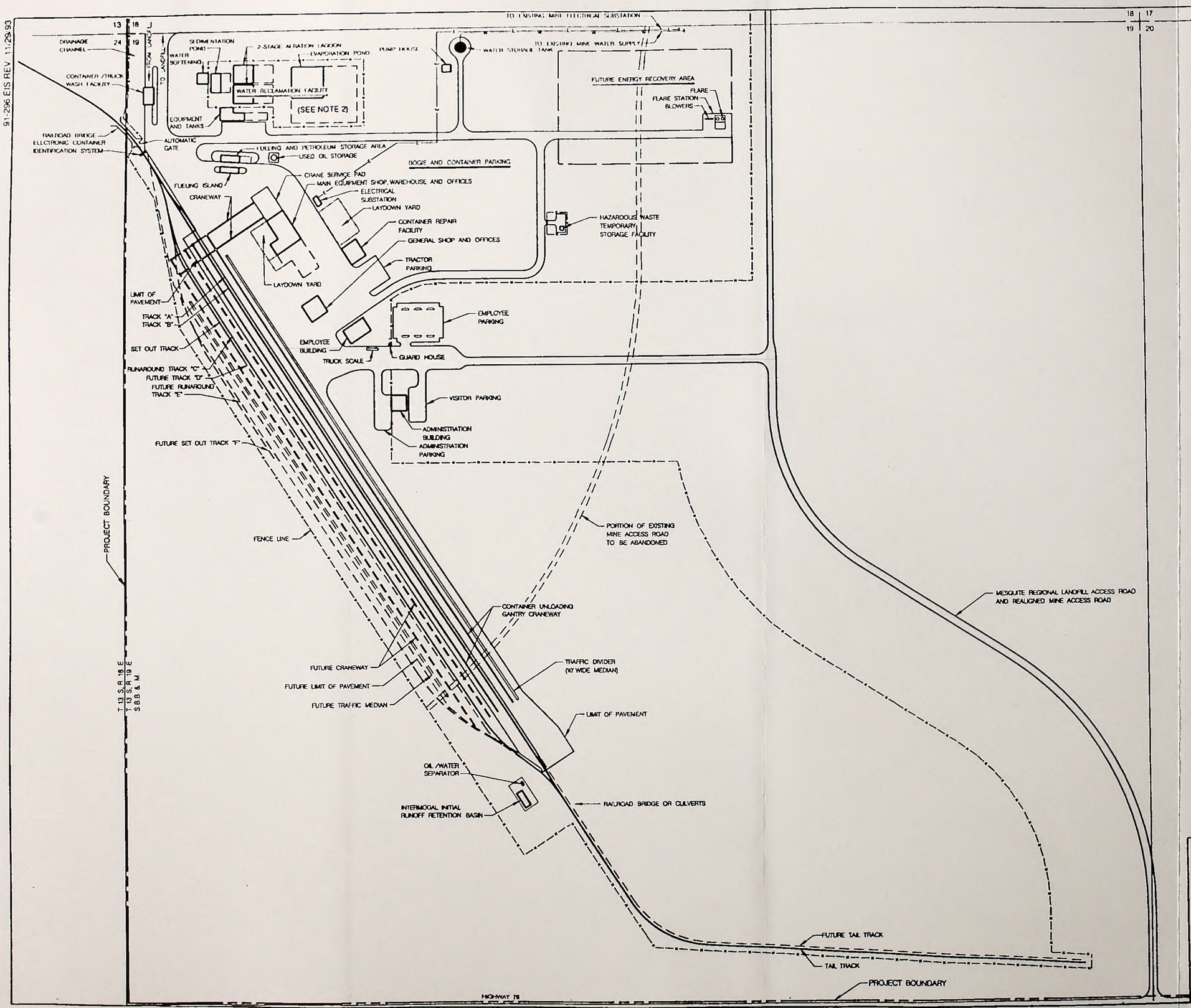

NOTES:

1. FENCING LINE SHOWN IS FOR INTERIM CONDITIONS. SEE FIGURE 2-33 FOR ULTIMATE FENCING PLAN.
2. A SINGLE-LINED SURGE POND TO TEMPORARILY STORE RAIN INFILTRATION INTO THE LCRS SYSTEM PRIOR TO COMPLETION OF THE FIRST WASTE LIFT AT ANY SEGMENT WILL BE LOCATED IN THIS AREA.

N

DRAFT

0 500 1,000 FEET

SCALE

Proposed Mesquite Regional Landfill

Mesquite Intermodal Layout

SOURCE: Environmental Solutions, Inc., 1992.

FIGURE **2-8**

TABLE 2-1

Anticipated Types and Sizes of Facilities/Structures

Proposed Mesquite Regional Landfill

Building/Facility Type	Anticipated Size	
	Initial Operations (4,000 tpd)	Maximum Operations (20,000 tpd)
Administrative Building (Two Floors) • Administrative Offices • Conference Room • Viewing/Presentation Room	6,400 sf	6,400 sf
Employee Building • Showers/Lockers/Restrooms • Lunch Room • First Aid • Offices	10,000 sf	10,000 sf
Maintenance Shop • General Maintenance • Offices • Material Storage	10,000 sf	10,000 sf
Heavy Equipment Shop • Equipment Repair • General Repair • Welding • Material Storage	21,000 sf	42,000 sf
Container Repair Facility	9,000 sf	9,000 sf
Fueling and Petroleum Storage Area • Fuel Storage Tanks • Drum Storage Building • Fuel Off-loading and Dispensing Facilities	10,000 sf	10,000 sf
Water Reclaim/Treatment Facility • Liquid Storage and Treatment Plant • Chemical Storage • Oil Water Separators and Oil Storage • Aeration Lagoons • Sedimentation Pond	41,000 sf	70,000 sf
Evaporation Pond	0.7 acres	2.5 acres
Truck/Container Wash Facility	5,500 sf	5,500 sf
Potable Water Treatment and Storage	1,000 sf	1,500 sf

Note: The daily operating volumes shown are the proposed initial and maximum anticipated amounts. The facility sizes shown are estimates and will vary based on actual operating conditions.

Source: Environmental Solutions, Inc., 1993.

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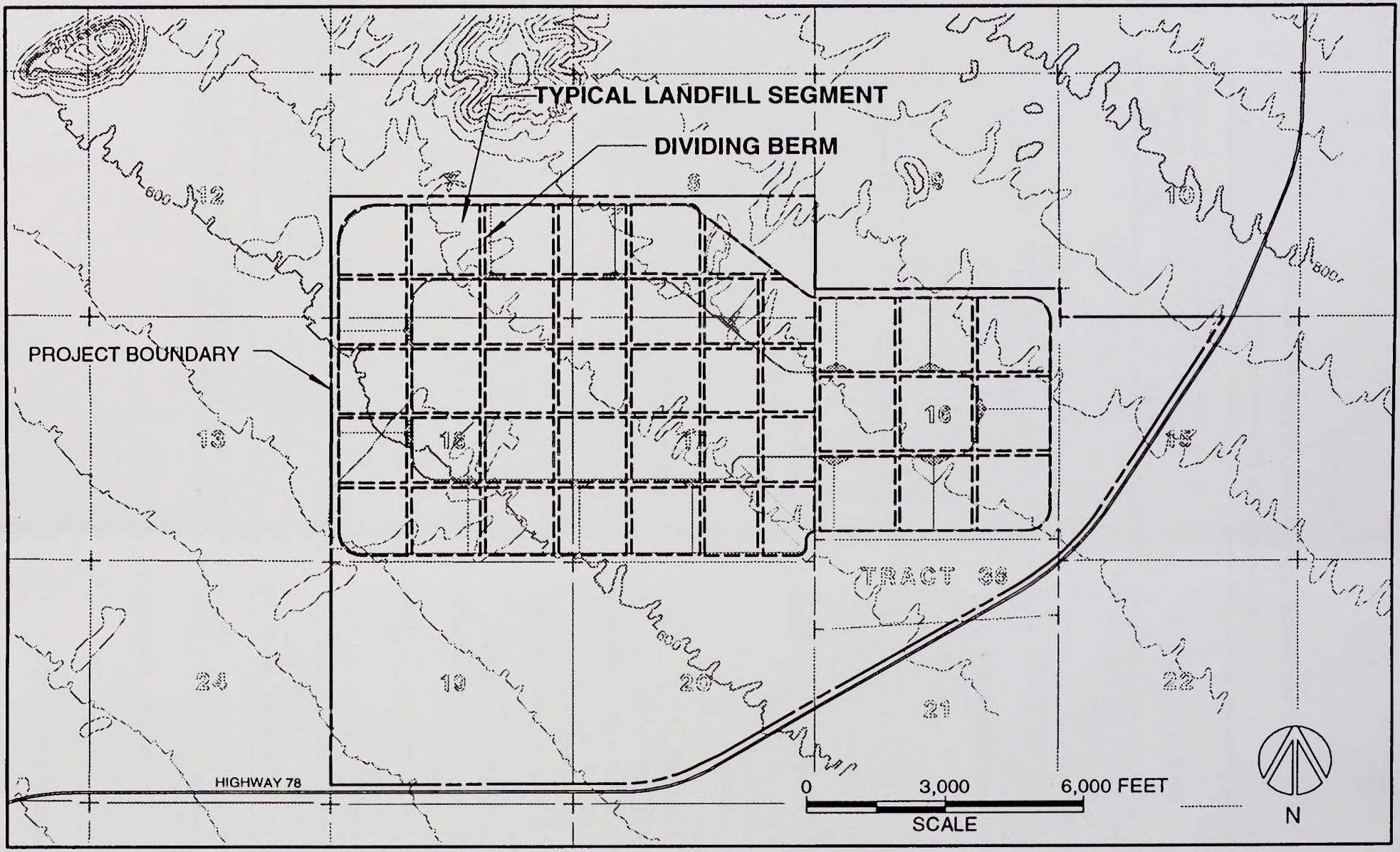

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Illustration of Landfill Segments

FIGURE

2-9

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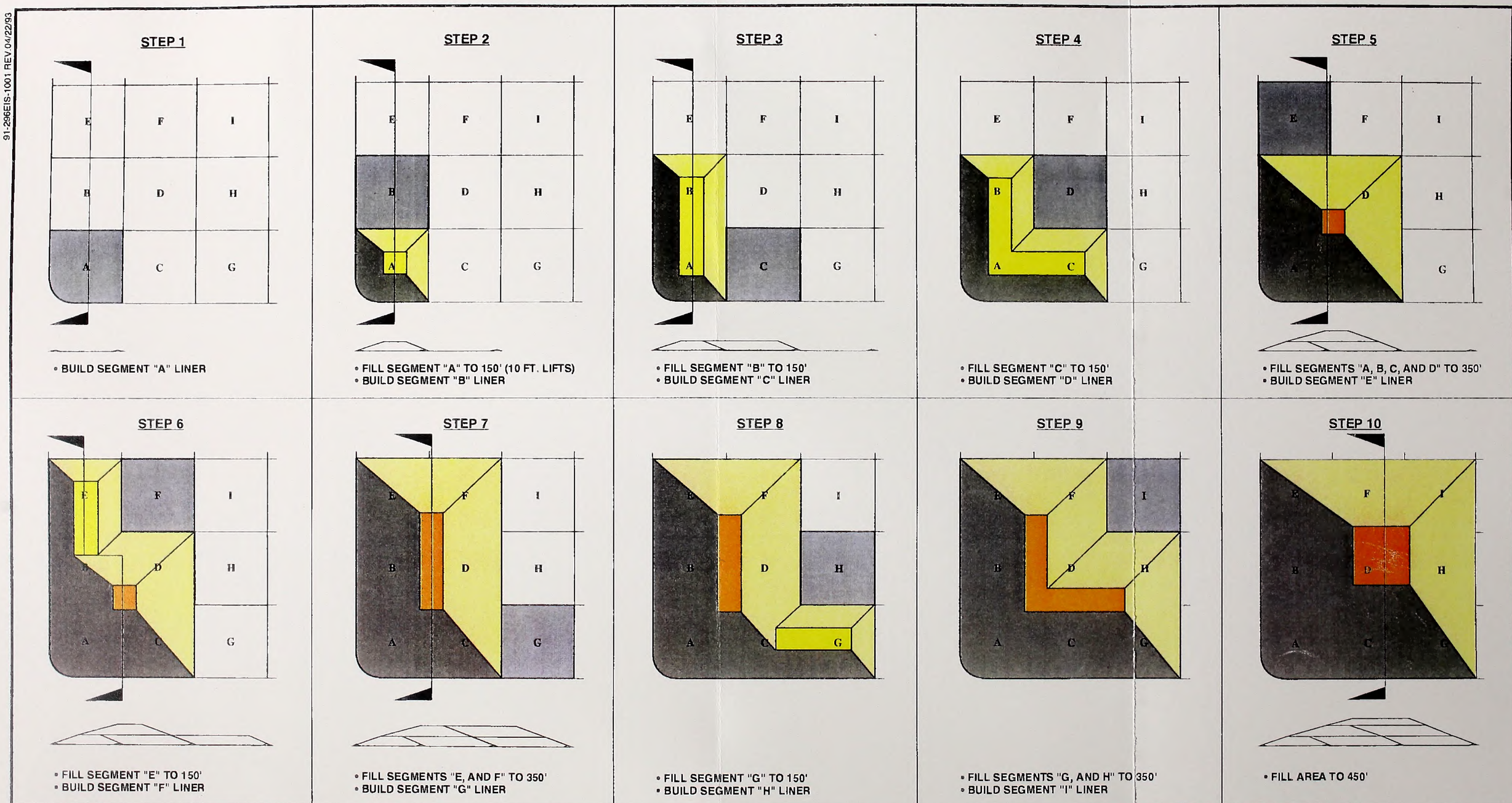


LEGEND

- INSTALLED LINER
- FINAL SLOPE LANDFILL PERIMETER
- TEMPORARY WORKING SLOPES
- TOP OF FILL = 150 FEET
- TOP OF FILL = 350 FEET
- TOP OF FILL = 450 FEET

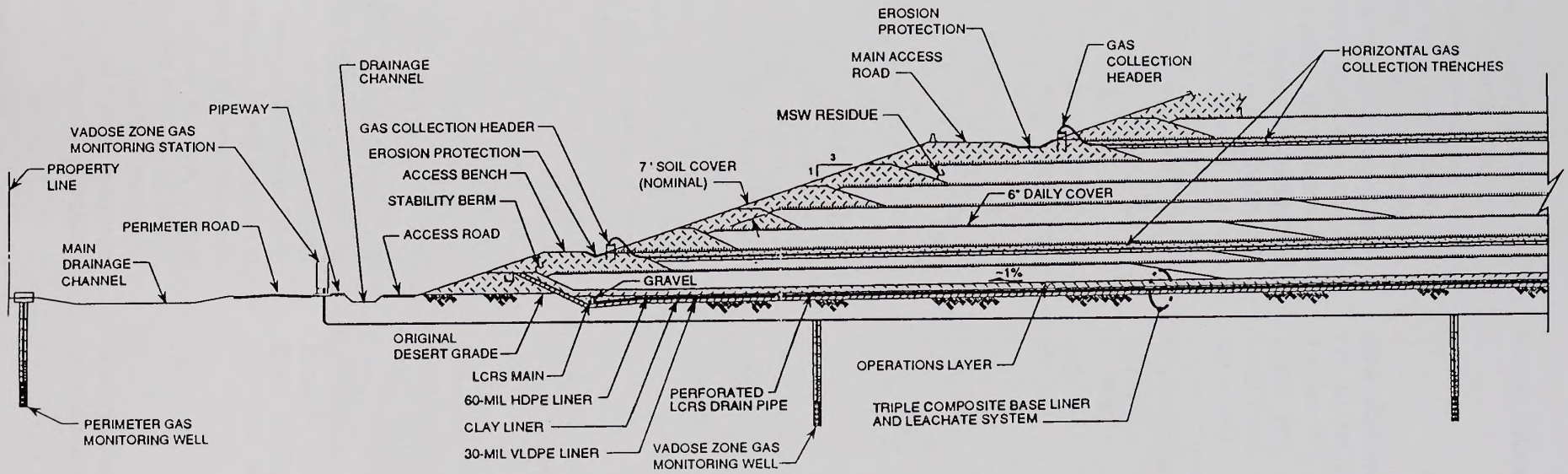
0 2,000 4,000 FEET
SCALE

Proposed Mesquite Regional Landfill

Example Sequence Of Landfill Segment Construction

SOURCE: Environmental Solutions, Inc., 1992.

FIGURE 2-10



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Example of Segment Cross Section

FIGURE

2-11

system. Activities associated with landfill closure are discussed in Section 2.1.15.

Soil Borrow Material Sources

The Applicant proposes to use all available sand and gravel from within the footprint of the proposed landfill (approximately 4.8 million cubic yards after removal of fines and coarse material) that occurs in shallow, less than 50-foot deep, lenses within the footprint. In addition, the proposed landfill operations would utilize overburden disposal pile and ore residue pile materials at the Mesquite Mine. All of the ore residue and the majority of overburden material could be eliminated as they are used for daily, intermediate, and final landfill cover. The ore residue and overburden material would not have to be processed or crushed before use as cover material. Any larger rocks would be separated from the overburden material and placed on the outside landfill surfaces. The proposed landfill could require a total of 200 million cubic yards of the material for the entire project.

Claystone portions of the overburden removed and stockpiled from the Vista and Rainbow mine pits or excavated from areas adjacent to the mines would be used to construct sections of the low permeability landfill liner. It is estimated that sufficient claystone is available in existing overburden piles or will be mined as overburden during the projected life of the Mesquite Mine for construction of the proposed liner system. At this time, mining of claystones solely for liner construction is not anticipated. The claystone obtained from the Mesquite Mine was successfully used late in 1992 to construct the composite liner for the newest Mesquite Mine leach pad.

Mineral materials, including claystone, obtained from unpatented mining claims on public lands would be purchased in accordance with the Minerals Act of 1947.

MSW Residue Placement

The cross section in Figure 2-11 illustrates how the landfill would be developed in approximately 10-foot high "lifts." Each lift would be a single row or layer of waste 10 feet high. At the end of each day, the compacted portion of the lift that has been filled over the past 24 hours would constitute a "cell." Wide soil stability berms (minimum size would be a base of approximately 62 feet with a top width of about 12 feet) would be constructed initially at permanent landfill perimeter locations, or at temporary internal boundaries that would be exposed for long periods between landfill phases. These berms would provide increased stability for landfill slopes and would represent the final landfill cover at the ultimate landfill perimeter. The detailed disposal procedures described above may also be modified periodically to satisfy technological developments and regulations.

Shortly after being emptied at the landfill working face, the MSW residue would be spread into approximately two foot thick layers that would be compacted with heavy equipment and covered daily to keep the exposed open face as small as practical. This compaction would serve several very important functions. The higher density would allow more MSW residue to be disposed per unit area within the landfill, thus providing a longer active life and reducing the need to develop new disposal facilities. Compacting MSW residue also reduces the amount of water infiltration during rain events, which is the primary source of increased moisture content once the MSW residue has been placed in a landfill. In addition, compacted lifts would be stronger and more stable so that the potential for long-term settlement of the landfill during and after its operating life would be reduced.

Figures 2-12 and 2-13 illustrate how proposed landfill operations would be conducted to minimize attraction of birds and vectors, odors, windblown debris, and water infiltration from occasional desert rainfalls. The figures show how containers would be emptied by tipping on a special piece of mobile equipment. Each "cell" would be covered with daily cover at least every 24 hours. Daily cover would consist of a minimum of six inches of soil. This material would be provided to control vectors, fires, odors,

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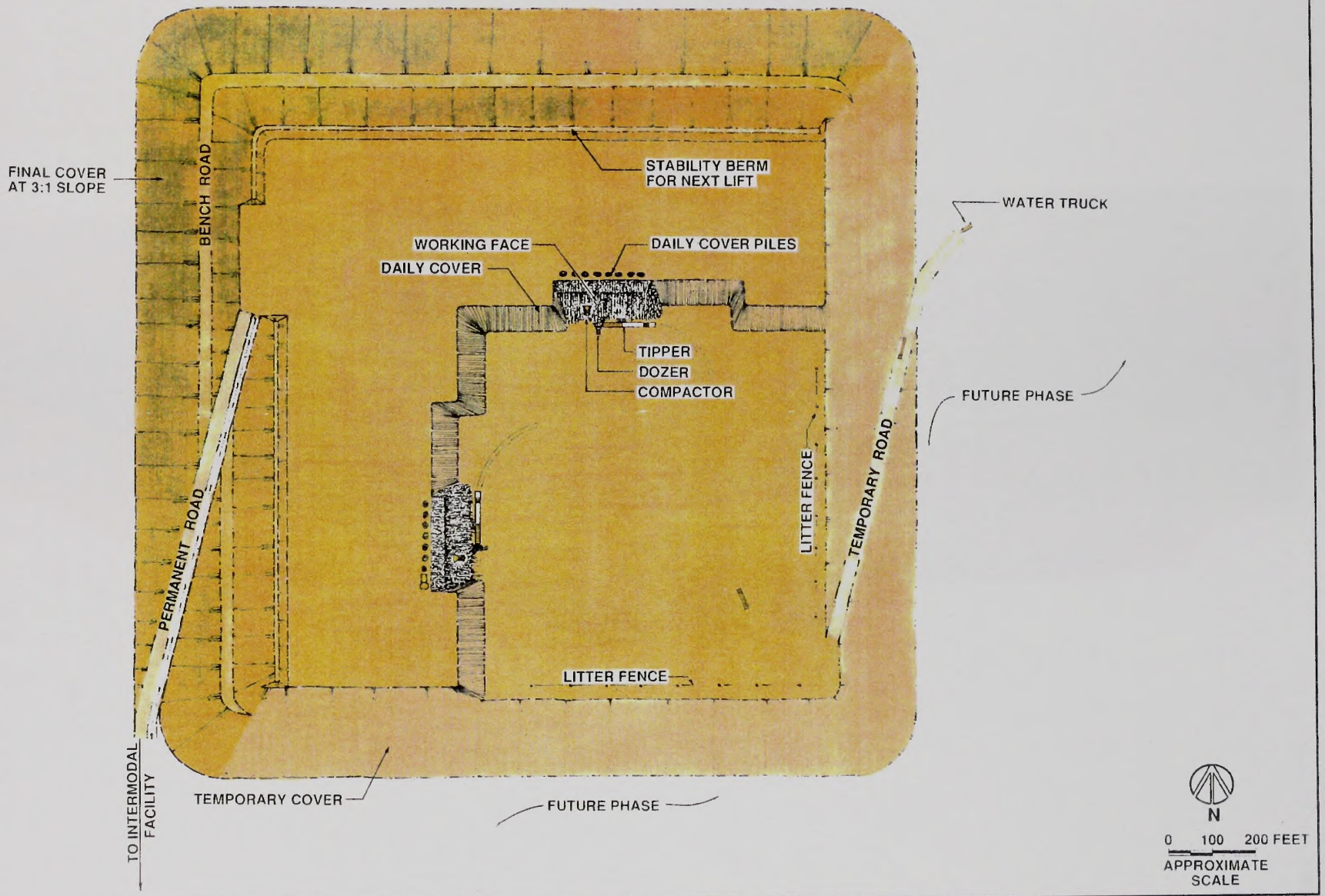

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Example Landfill Operation Plan View

FIGURE

2-12

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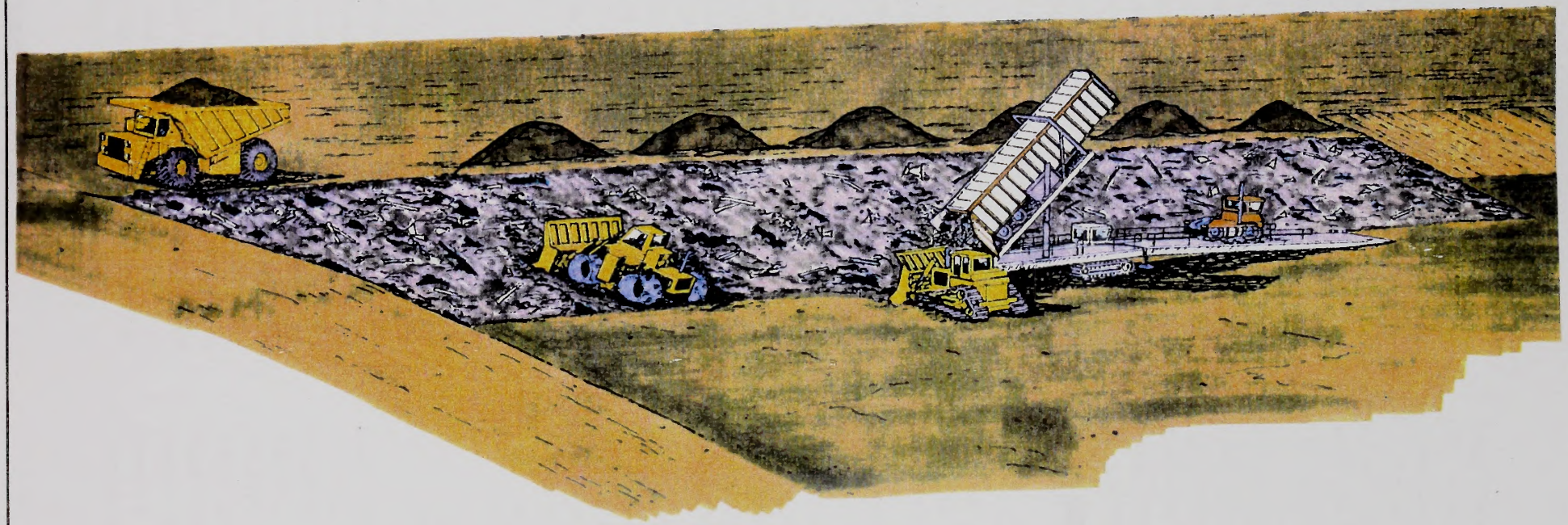

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Example Landfill Operations

FIGURE

2-13

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blowing litter, and scavenging, and would be applied more frequently as needed. In addition, daily cover would act to minimize precipitation infiltration prior to development of a new cell or placement of intermediate cover.

At this time, the Applicant does not propose the use of alternative cover materials such as foam. In the future, daily cover could also consist of foams or synthetic materials that are presently undergoing development and testing for this purpose. The use of alternative cover materials would be subject to approval by Imperial County, Regional Water Quality Control Board (RWQCB), and California Integrated Waste Management Board (CIWMB). Future environmental analysis may be required before alternative cover materials could be used.

The Applicant proposes to control birds during initial operations by applying daily cover material and operating with up to five working faces, each one less than one-half acre. If birds are attracted to the proposed landfill, the Applicant would then reduce the working face and/or apply cover more frequently. Additional bird control measures (e.g., monofilament lines mounted on telescoping poles to interfere with bird flight and allow landfill equipment access to the working face or pyrotechnics) would be implemented by the Applicant as identified during Section 7 Consultation with the U.S. Fish and Wildlife Service (USFWS) and as required by other applicable regulatory agencies.

California Code of Regulations (CCR) Title 14 § 17684 requires that areas where daily cover is exposed for more than 180 days be covered with at least one foot of compacted soil. The Applicant proposes that areas where daily cover would be exposed (i.e., not covered with an additional cell) for more than 180 days and less than one year, would be covered with at least one foot of compacted soil (or approved alternative material), called "temporary intermediate cover." The temporary intermediate cover could be thicker in certain areas to allow for construction of drainage and access roads or, if it is determined that the additional thickness would be necessary, to help control access by vectors.

Areas that would be exposed for longer than one year would be covered with "long-term intermediate cover," that would consist of at least two feet of compacted soil on flat areas and three feet of compacted soil on slopes. This cover could also be thicker to allow for construction of drainage or access roads, etc.

No salvaging of paper or other MSW residue would take place at the landfill. The removal of paper through source reduction and recycling programs within the originating jurisdictions would mean less paper in the waste delivered to the landfill. The potential for wind to blow remaining materials would be further reduced at the landfill by:

- Developing the landfill operating surface at several levels so that operations could be conducted at lower, more sheltered levels on windy days;
- Providing portable litter fences adjacent to the face if shelter from the landfill configuration cannot be achieved. The specific types of fence and height have not been determined at this time. Litter fence design would be developed during landfill operations;
- Minimizing the time between waste placement and daily cover placement so that MSW residue would be exposed to wind for shorter periods of time (i.e., during periods of high wind, soil cover would be applied more often than every 24 hours to control litter); and
- Conducting daily litter clean up by landfill personnel.

Large bulky items would generally be removed from the waste stream for recycling at the transfer stations and/or material recovery facilities (MRFs). If occasional large bulky items are observed at the disposal face, they would be placed on the toe of the cell, where other solid waste would be compacted around them. If the objects are prohibited items, they would be removed and disposed/recycled as required. Prohibited items would be temporarily stored on-

site in the same rail containers used to ship the MSW residue, or, for hazardous materials, in the proposed on-site hazardous materials storage area (Section 2.1.9).

2.1.4.2 Surface Water Drainage Control

Although it rains infrequently at the proposed landfill site, the control of surface water runoff would be an important design factor. Measurable precipitation can occur in the project vicinity as short, high intensity precipitation events occur. This condition results in high peak flows in drainage channels, which can increase from no flow to maximum conditions within several minutes. Usually, flowing conditions occur for less than one hour.

Substantial knowledge of hydrologic conditions exists for the area. This information was developed during design of storm runoff control facilities for the Mesquite Mine and relocated SR 78 (Figure 2-14). Flows from the existing mine are discharged across the highway at three erosion protected washes (swales). These facilities are designed to control the 100-year recurrence thunderstorm (e.g., 1.65 inches of rainfall per hour). As shown in Figures 2-15 and 2-16, landfill runoff control facilities would integrate with the existing mine drainage system in two phases. The first phase would occur in the early landfill operating years. The second phase would occur after approximately 15 years of operations. In each case, runoff diverted around the landfill, and runoff from the facility, would be directed to the existing three highway wash crossings. One hundred year storm event flows to each of these wash crossings would not exceed the design capacities identified in the *Final Drainage Report, Highway 78 Realignment* (December 1987). The established 100-year storm event capacities for the existing drainage crossings shown from east to west on Figure 2-14, are 4,473 cubic feet per second (cfs), 2,353 cfs, and 2,329 cfs, respectively.

The most important diversion channel would be located along the northern and western sides of the landfill. This channel would receive the largest flow through the mining area, from washes originating in the Chocolate Mountains. A desilting basin may be provided to reduce sediment loads that may impact the planned operation of the perimeter diversion channels. This requirement would be determined once operations have begun, and initial flows and siltation in the diversion channel have been observed. Surface drainage would occur across the intermodal facility. The intermodal facility would include drainage basins designed to collect the first 0.1 inches of runoff from any rain event. It is this runoff that typically carries the highest concentrations of potential pollutants such as grease and oil during rainstorms.

In addition to providing channels for high, peak-flow conditions, drainage control facilities would be designed to:

- Accommodate sediment loads caused by upstream erosion of unvegetated washes, and to avoid conditions that could result in channel blockage due to sedimentation.
- Avoid excessive erosion of key diversion channels (channels cannot be protected with natural vegetation).
- Discharge flows from constructed channels back to the same desert washes from which they were diverted, to the extent practical. This would avoid the creation of new erosion patterns on the desert floor and the need for modifications to downstream facilities such as the SP Main Line.

The proposed rail spur would be aligned parallel to existing runoff patterns and therefore would not require any major diversion facilities. A combination of berms and ditches would be constructed along the northwestern side of the spur to control any small flow that would be potentially intercepted by the railroad. This flow would be discharged through a drainage structure provided beneath the bend in the spur leading to the SP Main Line.

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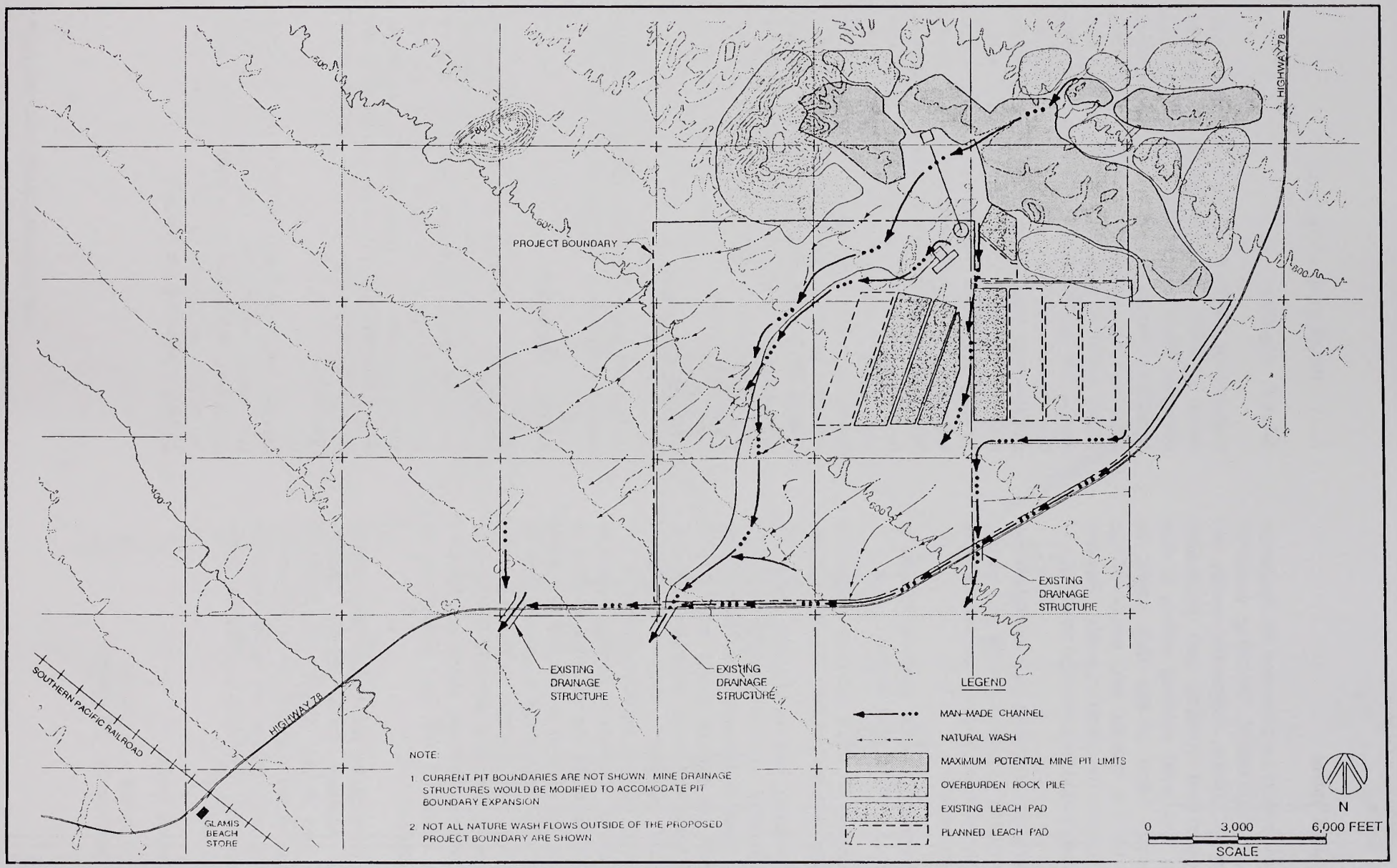

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Drainage Plan Existing Condition

FIGURE

2-14

2.1.4.3 Dust Control

Fugitive dust would be generated by equipment operating on the landfill, including container trucks, scrapers, graders, compactors, dozers, and loaders; cover-soil loading and placement operations; and wind blowing across freshly graded areas. Most of this dust would be generated by the wheels and tracks of the equipment moving on unpaved roads. Fugitive dust generated would be controlled by:

- Paving or providing dust surfactants on permanent portions of roads and wetting unpaved road surfaces as needed with water trucks.
- Sweeping of paved roads as needed to reduce accumulation of dust.
- Washing of truck tires as needed to reduce transport of dirt onto paved areas.
- Prewetting borrowed soils prior to excavation and preparation for soil placement and compaction. (Note: Water would be applied using water trucks equipped with water dispensers installed for this purpose. Soils in the desert typically have a moisture content of 2 to 5 percent. Sufficient moisture would be added to bring the moisture content to about 12 percent as needed to control dust. The anticipated moisture content of the waste is expected to be 20 percent. Covering the waste with soils having up to 12 percent moisture would not increase the potential for the production of leachate or LFG.)

According to work by the U.S. Environmental Protection Agency (U.S. EPA) (1985), Buonicore and David (1992), and Cowherd (1993), the proposed dust controls would provide the following wind erosion and heavy equipment operation emission reductions as compared to the uncontrolled case:

- Unpaved roads

  Watering - 90 percent
  Surfactants - 95 percent

- Paved roads - 50 percent

2.1.4.4 Lighting

Lighting of most of the landfill project area would be very similar to that of the existing Mesquite Mine. Standard industrial lighting structures would be used for the landfill operations and maintenance areas. Mobile light plants would be used for landfill working face areas. All lighting would be required to meet established industry standards (including Occupational Health and Safety Administration (OSHA)) for safety in the workplace and would be subject to Local Enforcement Agency (LEA) approval. The proposed intermodal facility would have brighter lighting than other areas in accordance with OSHA and other applicable engineering standards and codes for rail-loading facilities. The intermodal lights would be arranged to avoid direct off-site illumination toward SR 78. All fixed lighting (i.e., lighting not on vehicles) would be directed toward the ground and away from SR 78 so as not to create a highway hazard.

2.1.4.5 Equipment

Estimated equipment usage required for daily landfill operations is summarized in Table 2-2.

2.1.4.6 Employees

Preliminary estimates of daily operating personnel, by generalized job category, required for initial landfill operations (4,000 tpd) and for the proposed peak operations (20,000 tpd) are shown on Table 2-3. Approximately 268 people would be employed for daily operations at the Mesquite Regional Landfill during peak activities.

Initially, only one 8-hour shift per day, six days per week, would be required for landfill operations. Additional hours and/or shifts would be added as operating rates increase until 24-hour operations are reached.

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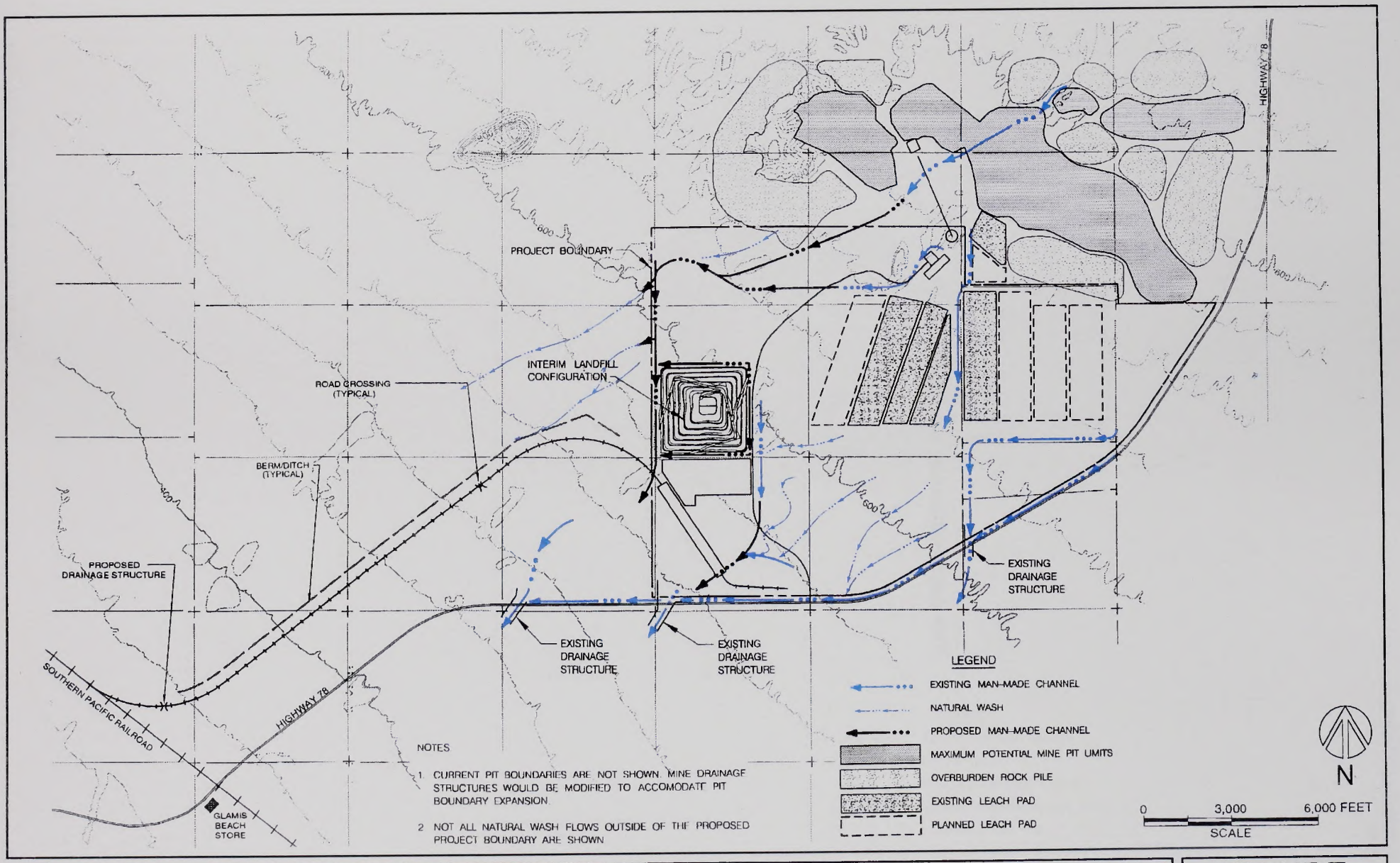

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Interim Site Drainage Plan

FIGURE 2-15

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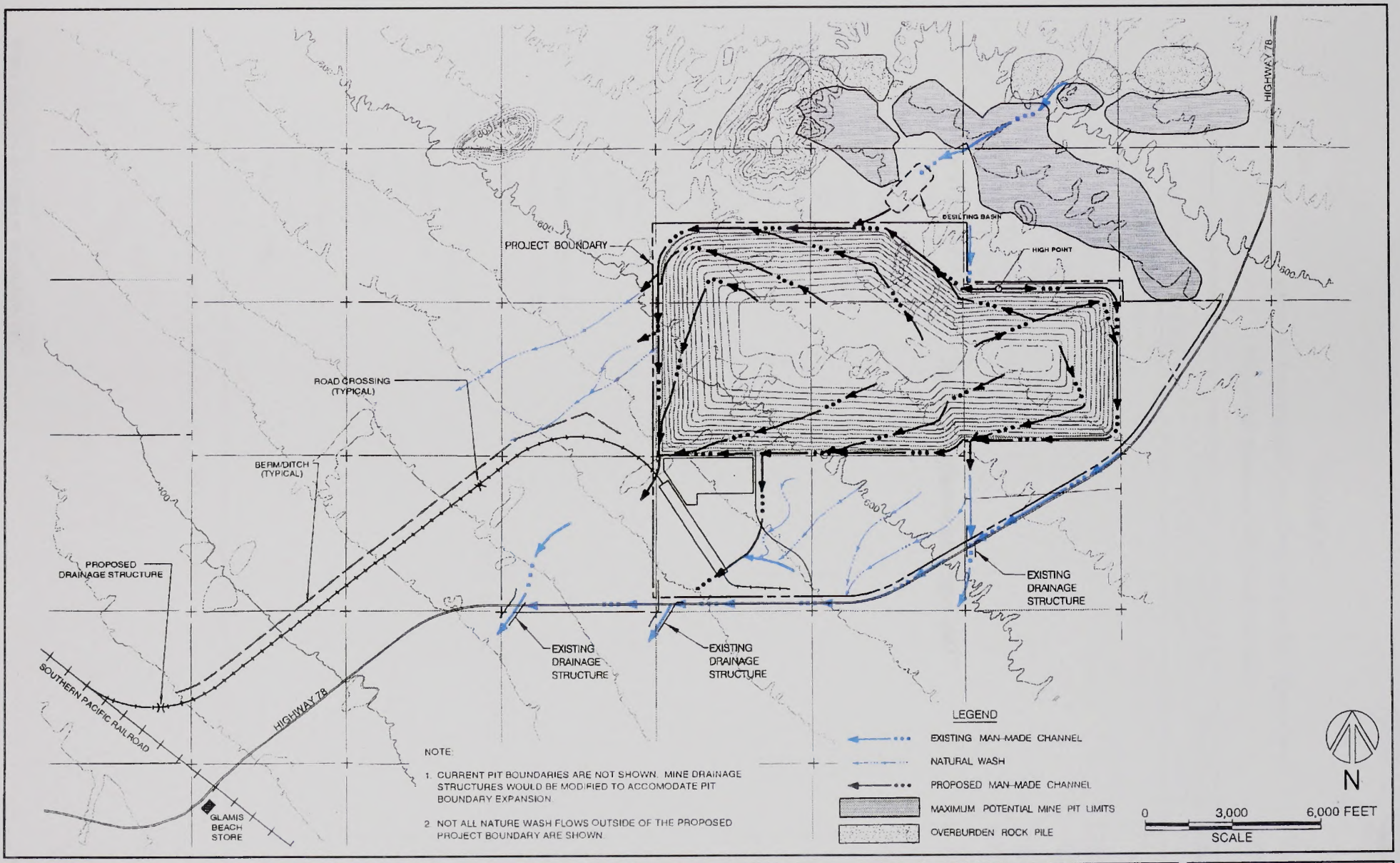

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Final Site Drainage Plan

FIGURE 2-16

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TABLE 2-2

Estimated Equipment Usage During Landfill Operations

Proposed Mesquite Regional Landfill

Equipment Category	Equipment Required For 4,000 Tons/Day	Equipment Required For 20,000 Tons/Day
Management/Administration (Standard Vehicles)	7	11
Security (Standard Vehicles)	2	2
Equipment Maintenance		
• Standard Vehicles	2	2
• 4x4 Heavy-Duty Service Truck	1	3
• Fuel/Lube Truck	1	3
• Heavy-Duty Tow Truck	1	1
• Standard Tow Truck	1	1
• Forklift	1	3
Facility Maintenance		
• Standard Vehicles	2	3
• Service Truck	2	2
• Stake Bed Truck	1	1
• Boom Truck	1	1
• Bucket Truck	1	1
Container Wash, Wastewater Treatment Facility	0	0
Shipping/Receiving		
• Standard Vehicles	1	2
• Forklift	1	3
Container Transfer		
• Standard Vehicles	1	3
• Overhead Cranes	2	5
• Tractors	12	24
• Bogies	160	320
Landfill Heavy Equipment		
• Compactors	2	4
• Dozers	2	4
• Tippers	2	4
• Loaders	2	2
• End Dumps	3	5
• Graders	2	3
• Water Trucks	2	4
• Backhoe	1	2

Source: Environmental Solutions, Inc., 1992a.

TABLE 2-3

Estimated Operations Personnel Requirements
Proposed Mesquite Regional Landfill

Categories	Personnel Required For 4,000 Tons/Day	Personnel Required For 20,000 Tons/Day
Management/Administration	22	47
Security	8	8
Equipment Maintenance	14	43
Facility Maintenance	11	22
Container Wash, Wastewater Treatment Facility	4	13
Shipping/Receiving	2	6
Container Transfer	12	60
Heavy Equipment Operators	13	57
Ongoing Construction	--	12
TOTALS	86	268

Note: The daily operating volumes shown are the minimum and maximum anticipated amounts.

Source: Environmental Solutions, Inc., 1992a.

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2.1.4.7 Highway Traffic/Trip Generation

The primary highway access route for the Mesquite Regional Landfill would be along SR 78. Most landfill-related highway traffic would be landfill employees arriving and departing from work. It is anticipated that project-related traffic, mostly coming from the western portion of Imperial County, would include approximately 132 trips at initial operations. This traffic would increase to approximately 362 trips (including delivery vehicles) for an MSW residue disposal rate of 20,000 tpd. These rates are based on existing employee carpooling rates at the Mesquite Mine (i.e., approximately 1.5 employees per vehicle). Project-related traffic would ultimately be distributed between three landfill operating shifts and one administration shift.

The Applicant does not propose to haul MSW residue by truck during normal operations The only reasonably anticipated event that could result in truckage from outside Imperial County would be an extended interruption of service on the rail-haul route. The transfer stations that would provide the MSW residue and the rail-haul system would provide about 72 hours of surge capacity. After 72 hours, transport to alternative landfills, or alternative transport procedures to the proposed landfill, would be required.

If, however, trucking for a short period were required, it could consist of up to 400 trucks working two round-trips per day for the maximum 20,000 tpd conditions. The delivery route would be south from the coastal areas on I-5 and I-805, east on I-8, north on State Route 111 (SR 111), and east on SR 78 to the proposed regional landfill. The emergency truck haul procedure could add up to 1,600 one-way trips per day along the proposed route.

Additional truck traffic could occur on SR 78 if the County of Imperial or local municipalities decided to utilize the proposed Mesquite Regional Landfill for the disposal of portions of the MSW residue from within the County. It is assumed that locally derived wastes would be delivered in transfer trucks (e.g., about 20 tons each) from one or several transfer stations constructed to replace existing landfills in populated portions of western Imperial County. Currently, approximately 105,000 tons per year of locally derived MSW is disposed at 10 landfills operated by the County Public Works Department and one privately operated landfill.

If locally derived MSW were disposed at the proposed Mesquite Regional Landfill at the current rate, assuming no additional recycling, approximately 15 20-ton transfer trucks would travel daily along SR 78.

Assuming continued population growth of about 2.0 percent per year and successful implementation of the California Integrated Waste Management Act of 1989, as revised (AB 939), the number of required MSW residue transfer truck loads could potentially increase to about 30 per day, spread over approximately 12 hours each day. Truck deliveries would be restricted to avoid the heaviest traffic to and from the Imperial Sand Dunes Recreation Area (ISDRA) (e.g., afternoons before and mornings after winter weekends from October 1st through May 31st).

Another source of project-generated traffic would come from transportation of agricultural plant material from Imperial County agricultural areas to the proposed regional landfill. As part of its program to obtain offsets for project-generated stationary source air emissions, the Applicant proposes this plant material be diverted from burning and hauled to the landfill and either used as cover amendment or landfilled. (for more discussion on this topic, please turn to the Air Quality analysis in Chapter 4.0). This activity would result in deliveries of up to two truckloads of these materials each day at various times during the year. This would add up to four trips per day to SR 78. Like other delivery activity, the agricultural plant material trucks would be scheduled to avoid the heaviest traffic to and from the ISDRA.

2.1.4.8 Recyclable Material Storage

Under usual circumstances, recyclable materials that are removed from the waste stream at transfer stations/MRFs in accordance with AB 939 are stored at these locations while the transfer station/MRF operator finds buyers for the various recycled commodities. From time to time the market for certain recyclable commodities experiences a slowdown, making immediate sale difficult. When this occurs, storage space for recycled materials at transfer stations/MRFs may become scarce. As a service to transfer station/MRF operators, the Applicant proposes to provide short-term storage space for recycled materials.

The recycled materials would be transported from transfer stations/MRFs to the proposed landfill in similar containers to those that would be used to transport MSW residue, except that they would be specially tagged to identify the contents as recyclable materials to be stored, not landfilled (please see Section 2.1.4.9 for a description of the proposed tagging system). The Applicant proposes that a maximum of 600,000 tons of recyclable material may be stored at the proposed landfill at any time. Before recyclable materials would be shipped for storage at the proposed landfill, the originating jurisdiction would have to enter into an agreement with Imperial County, the CIWMB, and the Applicant. The agreement would have to specify the maximum storage period of two years or other time period specified in the agreement, and allow the Applicant to landfill the materials if they were not removed from the proposed site during the specified period. The storage would occur only within the undeveloped portions of the landfill footprint (the outline of the landfill footprint is shown in Figure 2-2). The recyclable material would be separated and stored by type of material, and would be clearly marked and protected from the elements as necessary to assure there is no adverse impact to the environment. The specific storage location within the landfill footprint would vary as the landfill expands.

The following recyclable materials would be accepted for temporary storage at the proposed landfill site:

- Paper
- Plastic
- Aluminum
- Recyclable metals
- Other recyclable materials as identified by the CIWMB

The recyclables would be baled or otherwise contained at originating transfer stations and inspected to ensure that they do not contain hazardous materials. The Applicant would require that the transfer station/MRF operators provide certification to Imperial County that the recyclables do not contain hazardous materials. It is anticipated that specific storage requirements for each commodity would be reviewed and approved by the LEA before any material is brought to the site for storage. The recyclable material would be stored on an unlined portion of the landfill footprint, unless a liner is required by permitting agencies. A record of the types and quantities of all stored recyclables would be maintained with the LEA, CIWMB, or other designated state or local agency.

2.1.4.9 Record Keeping

Operation of the proposed landfill would require that complete and accurate records covering landfill and facility operations be maintained. Specific requirements would be based on the reporting requirements of the various permits that must be obtained to construct and operate the proposed Mesquite Regional Landfill.

A specific concern was raised during the Indio Public Scoping meeting (May 28, 1992) as to how the Applicant would ensure that waste is delivered to the correct site and how the Applicant would distinguish its containers from those carrying waste for the proposed Eagle Mountain Landfill or any other landfill.

The following description is based on preliminary design and is subject to modification as required in a Waste Discharge Order Permit

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(WDO) to be issued for the proposed Mesquite Regional Landfill by the RWQCB. A computer-based tracking system would be used for the containers destined for the proposed Mesquite Regional Landfill to assure that only MSW residue from transfer stations/MRFs that are properly screening MSW for recyclables and hazardous wastes (as described in Sections 2.1.8 and 2.1.9, respectively) would be received at the proposed landfill. Each container acquired for use by the project would have a specific serial designation. This designation, in addition to being prominently affixed on the container, would be placed on the container in the form of an electronic identification (ID) tag. Using an electronic ID reader the container would be tracked during the entire journey from the transfer station where it would be loaded, to the landfill, and its return to the transfer station. It is anticipated that the container electronic codes would be read and entered into the computer data base at several points including, but not limited to, the following:

- Upon departure from the transfer station.
- Upon arrival at the loading intermodal.
- Upon departure from the intermodal.
- Upon arrival at the landfill intermodal.
- Upon completion of the dumping of MSW residue at the landfill face.
- Upon completion of placing recyclables in the designated short-term storage area.

From this information, the Applicant would be able to determine the location and status of every container within the system at any time. In addition, the container weight (net and gross), loading/unloading time, and location would be entered. This system would provide accurate records of the travel time, disposition, and location in the proposed landfill of every container of waste and the location of every container of recyclables.

Containers would be acquired by the Applicant for use only on the proposed Mesquite Regional Landfill project. All containers would be the same color (undetermined at this time) and may have the logo or project name on them. The Applicant proposes that Mesquite Regional Landfill containers would be easily distinguished from the containers used for any other landfill.

2.1.5 LINER AND LEACHATE MANAGEMENT SYSTEM

The Applicant proposes to install a base liner and leachate management system that exceeds existing and proposed state and federal (Resource Conservation and Recovery Act (RCRA), Subtitle D) regulatory standards for Class III landfill liners (Figure 2-17, bottom graphic (B), Triple Composite Liner Planned for the Mesquite Regional Landfill). For comparison, Figure 2-17, top graphic (A), Example Minimum RCRA Subtitle "D" Liner And Leachate Collection System, also shows an example of the liner and leachate collection system required by RCRA, Subtitle D, for Class III landfills. The Applicant's proposed system would include a triple composite liner and a "leachate collection and recovery system" (LCRS) that would collect potential leachate from each landfill segment. The proposed liner and LCRS is based on preliminary design and is the basis of the environmental analyses in this EIS/EIR. The proposed liner and LCRS is subject to modification as the WDO to be issued for the proposed Mesquite Regional Landfill by the RWQCB undergoes ongoing negotiation and technical discussion. It is anticipated that the WDO will specify a liner system that is at least as protective as the proposed liner system. During the life of the proposed landfill, updated liner configurations may be implemented by the Applicant in response to new technologies (e.g., liner materials and seaming methods) and regulatory requirements. Approval by all regulatory agencies with jurisdiction over landfill liners (e.g., RWQCB), including compliance with CEQA, would be required before an updated liner configuration could be implemented by the Applicant.

The proposed landfill would be subdivided into segments as shown on Figure 2-9. The segments would be separated by containment berms constructed to allow potential leachate generation

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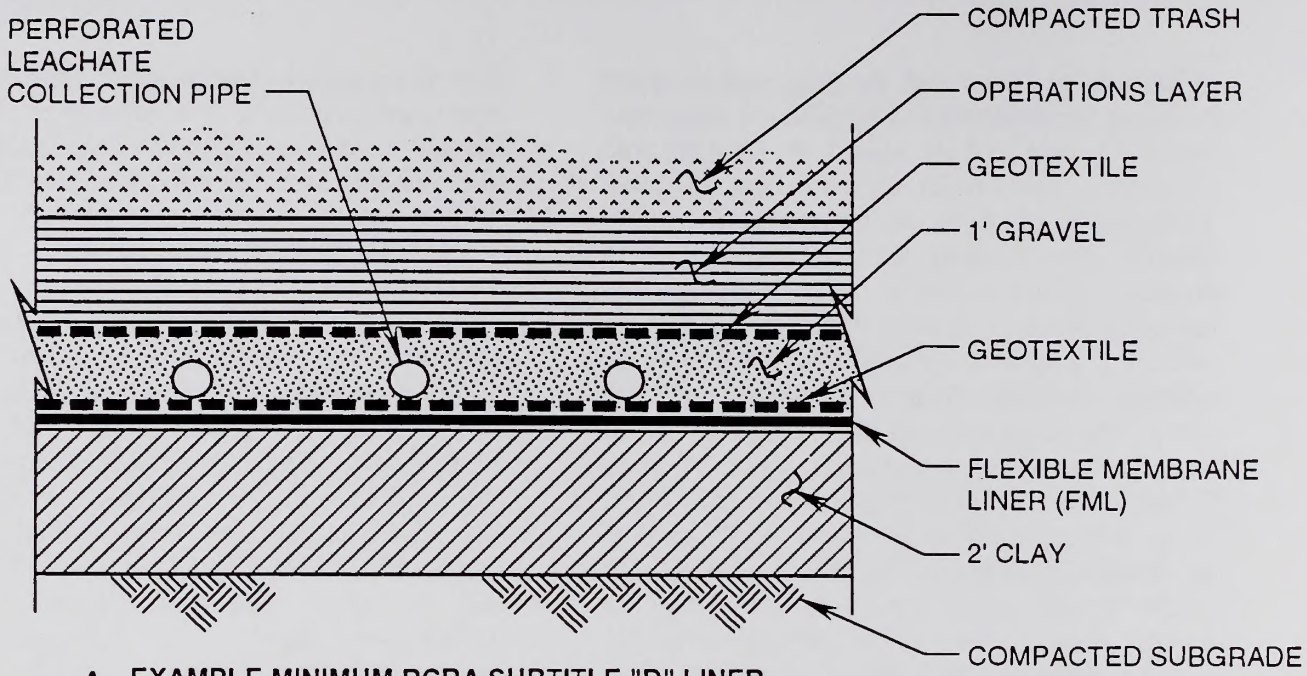
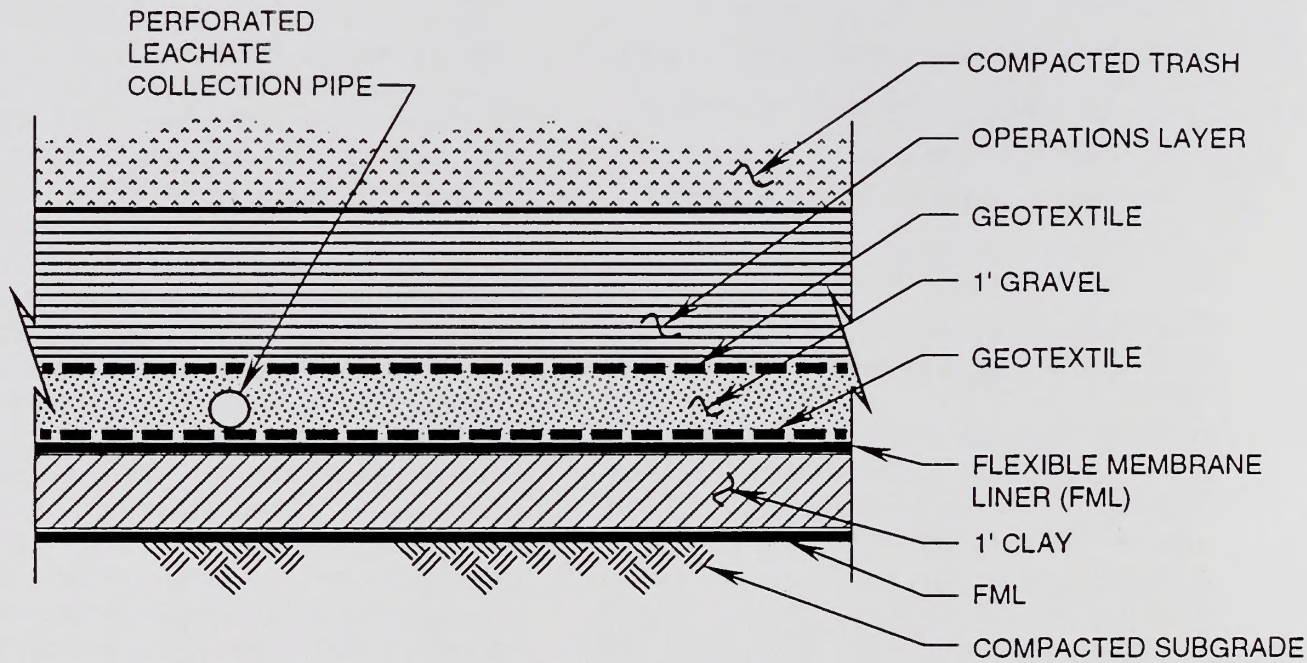


A. EXAMPLE MINIMUM RCRA SUBTITLE "D" LINER AND LEACHATE COLLECTION SYSTEM



B. TRIPLE COMPOSITE LINER PLANNED FOR THE MESQUITE REGIONAL LANDFILL

NOT TO SCALE

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Liner System Design Details

FIGURE **2-17**

in each area to be monitored separately. An independent LCRS would be installed for each segment that would connect to pipes that would extend out of the landfill. When each new segment is constructed, its base liner would be attached to the base liner of the adjoining segments. These joints would be inspected to ensure that they are leachate and gas tight.

The Mesquite Regional Landfill base liner and leachate management system would consist of the following components, starting at the ground level and going up:

- A compacted subgrade prepared with clay or screened soil for liner placement.
- A "triple composite" low-permeability liner that would be highly resistant to gas or liquid penetration. This triple liner would include the following components:
  - a very-low-density polyethylene (VLDPE) FML or equivalent at the bottom. The thickness of this layer would meet or exceed the 30 thousandths of an inch (0.030 inches = 30 mil) required for RCRA Subtitle D double composite systems.
  - a one-foot-thick layer of compacted clay with a very low hydraulic conductivity and a permeability of 10^{-6} centimeters per second (cm/sec).
  - a 60 mil high-density polyethylene (HDPE) FML above the clay;
- A LCRS consisting of a one-foot layer of gravel and perforated leachate collection pipes would be installed above the triple composite liner. The LCRS would provide a free drainage path for any leachate that may form in the landfill, without the potential of creating a high water pressure on the underlying triple composite liner. A 16-ounce geotextile fabric would be provided below the LCRS layer to protect the HDPE from being punctured. An eight-ounce geotextile would be placed above the LCRS to filter any fine particles carried with leachate.;
- A layer of at least two feet of soil (operations layer) to protect the LCRS and triple composite liner from landfill operations.

In addition to providing redundant protection against potential leakage, the FML layers would prevent the loss of moisture from the clay that could result in desiccation cracking over the long-term. In order for a leak to occur through this triple composite system, there would have to be defects in both FMLs and a crack in the clay at approximately the same location.

The proposed liner system would be continuous across the bottom of the entire landfill footprint.

Claystone materials that are suitable for landfill liner construction are being excavated from the Mesquite Mine to reach mineral bearing ore. These claystones were used by the Mesquite Mine to construct a new leach pad in 1992. The material did not need special crushing or screening and was placed using conventional construction equipment. The new pad was found to have a hydraulic conductivity on the order of 10^{-6} to 10^{-7} cm/sec upon completion of construction (i.e., a permeability on the order of one centimeter every 12 to 115 days).

The liner installed in each segment would slope toward the southwest, causing any leachate generated to migrate down-gradient by gravity toward the southwest. Migrating leachate would be collected by the LCRS and conveyed out from under the landfill footprint by gravity.

Any leachate generated within a landfill segment would be collected and piped to a holding tank. Each segment would have its own holding tank. This would allow for measurement and testing of any leachate collected. The frequency of testing and procedures would be specified in the WDO to be issued by the RWQCB. From the holding tanks, the leachate would be hauled by vacuum truck to the proposed water reclamation facility (Section 2.1.14). In the unlikely event of

continuous or frequent leachate flows from any given landfill segment, leachate would be piped directly to the reclaimed water facility. In-line measuring devices would be used if direct piping is implemented.

2.1.6 LANDFILL GAS CONTROL

The long-term decomposition of MSW residue results in the generation of landfill gas (LFG), which consists primarily of methane, carbon dioxide and trace amounts of volatile organic constituents. The magnitude and rate of LFG generated per pound of waste would be comparatively small for the Mesquite Regional Landfill because a portion of the biodegradable organic materials (e.g., recyclable paper, cardboard and green wastes) would have been removed, and the remaining waste residue arriving at the landfill would be drier than usual because of the typically arid conditions in Southern California. The natural moisture conditions and organic content of the remaining MSW residue, such as those associated with food wastes, would be adequate to result in some long-term waste degradation and would be expected to cause substantial LFG generation.

The proposed landfill design, including the base liner system, includes provisions to collect the majority of the LFG generated by the proposed landfill in order to avoid development of explosive air and methane mixtures, and to avoid transport of trace organics to the atmosphere and ground water. Primary components of the proposed LFG control system are illustrated in Figures 2-18 and 2-19. The LFG control system would consist of gravel-filled horizontal collector trenches, with perforated pipes, installed at approximately 50-foot vertical and 250-foot horizontal spacings, starting 20 feet above the base liner system. Each perforated pipe would be connected to a vacuum header pipe located outside of the proposed landfill. The resulting vacuum would be applied throughout the proposed landfill and would collect and transport generated LFG to a flare or to a future energy recovery system for destruction. The location of the proposed flare station and future energy recovery system is shown in Figure 2-8.

The Applicant proposes to monitor for LFG in two ways. Subsurface monitoring would be conducted by using a series of gas monitoring probes installed underneath each landfill segment (see Figure 2-20 and discussion in Section 2.1.7.2) and along the perimeter boundary of the landfill. Direct reading instruments would be used to determine if methane concentrations exist in the gas sample. On a regular schedule, gas samples would be sent to a laboratory for detailed analysis as required by the authorizing actions (permits).

Surface emission monitoring would be conducted to determine and quantify the concentration and rate of surface emissions (if any). Concentrations of methane gas at the landfill surface would be measured, using direct reading instruments. Both the surface and subsurface measurements would be used by the Applicant to adjust the LFG control system to maintain gas emissions within permitted levels. The schedule for LFG monitoring would be arranged to meet or exceed the requirements established by the authorizing actions.

Collection system trenches would be installed by excavating through the daily or intermediate cover at the top of each fifth, approximately 10-foot high, cell (except that the first trench would be constructed after the second 10-foot high cell). The gravel in the trench would be separated from the compacted wastes by a geotextile filter membrane. A perforated pipe made of flexible plastic tubing or articulated sections of different diameter pipe would be installed in the trenches to allow the system to conform to landfill settlements without damage to the collection system. The trench would also be covered with a geotextile membrane. Vacuum header pipes on the landfill perimeter would be located along horizontal access benches in the slope, at approximately 50-foot vertical intervals.

2.1.6.1 LFG Generation Enhancement Pilot Program

The Applicant proposes to begin an LFG generation enhancement pilot program at the proposed Mesquite Regional Landfill after the

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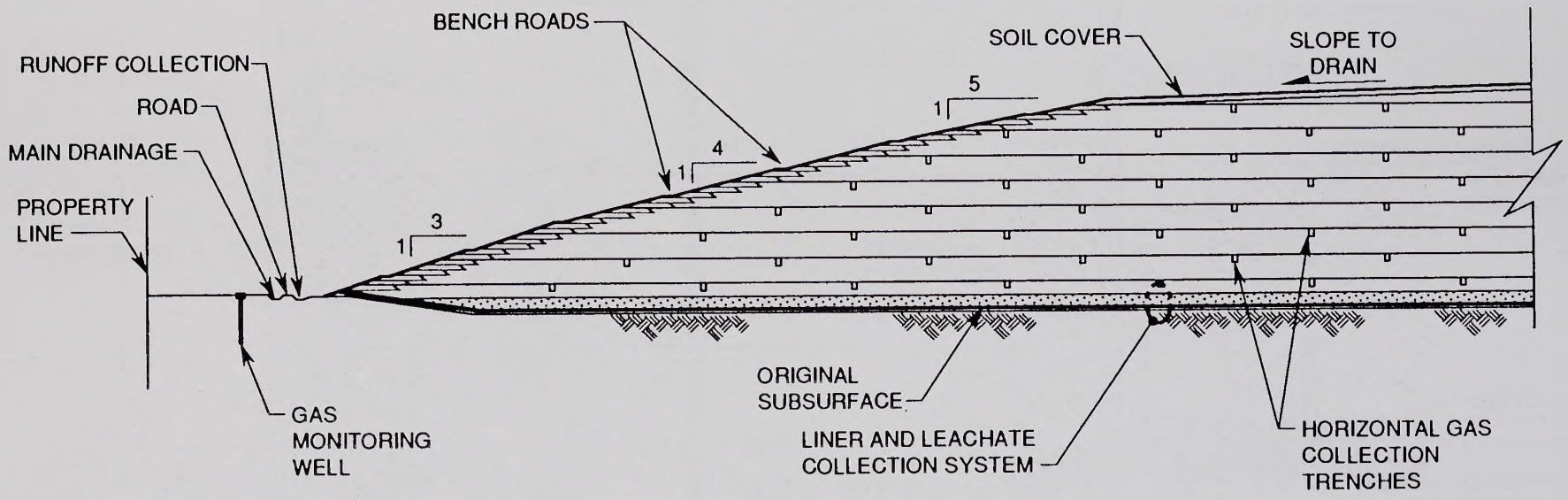
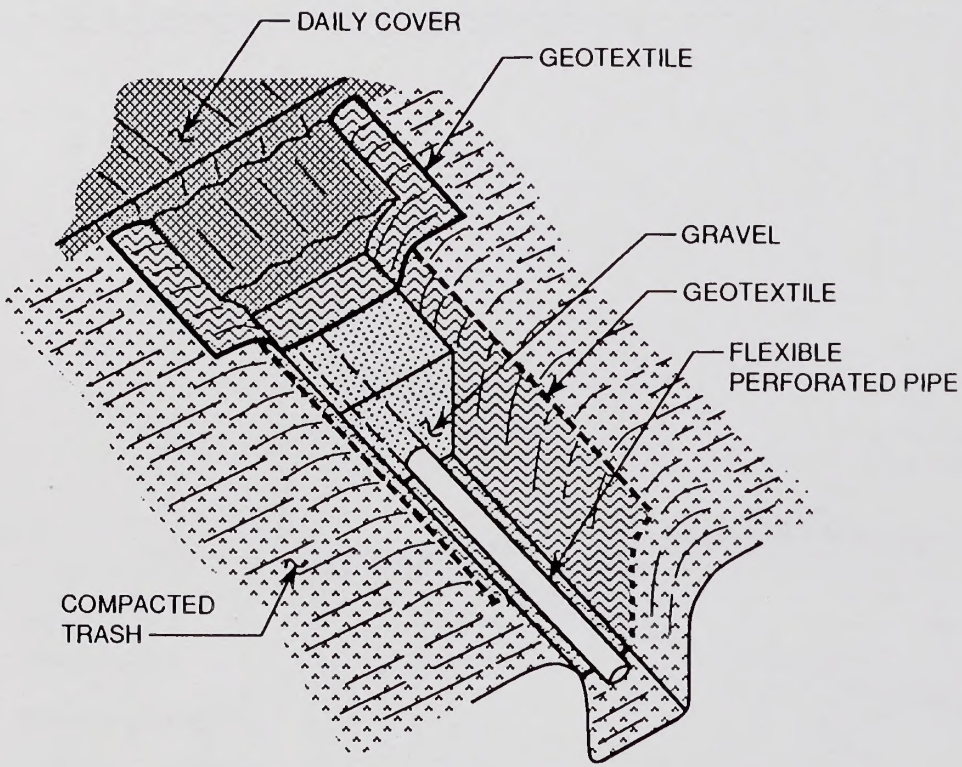


SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Example Landfill Cross Section With Collection Grid

FIGURE **2-18**



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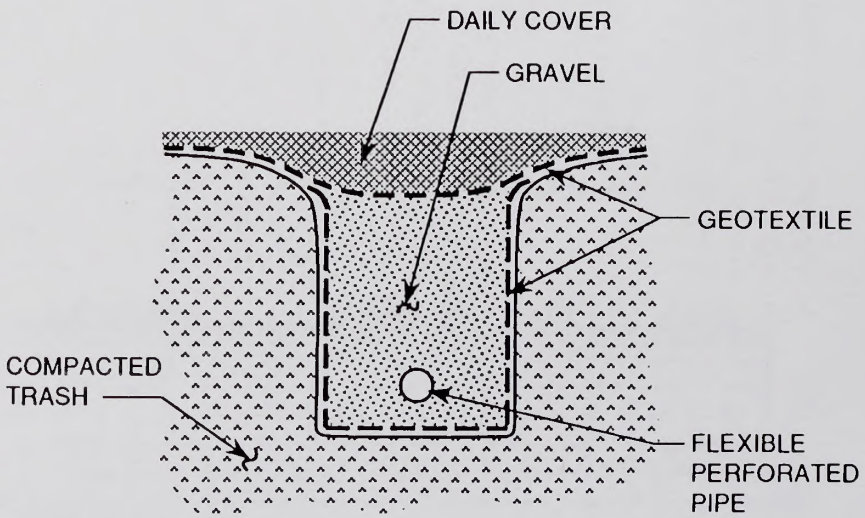


CROSS SECTION

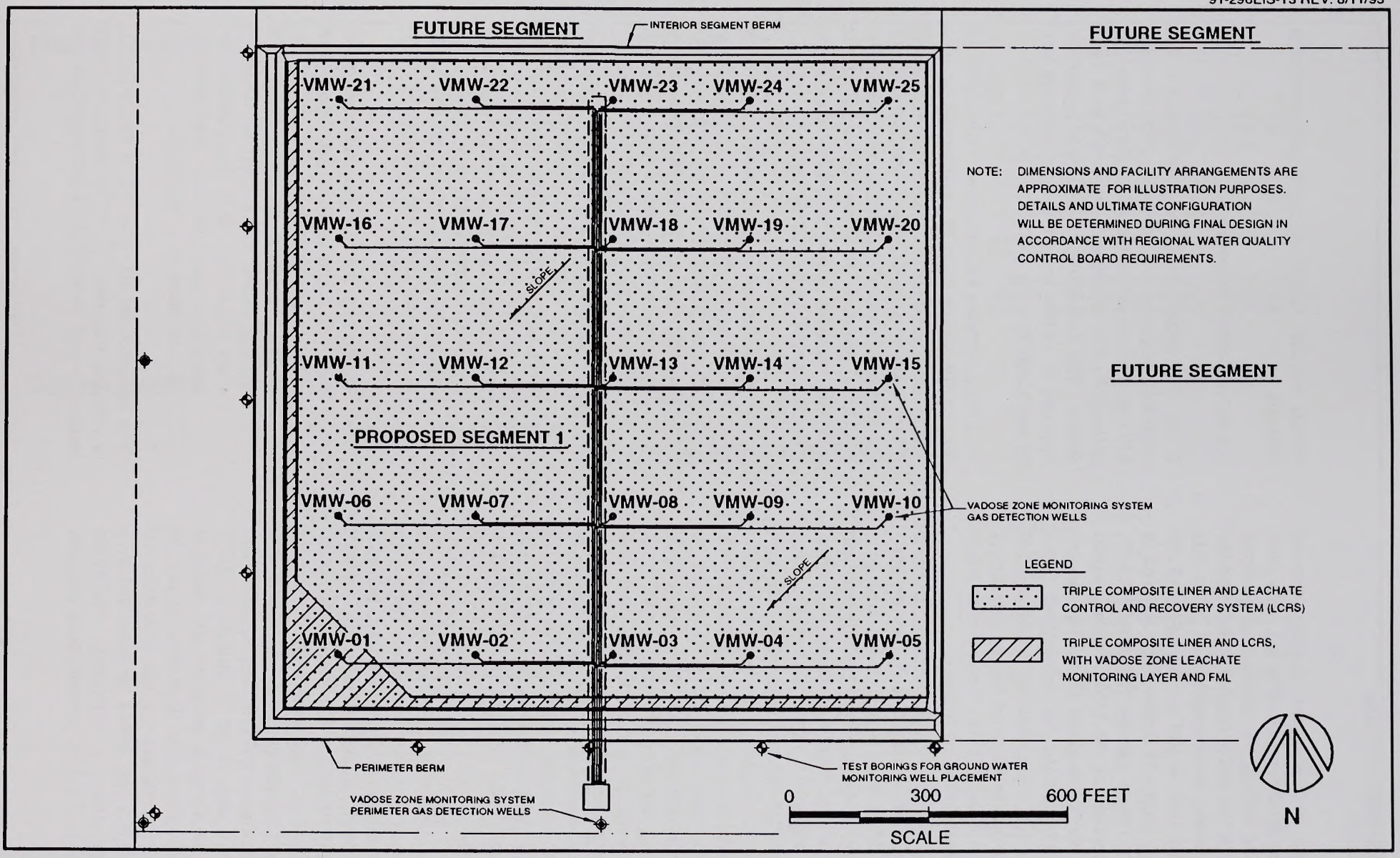
SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Horizontal Collection System Components

FIGURE

2-19



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Liner System with Vadose Zone Gas Monitoring and Ground Water Monitoring Components

FIGURE **2-20**

landfill begins operation and baseline leachate and LFG generation data are collected. The pilot program would include the addition of nutrients and moisture to the MSW residue to increase the rate of anaerobic decomposition. It is this decomposition that would create LFG. LFG created by the proposed landfill may be used in the future to create energy (Section 2.1.6.2). This "conditioning" of the MSW residue would occur at the landfill working face. The amount of conditioning would be determined from laboratory bench scale tests to optimize LFG generation for the purpose of energy creation at a future on-site energy recovery plant, while minimizing the creation of leachate.

The proposed LFG enhancement pilot program would be conducted in a designated area of a single segment of the proposed landfill provided with a special secondary leachate collection system. The segment with the LFG enhancement program would be located adjacent to the first landfill segment. Figure 2-21 shows the LCRS and liner system configuration to be used for the pilot program. Leachate and LFG would be monitored throughout the program. Air emissions from the pilot program would be in compliance with permitted levels, and any leachate would be collected and applied to increase moisture content of the MSW residue in the pilot LFG generation enhancement program or treated at the proposed water reclamation facility as provided by the WDO (Section 2.1.14).

Based on the results of the pilot program, the Applicant may request permits from the appropriate agencies (Imperial County, Imperial County Air Pollution Control District (ICAPCD), RWQCB, and CIWMB) to implement a full-scale LFG generation enhancement program throughout appropriately lined, controlled, and monitored portions of the proposed landfill. The environmental effects of a full-scale LFG generation enhancement program are analyzed generally throughout this document, based on engineering expectations of the quantities of leachate and LFG that would be generated by a full-scale program. However, full-scale implementation of a LFG enhancement program would require future, focused environmental analysis.

2.1.6.2 Energy Recovery

It is anticipated that initially, when LFG collection rates are low, including LFG from the LFG generation enhancement pilot program, the collected LFG would be destroyed at a flare station. The flare station would be designed and operated to satisfy emission criteria established by the ICAPCD.

As LFG generation rates increase with growth of the landfill and/or through implementation of a full-scale LFG generation enhancement program, it may become economical to utilize the methane for on-site or commercial energy recovery. The Applicant proposes that one or more of the following methods would be implemented at the proposed landfill in the future:

- A gas turbine or boiler based power plant to generate electricity for the facility. Excess power could be fed into the existing system through the transmission line, which currently provides electricity to the Mesquite Mine, and sold.
- A compressed methane gas plant to develop commercial quality methane from LFG. This methane would then be piped to an existing natural gas transmission line located near Niland in a potential future gas pipeline that may be constructed within the new rail spur right-of-way and along the existing SP Main Line (Figure 2-22).
- A plant to convert the methane gas in LFG into liquid methane gas, a portion of which could potentially be used for on-site fuel requirements. Fuel not used at the site would be transported off-site by truck or rail car. It is also possible that other fuels could be made from methane, such as diesel oil or methanol.

Over the proposed 100-year life of the project, it is possible that each of these energy recovery methods would be utilized by the Applicant and

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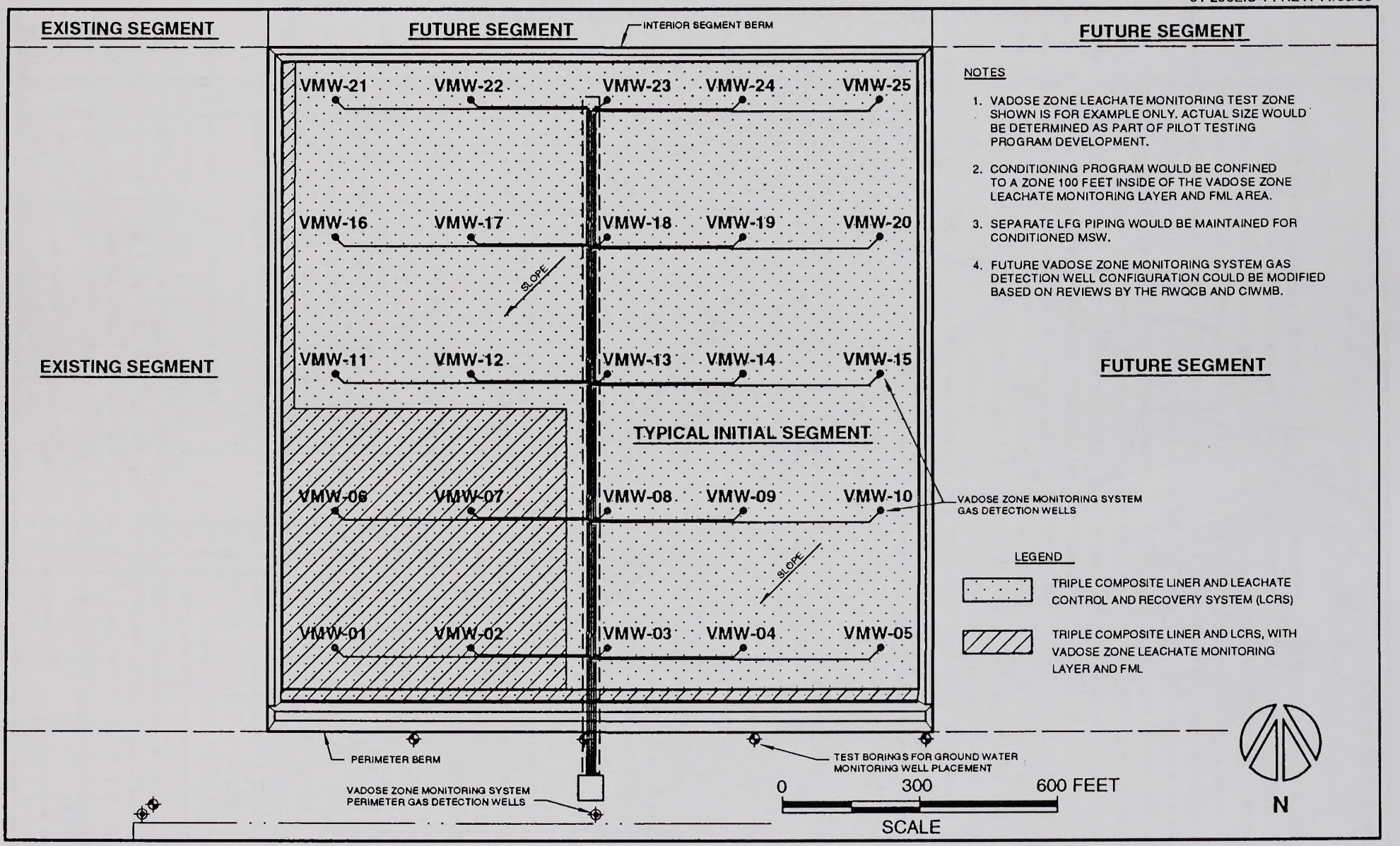
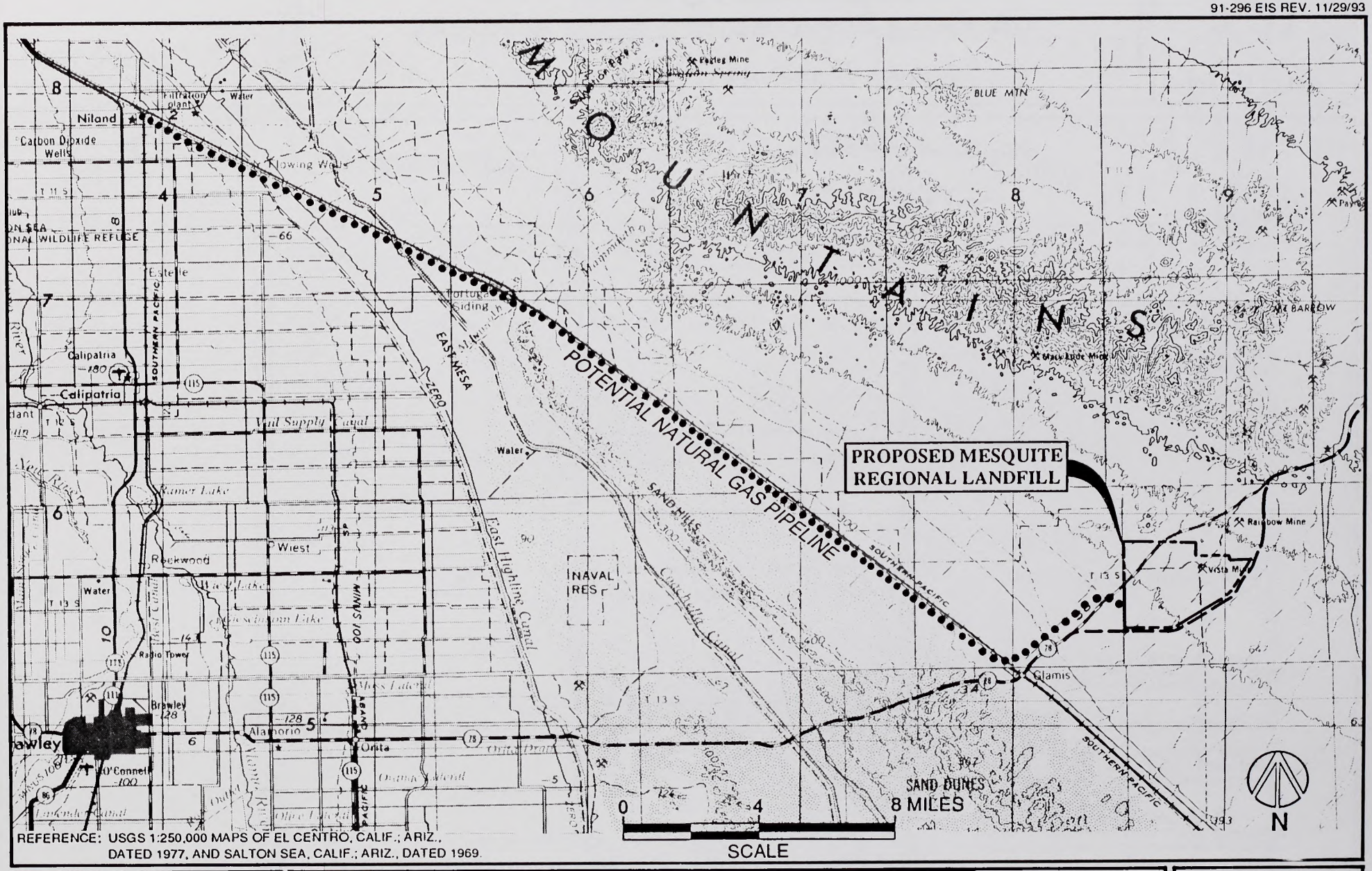


SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Example MSW Conditioning Program Liner Configuration

FIGURE **2-21**



REFERENCE: USGS 1:250,000 MAPS OF EL CENTRO, CALIF.; ARIZ., DATED 1977, AND SALTON SEA, CALIF.; ARIZ., DATED 1969.

SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Arrangement of Potential Compressed Natural Gas Pipeline to Niland

FIGURE

2-22

that more than one may be in operation at the same time. Therefore, the environmental effects of each of these energy recovery methods are described generally in Chapter 4.0 of this EIS/EIR. These descriptions are based on existing technology (i.e., the proposed energy recovery is feasible given today's technology and would produce the general environmental effects described in Chapter 4.0). Prior to implementing any of the anticipated energy recovery methods, the Applicant would have to apply for specific permits (e.g., building permit from Imperial County and Authority to Construct/Permit to Operate from the ICAPCD). Future focused environmental review of energy recovery facilities at the proposed Mesquite Regional Landfill may be required by agencies issuing these future permits.

Figure 2-23 shows a schematic diagram of the gas turbine power plant. If employed, the LFG-fueled turbine engine would use the methane contained in LFG as fuel and would turn an electric generator to provide power for the landfill facility. Electricity generated in excess of landfill needs could be sold, based on market conditions, and transferred through the on-site extension of the Imperial Irrigation District (IID) power line. Emissions from a gas turbine, primarily oxides of nitrogen (NO_X) and carbon monoxide (CO), would be controlled through the use of standard stationary source reduction devices (e.g., catalytic converters, scrubbers, etc., as appropriate) approved by the ICAPCD.

Figure 2-24 shows a schematic diagram of a LFG-fueled, boiler-based power plant. A boiler-based power plant could be used to create high-pressure steam to operate a steam-driven electric generator to provide power for on-site operations or commercial sales. Emissions from the boiler furnace would be controlled in accordance with ICAPCD emissions criteria for industrial boilers.

Figure 2-25 shows a schematic diagram of a compressed methane gas plant. Creation of pipeline-quality methane (natural gas) would involve compression of LFG and washing the compressed gas with solvents to remove impurities and carbon dioxide. The cleansing procedure would occur in a closed system with impurities removed by a nontoxic solvent. If implemented today, the nontoxic cleansing solvent likely would be selexol, a polyethylene glycol derivative. The cleansing solvent would be collected and aerated, which would remove the LFG impurities and allow the solvent to be reused. The air used for removal of impurities would be incinerated. Incinerator emissions would be controlled with stationary source reduction devices (e.g., catalytic converters, scrubbers, etc., as appropriate) as approved by the ICAPCD. The solvent would occasionally be removed and replaced with fresh volumes to maintain efficient cleansing of the LFG. Removed solvent would be stored in tanks on-site and periodically transferred off-site by truck and disposed or recycled at an appropriate facility.

Figure 2-26 shows a schematic diagram for a liquefied methane gas plant. Creation of liquefied methane gas would only occur if large quantities of LFG were generated by the landfill. The LFG would be converted to methane through the process described above. The methane would then be compressed and cooled and allowed to expand in a manner that produces liquid methane. This process would involve a series of high-pressure tanks and compressors. Emissions from the liquefied methane gas plant would be similar to those from the commercial methane production described above and would be controlled in the same manner. Additional emissions that would be unique to liquefied methane gas production procedures (e.g., from liquefied methane gas production compressors) would be controlled in accordance with ICAPCD performance criteria. The plant itself would be designed according to federal specifications. The liquefied methane gas would be stored in double-walled, high-pressure gas storage cylinders designed according to specifications contained in Title 49 Code of Federal Regulations (CFR), Subchapter C, Hazardous Materials Regulations. Off-site transfer of this commodity would also occur according to procedures established by 49 CFR. If train transfer of the liquefied methane gas occurs, a second track within the ROW of the rail spur would be constructed to allow liquefied methane

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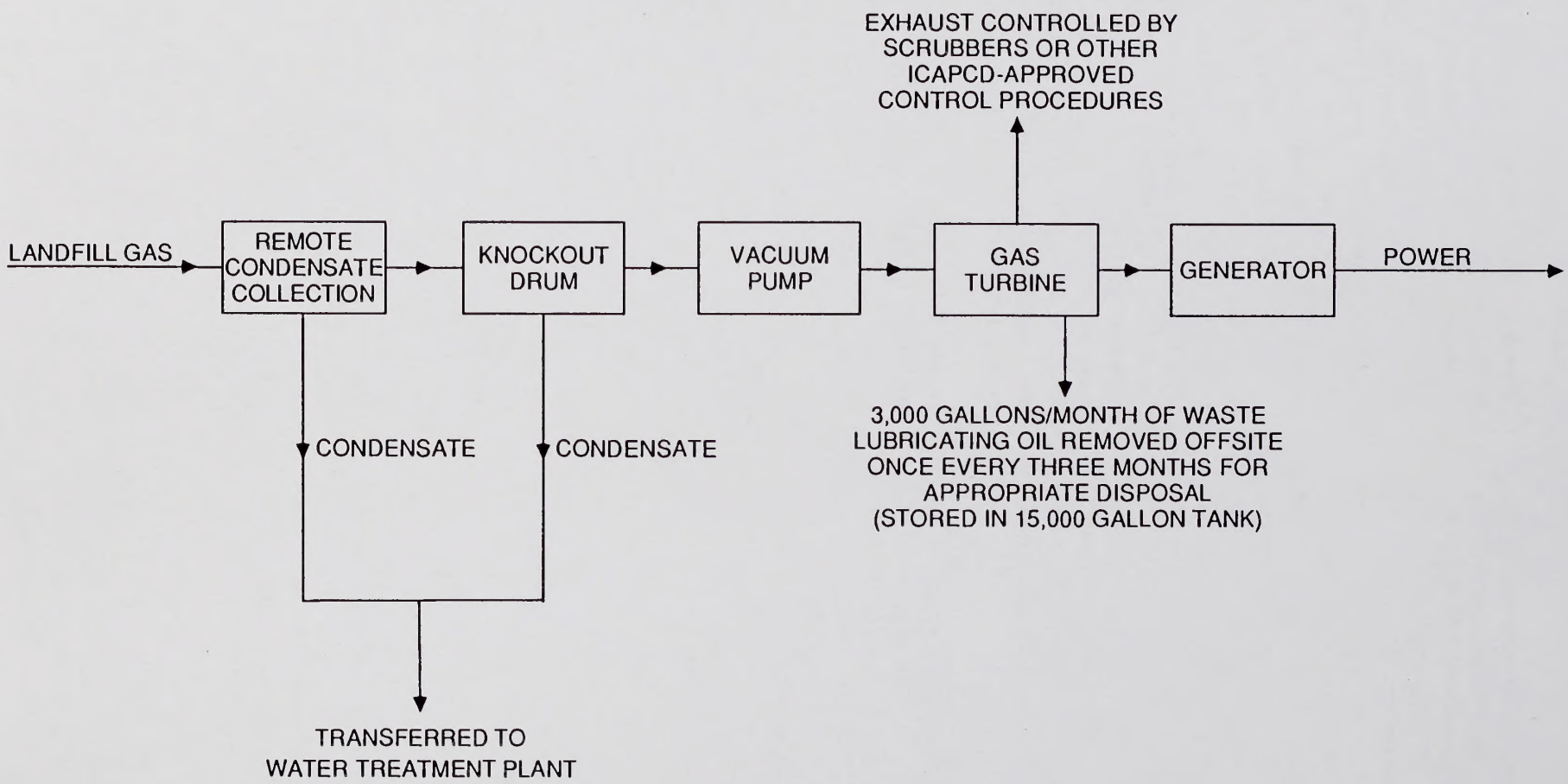
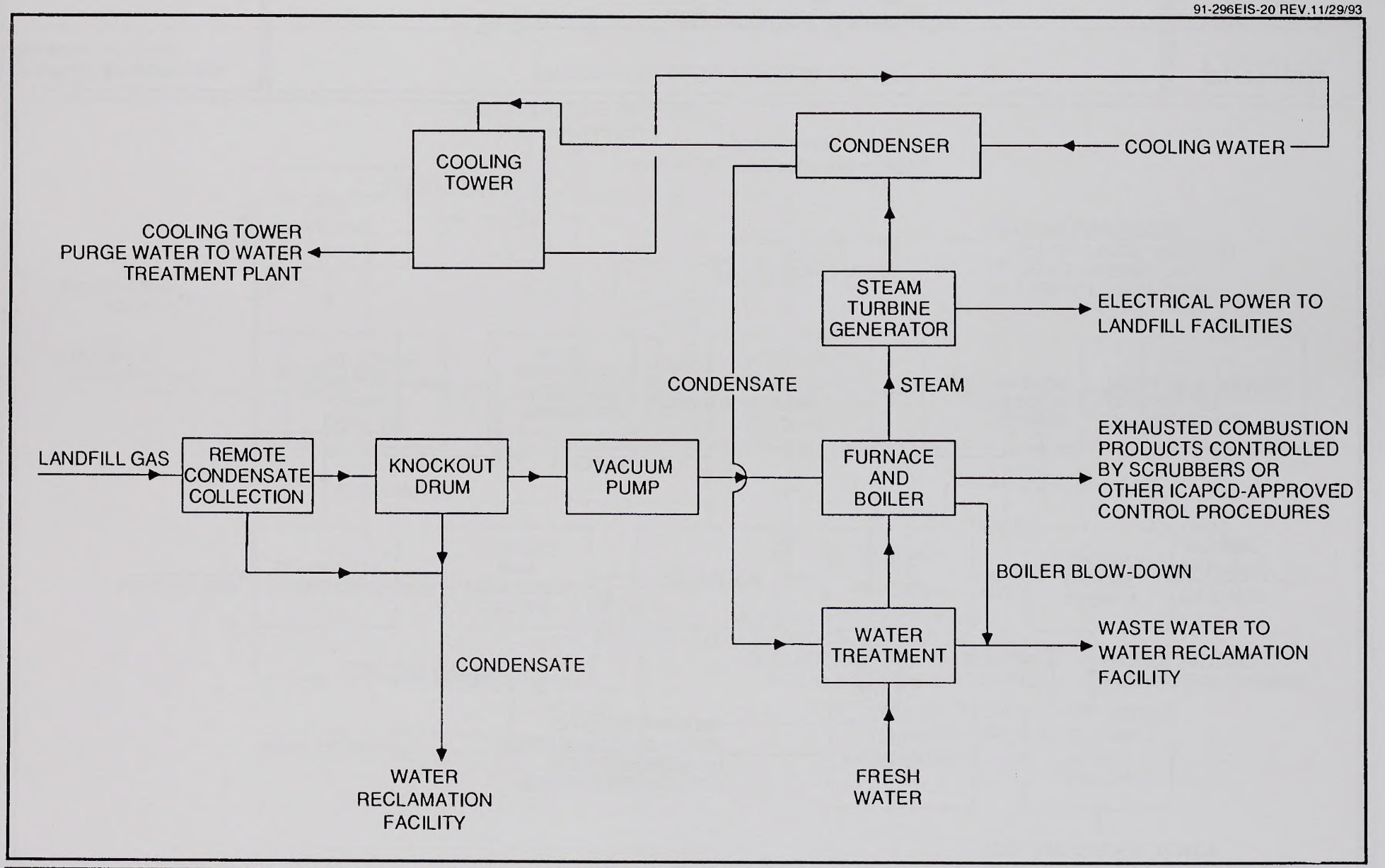


SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Schematic Diagram for Example Gas Turbine Power Plant

FIGURE **2-23**



SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Schematic Diagram for Example Boiler and Power Plant

FIGURE **2-24**

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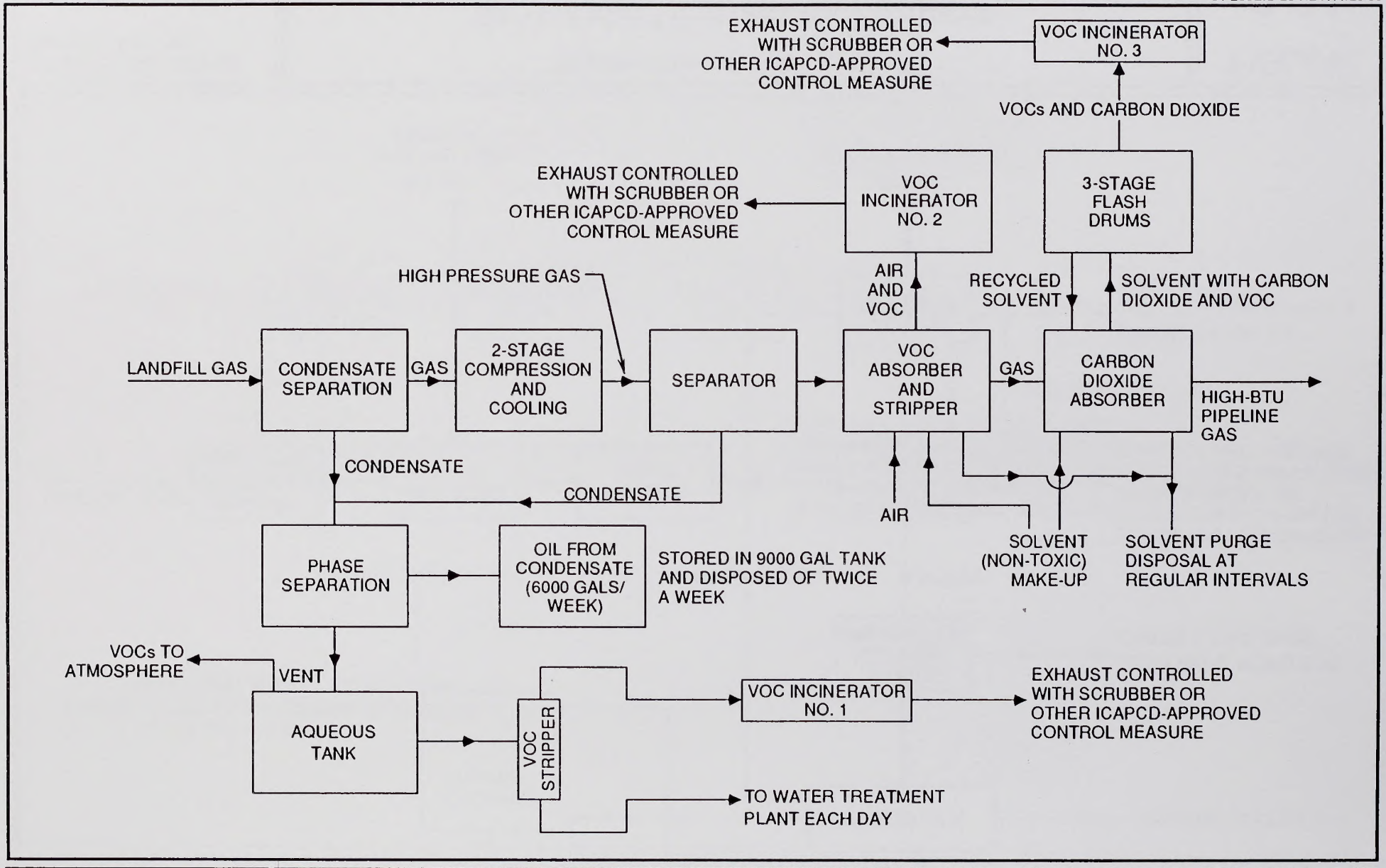
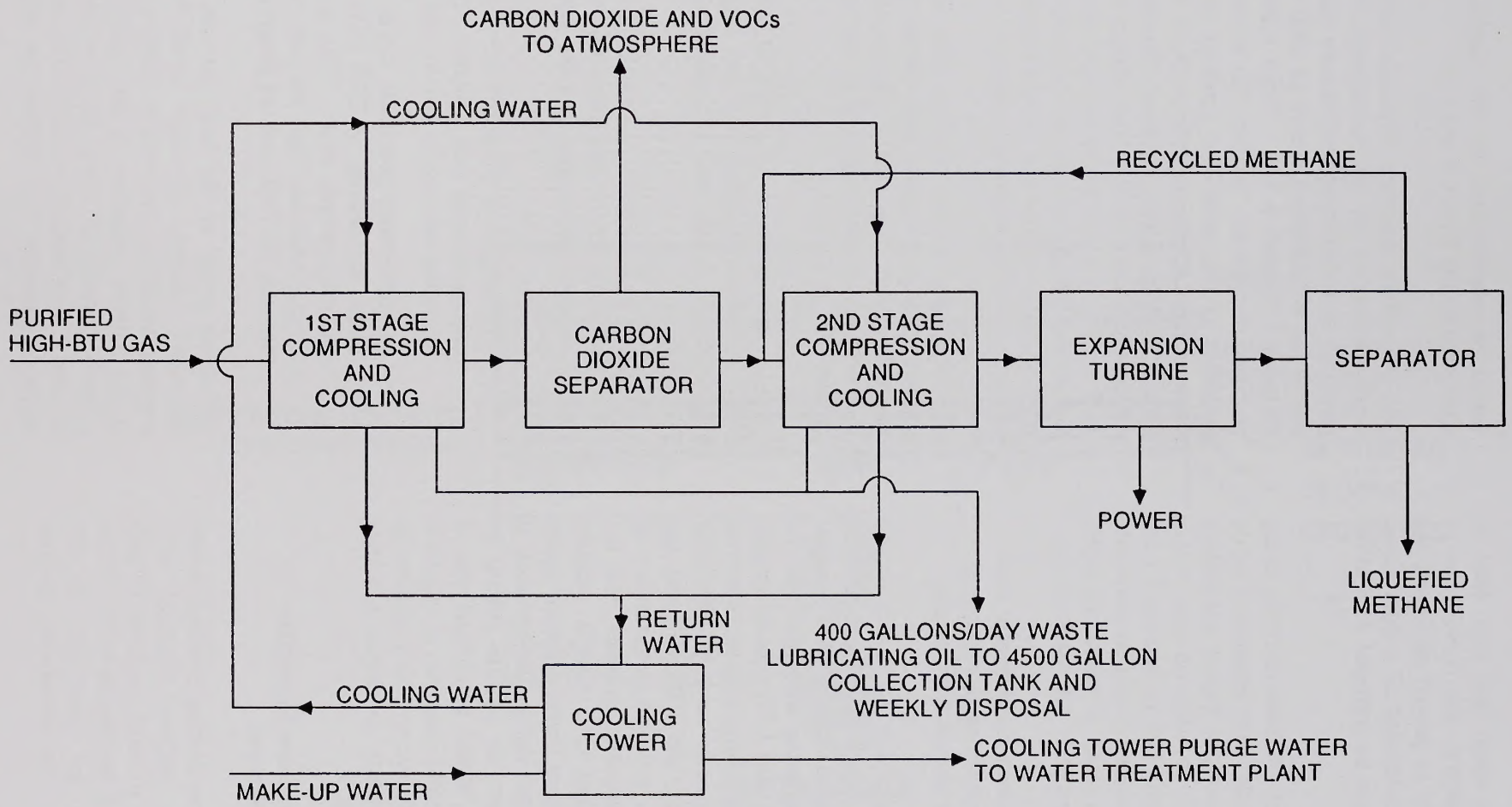


SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Schematic Diagram for Example Compressed Methane Gas Plant

FIGURE 2-25



SOURCE: Environmental Solutions, Inc., 1993.

Proposed Mesquite Regional Landfill

Schematic Diagram for Example Liquefied Methane Gas Plant

FIGURE 2-26

gas tanker cars (the same rail cars used to transport liquefied natural gas (LNG)) to be stored while waiting to be picked up for off-site delivery by regularly scheduled SP freight trains. The tank cars would not be included with MSW transfer trains.

Implementation of each of these facilities in the future likely would result in the creation of liquid condensate. Non-hazardous liquid condensate would be conveyed to the on-site water reclamation facility described in Section 2.1.14. Hazardous liquid condensate would be stored on-site in an aboveground tank. If stored, the liquid condensate would be properly disposed off-site.

2.1.7 Proposed Leachate and Landfill Gas Subsurface Monitoring Systems and Potential Leak Response Strategies

Because of the large size of the proposed Mesquite Regional Landfill, as compared with existing Class III landfills, the RWQCB would require extensive monitoring to assure that the liner, leachate control and LFG control system (Section 2.1.6) are functioning at least as well as anticipated. During each required five-year review of the project, the RWQCB and the Applicant would both evaluate performance of the control and monitoring systems and the amount of leachate and LFG that is actually being generated. At those times, a determination would be made by the applicable agencies if portions of the monitoring system should be modified to suit the actual conditions and if subsequent environmental analysis is required. Any decision to modify the proposed monitoring system would be subject to public hearings required for permitting.

2.1.7.1 Proposed Leachate Subsurface Monitoring Systems

The initial leachate monitoring systems would include a secondary leachate drainage layer beneath key portions of each segment (Figure 2-27) and ground water monitoring wells. These monitoring systems are described in the following paragraphs. The monitoring systems would be implemented by the Applicant and monitored by the RWQCB and LEA.

The secondary leachate drainage monitoring layer, underlain by an additional FML, is proposed at the southern and western boundaries and at the southwestern corner of each segment (Figures 2-20 and 2-27). These features are proposed because any leachate that would not be collected in the perforated leachate collection pipes in the LCRS would flow above the liner toward the southern and western boundaries and the southwestern corner of the landfill segment. This condition would result in these boundaries and corners being the only locations where flow from anywhere within the segment might occur above the liner for extended periods.

The secondary leachate drainage layer would be monitored for any seepage flow through the liner in these special areas, and would consist of the following components, again from the bottom to the top (Figure 2-27):

- a bottom 30-mil VLDPE FML to prevent downward seepage of any liquid that might reach the secondary drainage layer;
- an eight-ounce geotextile fabric to provide increased friction strength between the geogrid and the underlying FML;
- a free-draining geogrid (i.e., a synthetic porous material that is highly permeable to liquids and easy to install); and,
- an eight-ounce geotextile fabric directly under the bottom VLDPE FML in the triple composite liner. This geotextile would increase the friction strength between the FML and the geogrid.

Collection pipes at the low portions of the secondary leachate drainage layer for each segment would be connected to pipes extending to the outside boundary of the landfill. The primary purpose of these pipes would be to monitor if any leachate occurs in the secondary monitoring system. Any leachate that may occur

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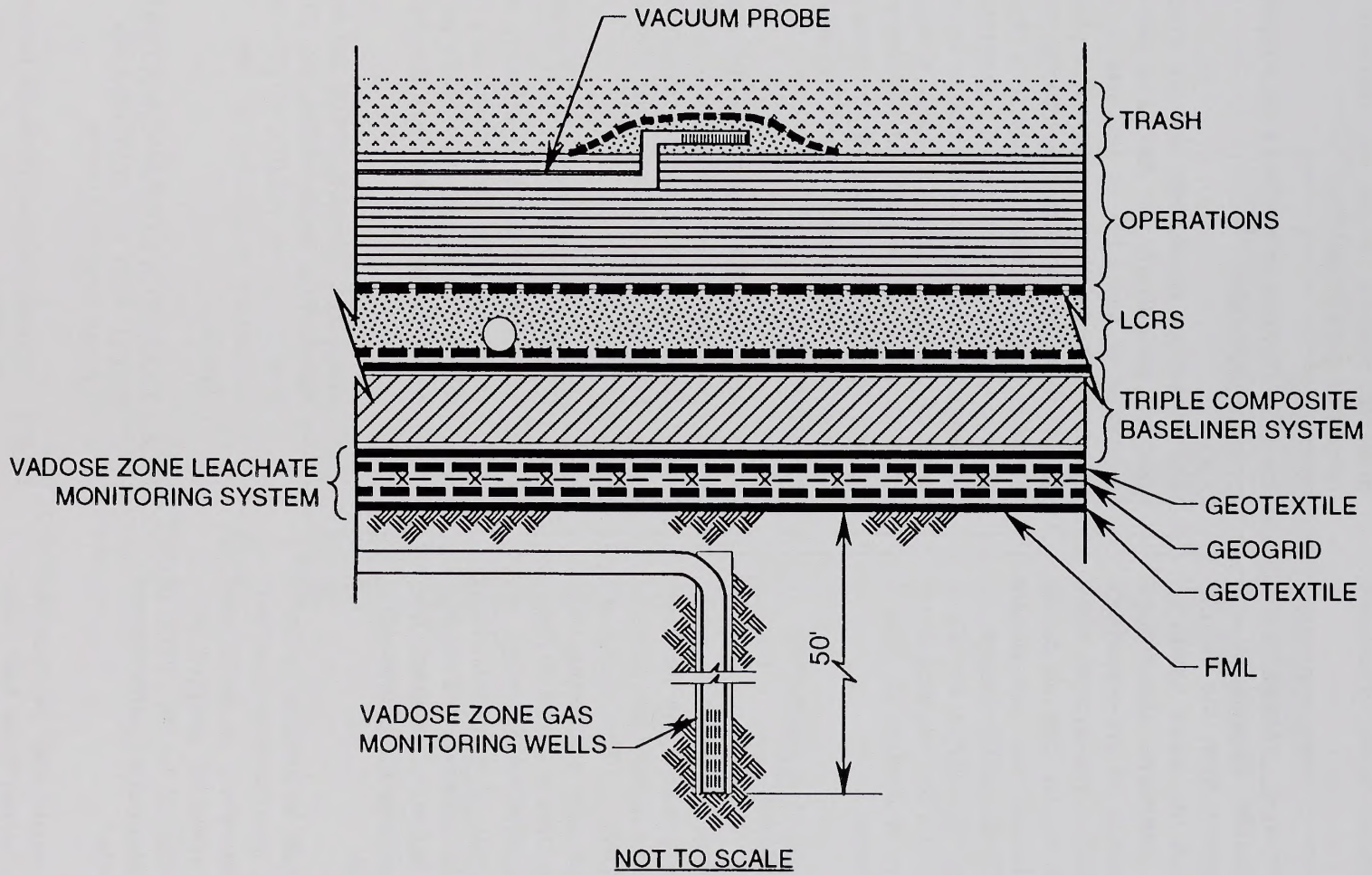

NOT TO SCALE

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Proposed Gas Pressure and Vadose Zone Monitoring Systems

FIGURE

2-27

at these locations would be collected and transported to the proposed water reclamation facility.

For additional protection, ground water monitoring wells located upgradient and immediately downgradient from the landfill would be sampled, and the water would be analyzed for a list of constituents identified by the RWQCB. The results of pre-operational analyses would establish a background water quality benchmark. At regular intervals during landfill operations, closure, and post-closure maintenance, these wells would be sampled for the list of contaminants required in the WDO. The sampling results would be compared to the benchmark to determine if leachate or LFG is contaminating ground water.

2.1.7.2 Proposed Landfill Gas Subsurface Monitoring Systems

A vadose zone monitoring well system would be installed to provide early warning in the event that LFG or leachate have escaped the proposed base liner and LCRS. The proposed configuration of vadose zone monitoring wells for a typical landfill segment is shown in Figure 2-20. The vadose zone monitoring system for each segment would consist of approximately 25 vertical monitoring wells, extending to a depth of approximately 50 feet below the proposed liner system. A typical vadose zone monitoring well is presented in Figure 2-28.

Perimeter gas wells would be installed to detect LFG or leachate escape from the triple-composite liner system. The atmosphere in and around each of these wells would be sampled on a regular schedule established in the WDO to assure that landfill environmental control systems are performing effectively.

Gas-pressure sensors would also be provided above the triple-composite liner at the base of the landfill to allow monitoring of the pressure gradient in this area. This monitoring would be used to assure that the gas pressure above the liner was maintained below atmospheric pressure so that there would not be a driving force that causes LFG to migrate downward. Four gas pressure sensors would be installed and monitored at least quarterly.

2.1.7.3 Potential Subsurface Leak Response Strategies

The subsurface monitoring systems would be sampled periodically as described above to determine if any LFG or leachate is being released from the liner system. If a collected sample from the subsurface monitoring systems indicates that a potential release from the liner system exists, a detailed program of investigations would be conducted to locate the area of release. Once located, a response program would be devised and implemented to correct the problem. A response program based on current technology could include the following:

- adjusting the vacuum in the landfill, provided by the existing or an expanded LFG collection system described in Section 2.1.6, to reverse the flow of the leak;
- placing a vacuum on the LCRS system;
- installing additional directionally drilled wells under the liner in the area of the release to increase atmospheric pressure below the liner to stabilize the problem; or,
- installing a low-permeability soil layer at intermediate levels within the affected portion of the landfill to prevent the downward migration of any future liquids.

2.1.8 TRANSFER STATIONS/MATERIAL RECOVERY FACILITIES AND AB 939 COMPLIANCE

2.1.8.1 Transfer Stations/Material Recovery Facilities

Transfer stations/material recovery facilities (MRFs) provide for the removal of recyclables and hazardous materials in the waste stream and

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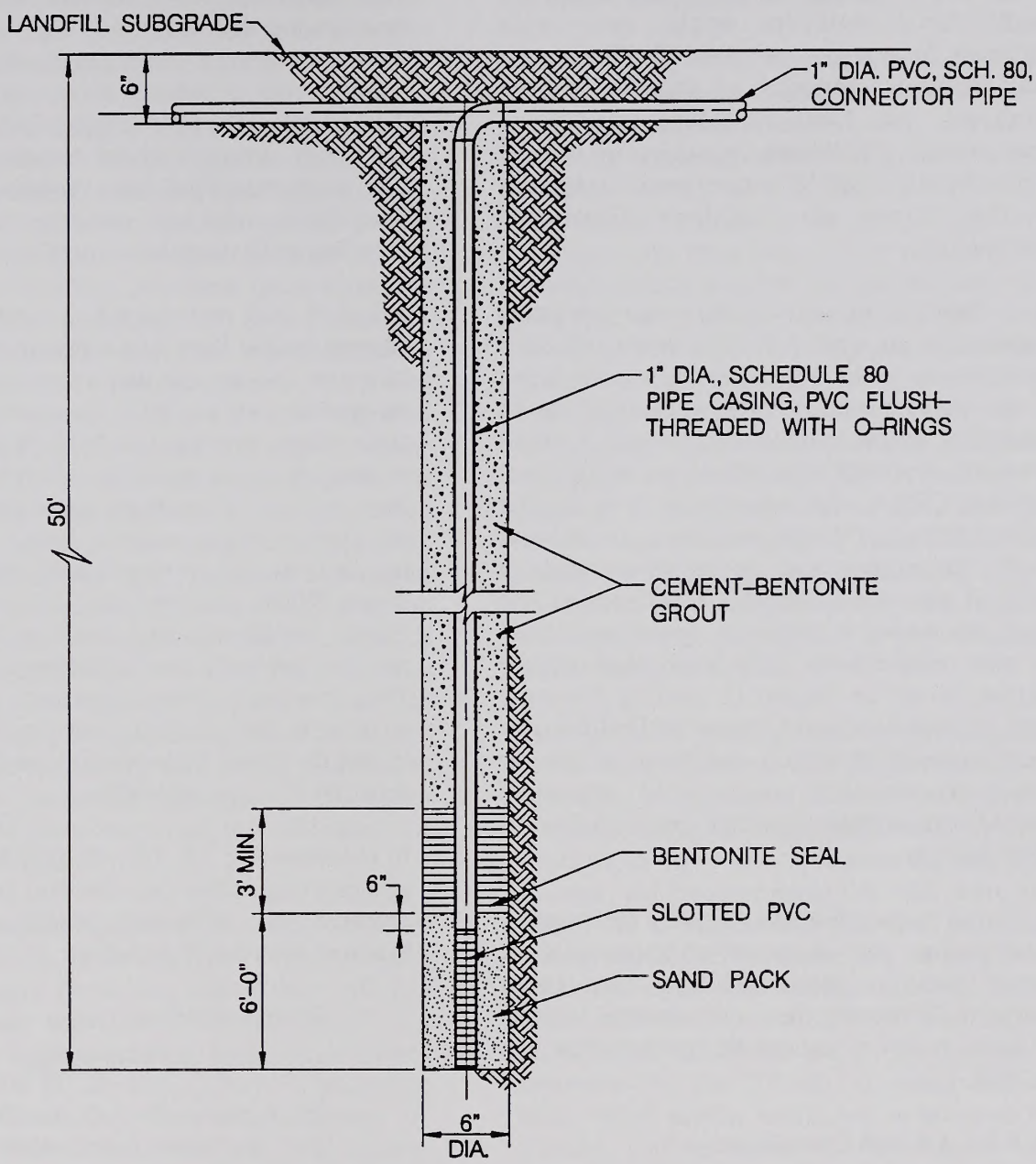

SECTION

TYPICAL VADOSE ZONE GAS MONITORING WELL

NOT TO SCALE

NOTE: Design details subject to review and final approval by the California Regional Quality Control Board.

SOURCE: Environmental Solutions, Inc.,1992.

Proposed Mesquite Regional Landfill

Typical Vadose Zone Gas Monitoring Well

FIGURE

2-28

for the consolidation of the smaller MSW loads which arrive at the transfer station/MRF in neighborhood collection trucks, into larger containers for transport to a landfill. The current total permitted capacity of transfer stations operating in Los Angeles County is approximately 20,000 tpd. An unknown number of transfer stations/MRFs are expected to be built in the future by Southern California communities.

These facilities are used by the waste-generating communities to meet AB 939's waste-reduction requirements. The size, location, and operation of any transfer station/MRF would have to be determined by the community in which it would be located, in compliance with all applicable laws, including CEQA. For a typical to large transfer station/MRF of 3,000 tpd capacity, a site of about 10 to 30 acres would be necessary and an enclosed structure of about 100,000 square feet would be needed to house the operation. Given the size requirements, it is likely that transfer stations would be located in existing industrial areas. A typical transfer station/MRF of this size would generate about 120 containers per day, or enough to load 120 trucks or 12 articulated railroad cars, slightly less than one train load of MSW residue.

Because it is not possible to identify the location, construction, and operation characteristics of future transfer stations/MRFs throughout Southern California, the environmental impacts of these facilities cannot be predicted in this EIS/EIR.

2.1.8.2 AB 939 Compliance

Questions were raised at the Mesquite Regional Landfill Project Public Scoping Meetings regarding how the proposed regional landfill would comply with AB 939. The Applicant proposes to make the MSW residue disposal capacity planned for the proposed Mesquite Regional Landfill available to public agencies throughout Southern California as they develop solid waste management plans to satisfy their AB 939 and future solid waste regulation responsibilities. The proposed landfill would support the goals of AB 939, as amended, by only accepting waste from communities that can demonstrate that their reduction and recycling activities are in accordance with AB 939 requirements or subject to an exemption from the CIWMB. The following discussion provides a very brief overview of the requirements of AB 939 and describes the responsibilities for compliance with the source reduction and recycling goals established by this law.

AB 939 and subsequent amendments were enacted by the State of California to provide an effective and coordinated approach to the safe management of all MSW generated within the state. To accomplish this, AB 939 authorizes and requires local agencies, as subdivisions of the state, to make adequate provision for solid waste handling, both within their respective jurisdictions and in response to regional needs. The CIWMB oversees and enforces AB 939. Private landfill operators, such as the Applicant, are not responsible for the implementation of AB 939; however, these operators should not implement their projects such that their projects inhibit the ability of local agencies from meeting their AB 939 responsibilities.

In implementing AB 939, the CIWMB and local agencies (e.g., cities and counties) are required to promote the following waste management practices in order of priority:

- Source reduction
- Recycling and composting
- Environmentally safe transformation and environmentally safe land disposal, at the discretion of the city or county

To encourage these priorities, AB 939 requires cities and counties to reduce the landfilled volume of their yearly MSW stream 25 percent by the year 1995 and 50 percent by the year 2000. Cities and counties are required to develop and submit solid waste management plans to the CIWMB that, among other things, indicate how the waste stream reduction goals will be accomplished in each jurisdiction. Subsequent yearly reports are required to

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indicate ongoing waste management activities and to demonstrate continued compliance. Penalties for non-compliance can be imposed on the cities and counties by the CIWMB.

Each city's or county's solid waste management plan is required to contain specific descriptions of source reduction activities, recycling activities, composting activities, education and public information activities designed to promote AB 939 goals, funding activities, provisions for special waste handling, and provisions for separate household hazardous waste collection and disposal. The waste management plan is also required to provide a projection of long-term landfill capacity (15 years) to accommodate MSW generated within the originating city or county after implementation of its source reduction, recycling and composting programs. AB 939 allows long-term landfilling capacity to be based on facilities located within the originating city or county, or based on capacity provided by agreement with a facility in another jurisdiction. The Applicant proposes to make the planned long-term landfilling capacity at the proposed Mesquite Regional Landfill available to cities and counties throughout Southern California in accordance with this allowance for regional facilities.

Source reduction and local recycling activities are expected to be an important factor for each city or county in accomplishing their AB 939 waste-stream reduction responsibilities. To accomplish these reductions, each city or county is responsible for developing ways to encourage source reduction and recycling activities by businesses and homeowners. Typical source-reduction activities include: reducing the use of nonrecyclable materials; replacing disposable products with reusable products; reducing the amount of packaging used for products; reducing yard waste; and increasing the efficiency of the use of paper, cardboard, glass, metal and other materials. Typical local recycling activities include school paper drives, public or private buy-back centers, and recyclables drop offs. Through these activities, cities and counties plan to perform a substantial portion of their AB 939 reductions before MSW is placed at curbside for pick-up.

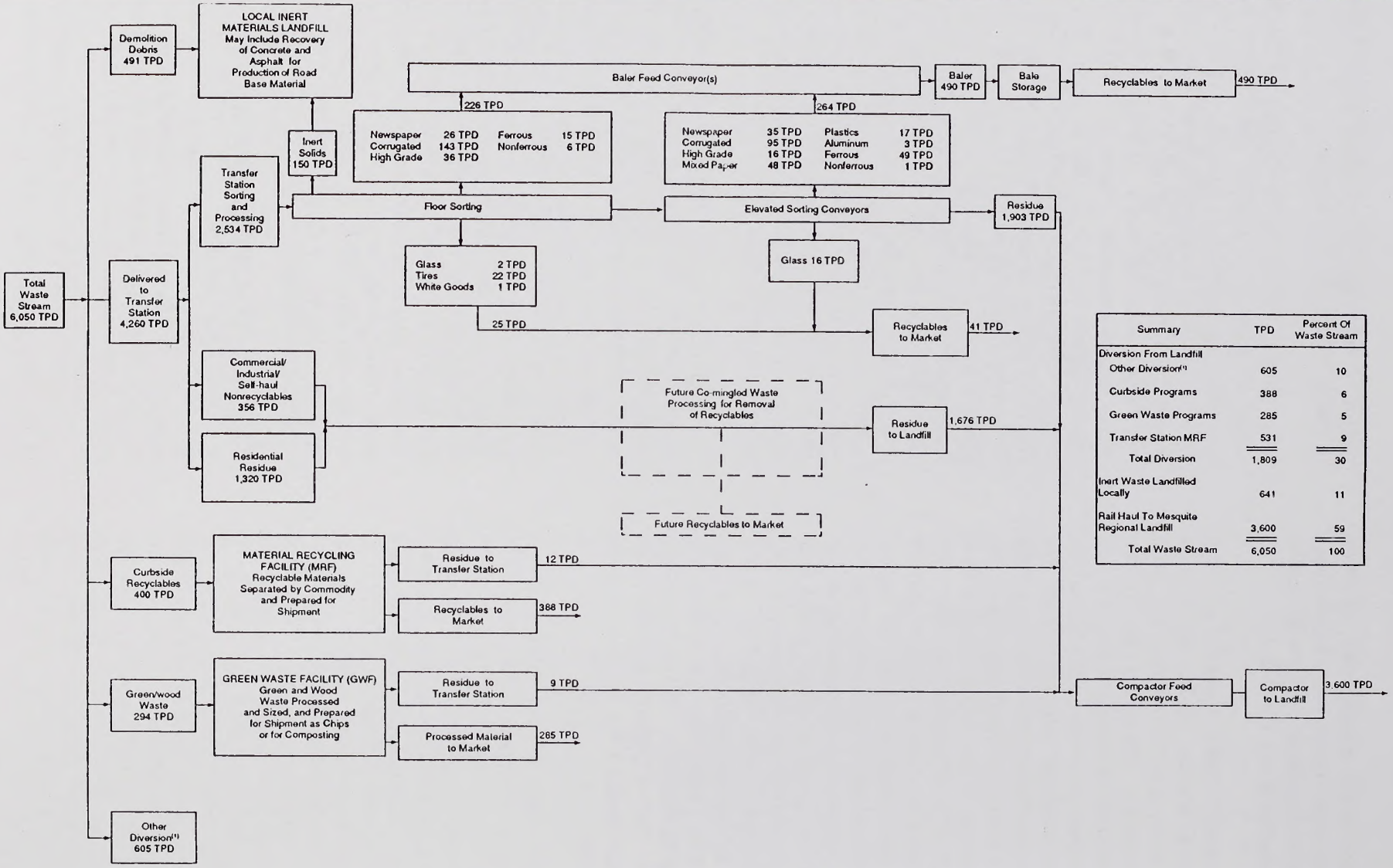
After pick-up at homes or businesses, MSW would be taken to a transfer station/MRF for processing and additional recycling. Figure 2-29 shows an example schematic diagram of a typical transfer station/MRF operating in 1996 in accordance with AB 939's 30 percent overall waste stream reduction. Note that, while the transfer station accounts for the majority of the overall waste-stream reduction, the source reduction and local recycling activities referred to above are required to reach AB 939 requirements. In addition to recycling and composting, transfer stations/MRFs also provide excellent opportunities for screening and removal of hazardous wastes from the waste stream. The remaining MSW residue after source reduction, recycling, and composting is to be transferred to an environmentally safe landfill in accordance with each city or county's integrated waste management plan.

The Applicant proposes that the owner/operator of any transfer station/MRF or other solid waste operation wishing to send MSW residue to the proposed Mesquite Regional Landfill would be required to enter into a contractual agreement. Among the requirements of this agreement would be a stipulation that the jurisdiction generating the MSW residue had an adopted and up-to-date solid waste management plan that had been approved by the CIWMB and that the jurisdiction had made good faith efforts (as determined by the CIWMB) to comply with this plan. MSW residue would not be accepted from transfer stations/MRFs or other solid waste operations that served jurisdictions that could not meet this stipulation.

2.1.9 HAZARDOUS MATERIALS MANAGEMENT

Removal of hazardous materials from the Mesquite Regional Landfill waste stream would occur in two ways:

- Public education and collection programs
- Waste screening



Summary	TPD	Percent Of Waste Stream
Diversion From Landfill		
Other Diversion(1)	605	10
Curbside Programs	388	6
Green Waste Programs	285	5
Transfer Station MRF	531	9
Total Diversion	1,809	30
Inert Waste Landfilled Locally	641	11
Rail Haul To Mesquite Regional Landfill	3,600	59
Total Waste Stream	6,050	100

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Waste Stream and Diversion Analysis for Model Transfer Station / Material Recover Facility (MRF) 30 Percent Total Diversion

FIGURE **2-29**

Public education and collection programs, which are implemented before the waste material is discarded, are a very important factor in the removal of hazardous materials from MSW. These programs prevent hazardous materials from entering the MSW stream. As described in the preceding section, AB 939 requires that cities and counties develop integrated waste management plans that contain a household hazardous waste (HHW) element. Though California law allows HHW to be present in the MSW stream and federal law does not classify HHW as hazardous, AB 939 was written to help reduce the amount of these materials that are disposed in normal household trash. As HHW management plans are developed and put in place by the cities and counties, the percentage of HHW in the waste stream is expected to decline, but as a practical matter will probably never be zero. Table 2-4 shows typical HHW and indicates the percent these materials constitute of the MSW stream. The table is from a 1986 study of 1,022 weekly pickups of MSW from Marin County in Northern California. The report concluded that HHW comprises between 0.31 and 0.52 percent of the MSW stream in California. As AB 939 procedures are implemented in the future, these percentages are expected to decline.

An additional impact of public education and collection programs is the control of hazardous materials that may occasionally be present in the MSW stream from businesses (e.g., small quantity generator hazardous wastes). California law currently requires cities and counties to develop plans to assure that separate handling exists to control these hazardous wastes and prevent them from entering the MSW stream. These plans could include assessment of penalties to businesses that are found not complying with this requirement.

The second method for controlling hazardous waste volumes in MSW is waste screening. Waste screening for hazardous materials would be conducted at several points along the path that the waste travels from its point of origin to its final placement in the proposed Mesquite Regional Landfill. For the Proposed Action, the primary hazardous materials screening would occur at the originating transfer stations/MRFs. Several techniques could be used by the transfer station/MRF operators to keep hazardous materials out of the MSW stream.

One of the techniques that could be used by the transfer station/MRF operators would be to give special scrutiny to loads from generators with a greater likelihood to dispose small quantities of hazardous materials. The transfer station/MRF operators would know the businesses in their service area that would be likely generators of prohibited wastes (e.g., the automotive industry, which generates solvents, paint wastes, lead acid batteries, grease and oil; the dry cleaning industry, which may generate filters containing dry cleaning solvents; metal platers which generate heavy metal wastes; and other industries which generate a variety of undesirable wastes). Transfer station/MRF operators would also know which haulers and trucks pick up from the businesses in the area that are likely to generate prohibited wastes. In addition, wastes from unknown, unlicensed, or otherwise questionable haulers would not be accepted at the transfer station/MRF without prior careful inspection.

The next and perhaps most important technique that could be used by the transfer station/MRF operator would be training of personnel to spot hazardous materials. Personnel working at the transfer station/MRF entrance, on the tipping floor, and on sorting lines could be trained to identify suspicious wastes based on visual and olfactory characteristics. For example, personnel could be trained to look for the following, indicators of hazardous material:

- Hazardous placarding or markings
- Liquids
- Powders or dusts
- Sludges
- Bright or unusual colors
- Drums or commercial-size containers
- "Chemical" odors

TABLE 2-4

Typical Distribution of Household Hazardous Wastes by Type
1986 Study, Northern California

TYPE	PERCENT OF WASTE STREAM(1)
Household Cleaners	
Toilet Bowl Cleaner	0.0022 - 0.0036
Laundry Detergent	0.0010 - 0.0016
Starch	0.0005 - 0.0009
Other Laundry	0.0006 - 0.0011
Bleach Substitute	0.0004 - 0.0006
Dish Detergent	0.0028 - 0.0044
All Purpose Cleaner	0.0168 - 0.0282
Grease Remover/Destainer	0.0005 - 0.0009
Disinfectant	0.0022 - 0.0037
Glass Cleaner	0.0004 - 0.0006
Metal and Wood Polish	0.0042 - 0.0070
Vinyl Polish	0.0015 - 0.0024
Shoe Polish	0.0014 - 0.0023
Floor Polish and Wax	0.0033 - 0.0056
Carpet Cleaner/Deodorizer	0.0024 - 0.0041
Air Sanitizer/Deodorizer	0.0013 - 0.0021
Oven Cleaner	0.0020 - 0.0033
Automotive Maintenance	
All Purpose Oil	0.0032 - 0.0054
Hydraulic Fluid	0.0016 - 0.0028
Motor Oil	0.0159 - 0.0267
Transmission Fluid	0.0007 - 0.0011
Engine Degreaser	0.0007 - 0.0012
Oil and Fuel Additives	0.0033 - 0.0198
Automobile Polish	0.0030 - 0.0051
Automotive Degreaser	0.0016 - 0.0028
Automobile Sealants	0.0016 - 0.0026
Pesticides and Yard Maintenance	
Fertilizer	0.0031 - 0.0052
Pesticides	0.0163 - 0.0273
Pet Drugs, Powders, Dips	0.0050 - 0.0848

TYPE	PERCENT OF WASTE STREAM(1)
Selected Cosmetics	
Perfume	0.0078 - 0.0131
Nail Polish Remover	0.0002 - 0.0003
Nail Polish	0.0080 - 0.0474
Antiperspirant/Deodorant	0.0037 - 0.0062
Facial Cosmetics	0.0056 - 0.0095
Hair Cosmetics	0.0112 - 0.0189
Other Cosmetics	0.0100 - 0.0598
Household Maintenance	
Non-Latex Paints	0.0243 - 0.0407
Latex Paints	0.0036 - 0.0061
Turpentine	0.0009 - 0.0015
Wood Sealant	0.0049 - 0.0082
Stain	0.0017 - 0.0029
Varnish	0.0006 - 0.0010
Adhesive	0.0035 - 0.0058
General Household Sealant	0.0207 - 0.0347
Wood Filler	0.0010 - 0.0016
Other Maintenance	0.0088 - 0.0148
Other Household	
Household Batteries	0.0683 - 0.1146
Prescription Drugs	0.0096 - 0.0161
Other Miscellaneous	
Hobby Items	0.0052 - 0.0088
Charcoal Lighter Fluid	0.0154 - 0.0258
Pool Chemicals	0.0007 - 0.0011
Fuel Refill	0.0004 - 0.0007
Other	0.0021 - 0.0035

(1) Taken from a study of 1,022 weekly pickups of Marin County household solid wastes conducted in May and August of 1986, and range of 0.31 to 0.52 percent of total waste stream for HHW component. The study was published in *Evaluation of Hazardous Materials in the Bailard Landfill*, Douglas C. Wilson, Ph.D., Bureau of Applied Research in Anthropology, University of Arizona, November, 1991.

Source: Environmental Solutions, Inc., 1993.

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It is anticipated that the transfer station/MRF operators would use both floor sorting and line sorting procedures to remove recyclable materials from the waste stream. This sorting activity would also offer the opportunity for close inspection of the waste to identify possible hazardous materials.

The final technique used by the transfer station/MRF operators would be random load checking, which is a requirement in California and will be required under new Subtitle D federal regulations. The operator would check a number of randomly-selected incoming loads of MSW each week. The number of loads selected would be established by the transfer station/MRF permit provided by the CIWMB and by the agency with local land use jurisdiction over the transfer station/MRF site. Among the factors considered by the CIWMB in establishing a random load-checking program for a transfer station would be the anticipated volume of MSW handled by the transfer station/MRF and the probability that hazardous materials would be present in loads to be received, based upon an assessment of the type of businesses served or the type of hauler involved. The random load-checking program would allow that any load could be checked and, most importantly, that suspicious loads would be checked at any time.

The Applicant would require the owner/operator of any transfer station/MRF that wanted to process waste for delivery to the Mesquite Regional Landfill to provide a valid copy of its operating permit from the CIWMB, including all required hazardous waste control procedures. The permit, including these control procedures, would be available for public review at the offices of Arid Operations Inc.

Additional screening of the waste would take place at the landfill face. The Mesquite Regional Landfill design provides that MSW residue containers would be unloaded at the landfill working face using a tipper. Normally, the tipper would be operated by the tractor driver; however, for the Mesquite Regional Landfill, a special tipper would be used. This tipper would have a full-time operator in a cab situated so the operator would observe the waste as the MSW residue container was emptied and as the landfill equipment placed the waste (during the time that another container was being positioned on the tipper). The tipper operator would observe the MSW residue for suspicious material. All other working face equipment operators would also receive training in the identification and handling of hazardous materials. In the event the tipper operator or other personnel spotted suspect material, operations would cease to allow for the safe on-the-ground inspection and, if hazardous, removal of the material by personnel trained to handle hazardous materials.

Any hazardous materials contained in the MSW residue and discovered by landfill personnel would be taken to a hazardous materials storage area and contained according to all applicable regulations. The storage area would be fenced to preclude entry by wildlife and unauthorized entry by persons. Periodically, the hazardous materials would be trucked off-site for proper disposal.

2.1.10 COMPLIANCE MONITORING

The various permits for operation of the proposed landfill would stipulate numerous monitoring and reporting requirements. A mitigation, monitoring, and reporting program (MMRP) would be developed for the proposed Mesquite Regional Landfill according to the requirements of AB 3180. The MMRP would be prepared concurrently with the Mesquite Regional Landfill Final EIS/EIR and would be docketed for EIS/EIR consideration by the Imperial County Board of Supervisors and the public. The MMRP would be sent out for public review by the BLM along with the Final EIS/EIR. Additional monitoring and reporting requirements may be required by the various NEPA Cooperating Agencies and CEQA Responsible Agencies as conditions of the actions taken or permits issued by these agencies. Monitoring would be performed by full-time monitoring and engineering personnel who would be employed by the Applicant and would be subject to independent verification by permitting agencies.

2.1.11 LANDFILL ACCESS

Access to the proposed landfill would require modifications to the existing Mesquite Mine access road and relocation of the intersection at SR 78. The proposed access configuration is shown on Figure 2-2. The new intersection would be designed to the requirements of a California Department of Transportation (Caltrans) encroachment permit. The exact configuration of the proposed access road intersection with SR 78 would require approval by Caltrans as part of an encroachment permit. Caltrans does not formally approve preliminary designs. As a CEQA Responsible Agency, Caltrans will receive this Draft EIS/EIR for comment.

The existing mine access road would be removed. As shown in Figure 2-2, the new road would serve both the mine and the landfill intermodal facilities. This road would be used by employees and all vehicles that would deliver to or pick-up from the proposed landfill. The existing access road would be removed and reclaimed.

2.1.12 LANDFILL RELATED RAILROAD FACILITIES

The regional landfill concept is based on transporting MSW residue from population centers in various Southern California communities to the proposed landfill by railroad. The MSW residue would be transported in specially designed containers or rail cars, constructed and certified by the International Standards Organization (ISO). The containers/rail cars would be enclosed with a permanent or removable roof (Figure 2-30). If a removable roof is used, it would be designed to control litter, vectors, and odors. Tarpaulins would not be used to cover containers. The proposed containers would be approximately 40 feet long and would have the capacity to haul approximately 25 tons of MSW residue.

The MSW residue containers would be similar in size and configuration to freight containers that travel the SP Main Line each day. The containers would be loaded onto a MSW residue train bound for the proposed landfill at an intermodal facility designed for such loading. Typical trains would be up to 4,600 feet (0.87 miles) long; however, one-mile long trains may be used on occasion, as described in Section 2.0. Initially, the MSW residue train likely would be loaded at the existing City of Industry Intermodal. SP has indicated that this existing facility has available capacity to handle containers with up to the full 20,000 tpd of MSW residue planned to be received at the proposed regional landfill. In later years, MSW residue train loading may be moved to the Los Angeles Transportation Center (LATC) located in downtown Los Angeles, depending upon SP's operating priorities.

The containers would be transported on the SP Main Line, and diverted onto a proposed rail spur approximately one mile north of the intersection of SR 78 and the SP Main Line, and approximately four to five miles west of the proposed landfill. New railroad facilities associated with the landfill, including a railroad spur and rail unloading intermodal, are discussed below.

2.1.12.1 Proposed Railroad Spur

The proposed four- to five-mile long rail spur, shown in Figure 2-2, would connect the landfill site to the existing SP Main Line about one mile northwest of the Glamis Beach Store. The exact length of the spur will depend on the final intermodal facility design. The spur would be located a minimum distance of about 2,500 feet north of SR 78 to avoid interference with campers near the highway during periods of heavy use at the nearby Imperial Sand Dunes Recreation Area (ISDRA). The spur alignment would be designed to run parallel to the natural drainage pattern of washes in this area to avoid the need to divert and control large runoff flows.

Inspection of the rail spur ROW would occur at least once a month by the Applicant, with appropriate maintenance performed as needed. These activities would include the track and the immediately surrounding area. Visual inspection of the communications/power lines and drainage

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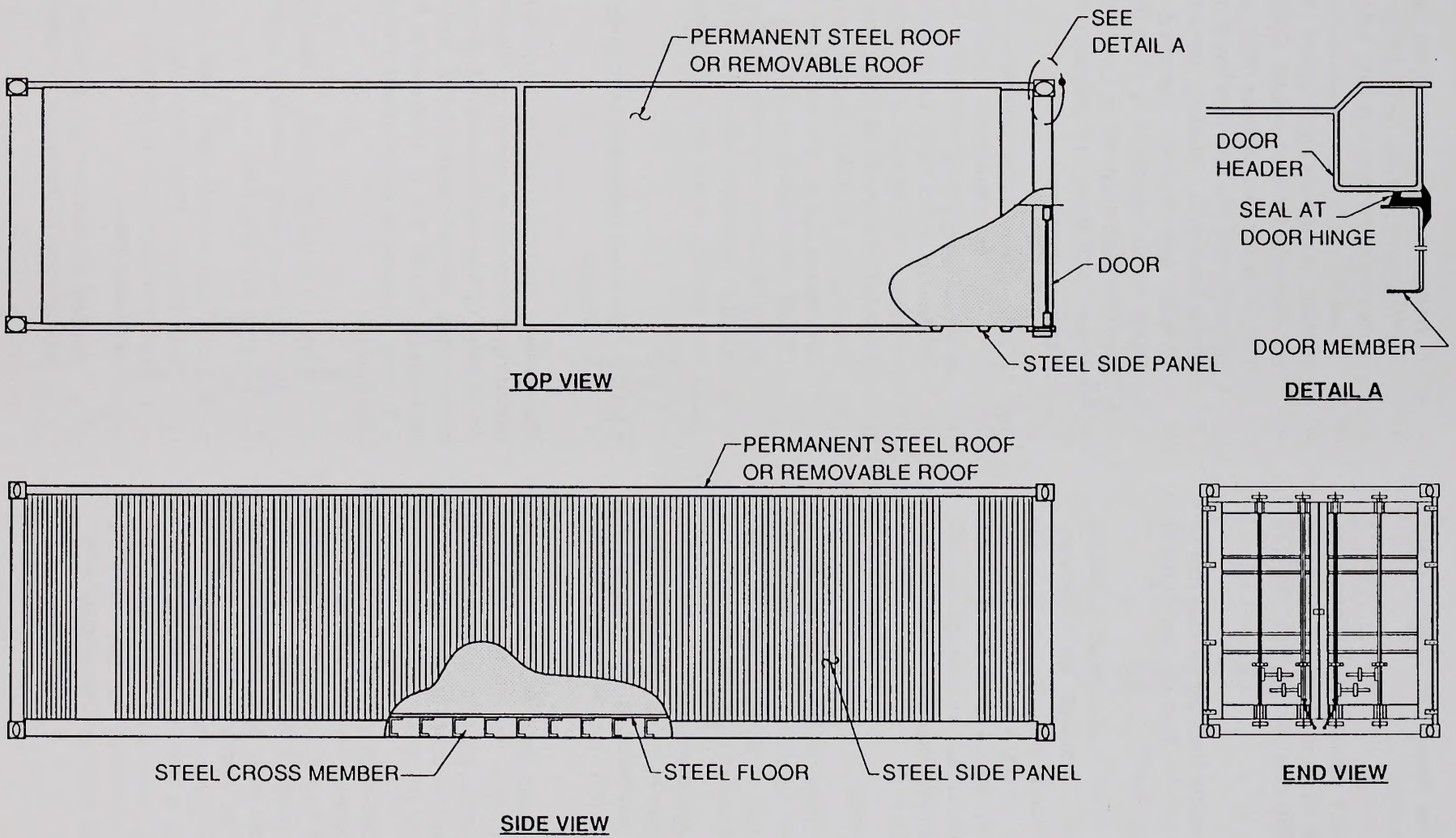

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Example MSW Residue Container

FIGURE

2-30

facilities would occur during track inspection and after major storm events.

Figure 2-31 shows a cross section through the railroad spur. The width of the ROW would be approximately 150 feet to provide for the following:

- An initial single track for moving four or five trains per day from the Main Line to the proposed landfill.
- A second future track, which would be constructed if needed for temporary holding of trains (e.g., minutes to hours) to satisfy Main Line schedules or unloading requirements at the proposed landfill intermodal, or storage of tank cars containing liquefied methane gas (Section 2.1.6.2).
- An access road.
- Small drainage ditches and berms to direct storm runoff flows to a railroad underpass that would be constructed near the western end of the spur.
- Sand and gravel materials obtained from sources adjacent to the proposed ROW would be purchased by the Applicant in accordance with the Materials Act of 1947.
- Sand and gravel obtained as cut material during rail spur construction or from existing sources adjacent to the proposed ROW would be used for construction of the proposed rail spur.
- Communications or power lines to allow train movements on the rail spur to be monitored and regulated. Communications or power lines could be provided on overhead poles or buried. The final design of the communications or power line configuration has not been determined at this time. Since aboveground facilities would be visible, the analysis presented in this EIS/EIR assumes the aboveground configuration.
- A buried pipeline constructed in the ROW to carry methane derived from LFG if an energy recovery system based on cleaning LFG to commercial-use methane quality was implemented. Based on discussions with Southern California Gas Company, the methane likely would be transported in a new pipe along the SP Main Line to an existing natural gas pipeline near Niland. Approval of a ROW for the pipeline is a BLM Action described and analyzed in this EIS/EIR. Figure 2-22 shows the proposed buried pipeline alignment.
- Up to three at-grade railroad crossings provided at appropriate locations as shown in Figure 2-2 to allow public vehicle and gravel truck access across the rail spur. Appropriate signs would be provided for each at-grade railroad crossing. Fencing would not be constructed along the rail spur from Glamis to the site. A gate would be provided across the rail spur at the landfill perimeter fence to prevent unauthorized access into the intermodal area.

2.1.12.2 Railroad Unloading Intermodal Facility

The general alignment of the proposed rail unloading intermodal is shown in Figure 2-2. An example of intermodal operations, during the period when the proposed landfill would be operating at 20,000 tpd, is illustrated in Figure 2-8. Key elements of the proposed intermodal could include:

- Three unloading tracks. These tracks would allow three trains to be located on-site at any given time.
- One "run-around" track used to move locomotives from one end of the proposed intermodal to the other, around the parked trains.
- Asphalt or concrete pavement between and adjacent to the tracks for supporting

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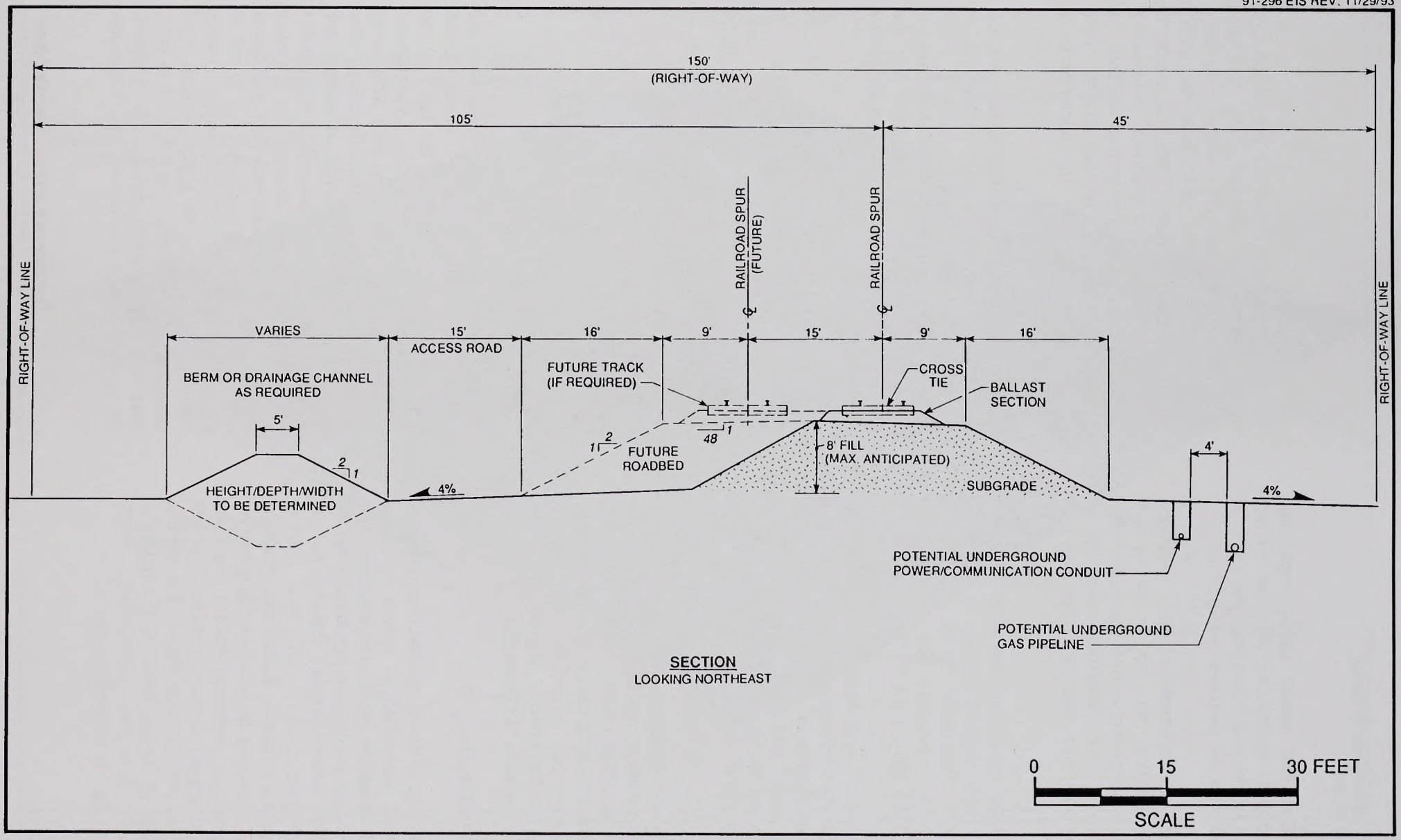

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Proposed Rail Spur Right-of-Way Cross Section

DRAFT

FIGURE 2-31

cranes that would unload and load containers or specially designed rail cars and trucks that would haul the MSW to and from the proposed landfill.

The actual arrangement of the proposed intermodal facility may be varied to suit operational requirements as final design activities are completed. Any variations would not be different conceptually than the design shown in Figure 2-8.

An example of intermodal operations including the cranes and container trucks is shown in Figure 2-32. Estimates of the numbers of equipment and operators are discussed in Sections 2.1.4.5 and 2.1.4.6, respectively.

Crane crossover zones would be provided near both ends of the intermodal to allow the cranes to move between trains or to a maintenance area. Individual components of the intermodal could be constructed in phases to suit the rate of increases in MSW residue volumes accepted at the site.

The intermodal operations could be modified from time to time in the future. For example, portions of the MSW residue may be transported to the landfill operating face in large trucks or on enclosed conveyors. However, the Applicant would not use the existing Mesquite Mine ore conveyor to transport MSW residue.

2.1.13 FENCING

For security and to avoid unauthorized entry, the entire project site would be fenced. A 6- to 8-foot-high industrial fence with porcupine wire or equivalent (to avoid raven perching) would be used, except where existing fencing can be utilized (Figure 2-33). All new fencing surrounding the proposed landfill site would be constructed according to BLM specifications for tortoise fencing. Existing fencing has been improved in places to exclude desert tortoises from entering the Mesquite Mine. The existing fences would be further improved if required to successfully conclude consultation under Section 7 of the Endangered Species Act.

The facilities located outside of the fenced area would include the administration building, visitors parking lot, and truck scales. The fence would provide ingress and egress for MSW residue trains, employees, water and electrical transmission, drainage channels, monitoring systems, and other required project features. A guardhouse would be located at the main facilities entrance, near the administration building.

Initially, the fence would encompass only the portion of the proposed landfill project area to the west of the existing mine access road. After mine closure, and abandonment of the portion of existing access road within the landfill area, the fence would be extended to the eastern project boundary.

2.1.14 WATER AVAILABILITY, SANITATION AND UTILITIES

Primary water use at the proposed landfill would include the following:

- Container/truck wash.
- Dust control.
- Soil compaction.
- Equipment and facilities maintenance.
- Sanitation.

The Applicant proposes to obtain water from the existing Mesquite Mine Well Field located approximately three miles to the south of the proposed site (Figure 1-2). Appropriate approvals would be obtained to draw water using the existing well field for landfill construction and operations. Initial calculations indicate that the combination of Mesquite Mine and landfill water use would not exceed the existing maximum permitted annual well field withdrawal rate of 4,033 acre-feet per year. As shown in Figure 1-2, a water pipeline currently extends from the well field to the Mesquite Mine. An extension to that pipeline would be built to bring water to a 600,000-gallon storage tank located in the operations and maintenance facilities area

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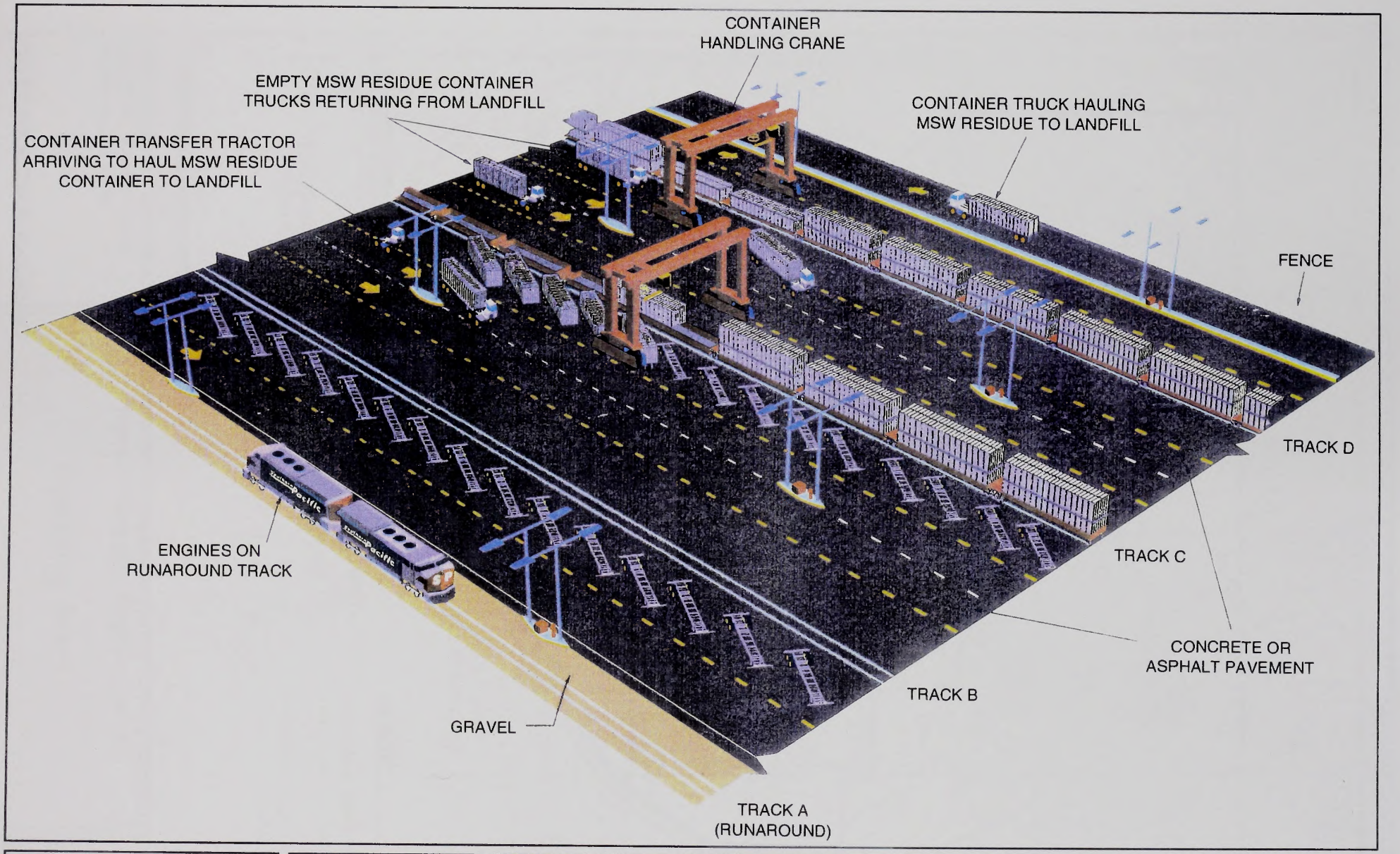

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Example Intermodal Operations

FIGURE

2-32

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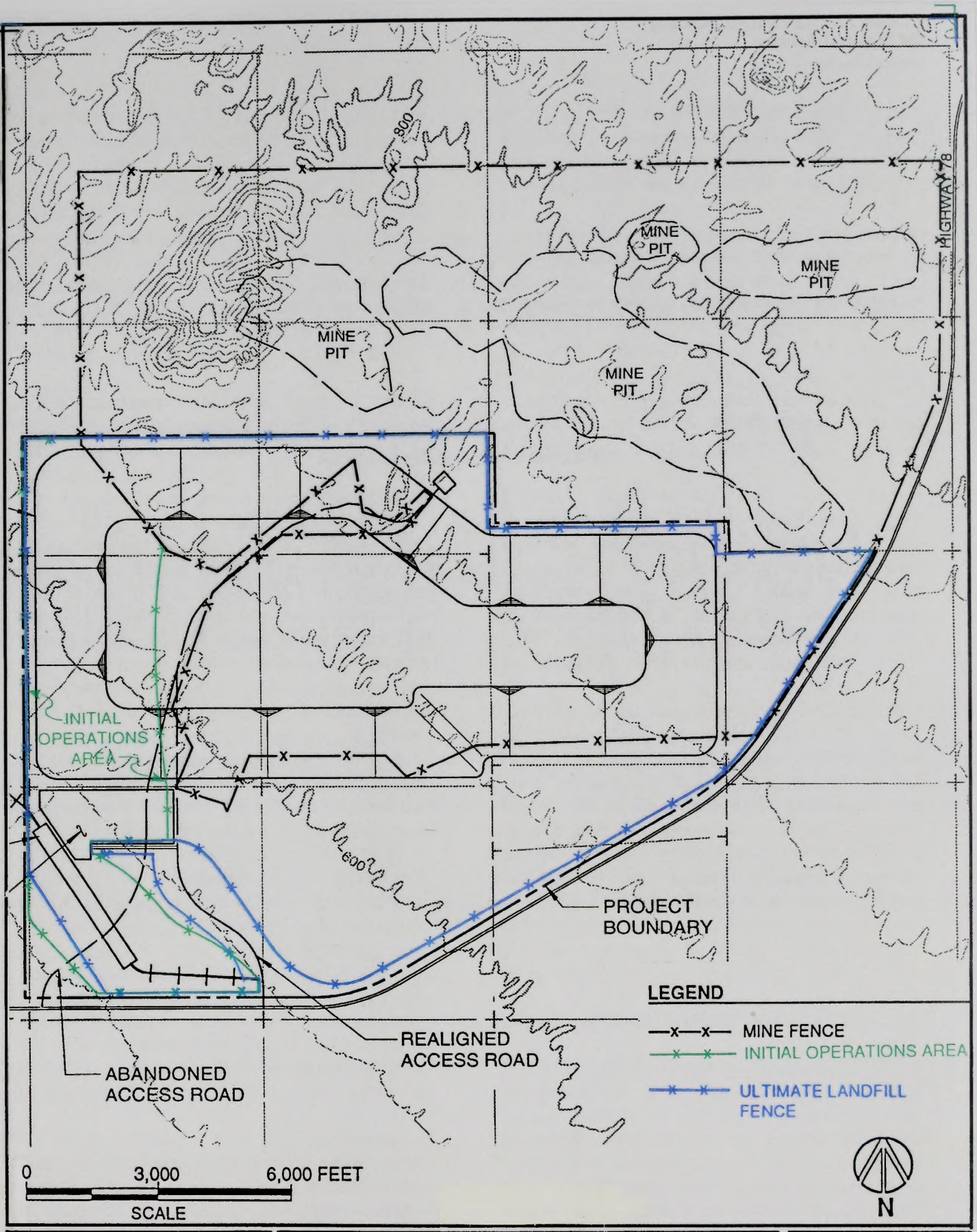

SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Fencing Plan

FIGURE **2-33**

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near the intermodal. From this storage tank, water would be transferred by truck or ancillary on-site pipelines to various on-site locations, as needed. Water would also be used to condition MSW, if LFG generation enhancement is permitted in the future.

Potable water would be obtained from the water wells. The well water would be treated and softened at an on-site well-water treatment facility dedicated to the production of potable water.

MSW containers would be "washed" at the proposed on-site container wash facility every sixth trip to the landfill. Water used for container/truck washing activities would be recycled at a water reclamation facility (not the dedicated potable treatment facility described above) located adjacent to the container/truck wash areas (Figure 2-8). The container/truck wash area would be located on a lined concrete pad that would drain to the water reclamation facility. Figure 2-34 shows a conceptual flow diagram for the water reclamation facility. Container wash water would be treated in three separate stages to remove suspended particles and dissolved organic materials, filtered, and pumped back to the container wash facility or used for other on-site purposes (e.g., dust control, compaction of soils, etc.). Reuse of reclaimed water would be in accordance with a WDO issued by the RWQCB. Materials removed from the wash water during treatment would be landfilled or, in the case of oils or other hydrocarbons, recycled off-site or disposed of at an appropriate off-site facility. After multiple recycling, water that has built up substantial amounts of dissolved inorganic salts (i.e., water with a high total dissolved solids content) would be evaporated in a lined evaporation pond. Solids that settle at the bottom of the evaporation pond would be tested by the Applicant and disposed of as appropriate.

As shown in Figure 2-34, LFG condensate or collected leachate would also be treated at the reclaimed water facility using a combination of an airstripping procedure and biotreatment to remove wastes. After treatment, these liquids would become part of recycled water used for various purposes on-site in accordance with the WDO issued by the RWQCB. Air used for the air stripping treatment process would be released into the atmosphere or sent to a flare, all in accordance with requirements of the ICAPCD.

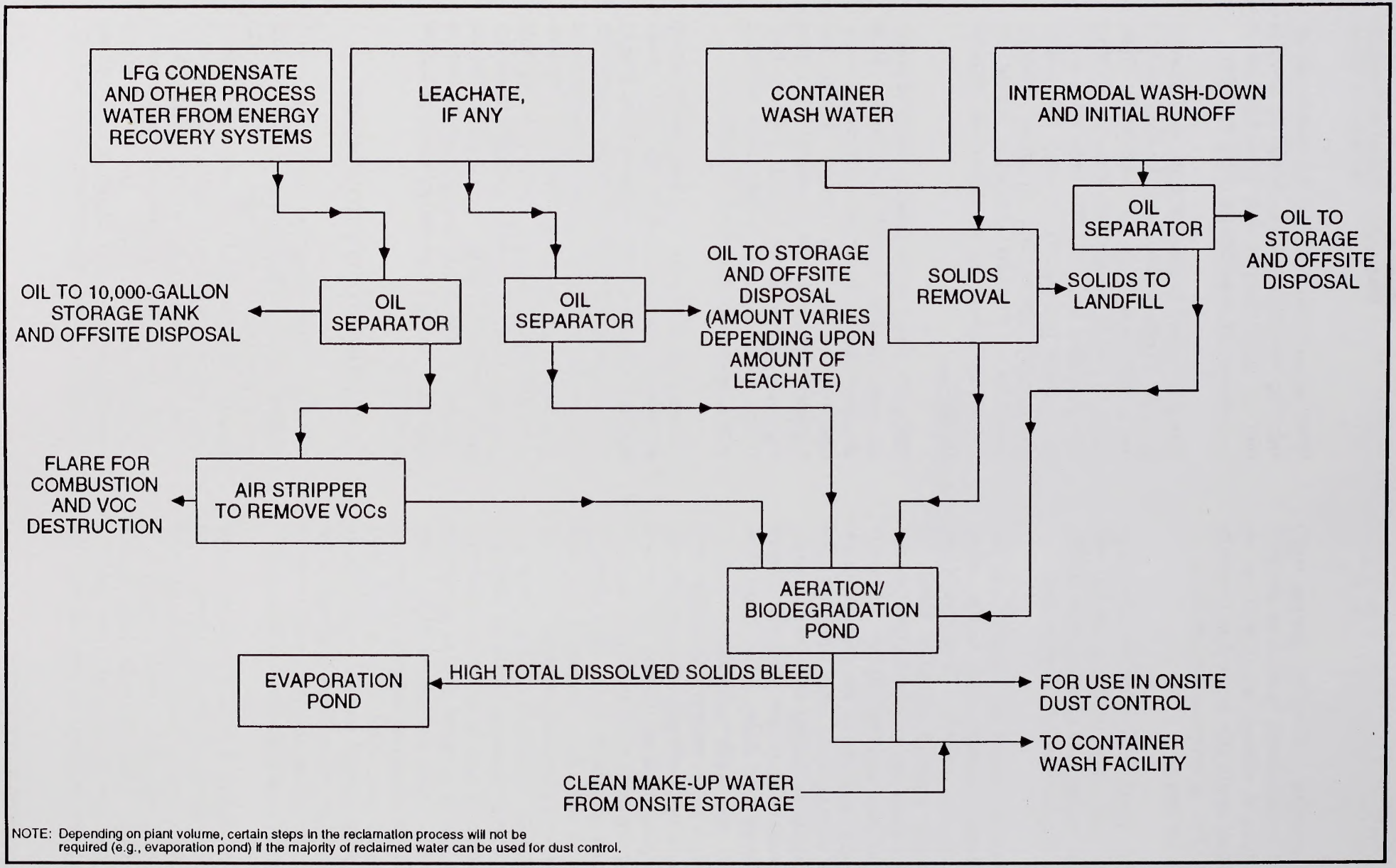
Sanitation would be handled in the same manner as at the Mesquite Mine, with the installation of one or more septic tanks and leach fields. These facilities would be separate from the existing Mesquite Mine facilities. The septic tanks would be pumped periodically to keep the system biologically active and in good working condition. Pumped materials would be transported off-site to an appropriate disposal facility.

Electricity would be the primary source of power for non-vehicular landfill operations. Most electrical use would be for pumping of water, operation of the LFG control system, and nighttime lighting in the intermodal area, along the road to, and at the landfill working face. Other operations and maintenance facilities would require minor amounts of electricity.

Electrical power for the proposed landfill would be obtained from the existing IID 92-kV power line and substation at the Mesquite Mine (Figure 1-2). An on-site extension from the existing IID line would be built to a new substation to be located near the intermodal facilities. Standby generators fueled by LFG, methane, or imported fuel such as diesel would be available to provide power for essential facilities in the event of power outages. In the future, electrical power may be generated on-site by an energy recovery facility using LFG.

2.1.15 OFF-SITE IMPROVEMENTS

Off-site improvements associated with implementation of the proposed landfill facilities would include a rail spur connecting the proposed landfill site to the existing SP Main Line, a new intersection at SR 78, and a segment of the realignment of the existing Mesquite Mine access road. These improvements are discussed earlier within this chapter. The off-site access road, proposed rail spur alignment, and highway intersection location are illustrated in Figure 2-2.



NOTE: Depending on plant volume, certain steps in the reclamation process will not be required (e.g., evaporation pond) if the majority of reclaimed water can be used for dust control.

SOURCE: Environmental Solutions, Inc., 1993.

Proposed Mesquite Regional Landfill

Water Reclamation Facility Conceptual Flow Diagram

FIGURE **2-34**

A buried gas pipeline could be constructed in the proposed railroad spur and SP Main Line ROWs to convey methane derived from LFG, if an energy recovery system based on cleaning to commercial-use methane quality was implemented in the future (Sections 2.1.6 and 2.1.12.1).

2.1.16 SAFETY AND HEALTH

Fire control provisions and landfill employee training programs are discussed in Section 4.12.3.

2.1.17 LANDFILL CLOSURE

The successful closure and reclamation of the site would be determined according to the criteria that are applicable at the time the proposed landfill closes. Currently, these criteria are set forth in RCRA Subtitle D, CCR Title 14, and CCR Title 23.

In much the same way that the proposed landfill and supporting facilities would be developed and constructed in phases, the proposed landfill would also be completed in phases as operating segments are completed. These activities would be conducted in a manner consistent with relevant federal and state laws regarding landfill closure and post-closure. It is anticipated that all segments would be completed after 100 years of operation. Once all segments are completed, the proposed landfill would be "closed."

The exterior slopes and surface of the proposed landfill would be designed and constructed so that final cover can be placed during their construction. LFG management and control systems would be constructed upon completion of each landfill lift. Leachate management and collection systems would also be constructed during landfill development, as would monitoring systems required for the various project permits. As a landfill operating segment is completed, surface topography and local drainage patterns would be finalized, and the following activities would begin:

- landfill surface care;
- regular inspection and record keeping;
- monitoring (e.g., air, LFG, ground water, and leachate);
- collection and treatment of leachate;
- LFG management and control;
- energy recovery (if implemented; and,
- general site administration and maintenance.

Through this process, facility closure activities and planning would occur throughout the life of the proposed landfill. In the years leading up to the time when landfill MSW capacity would be reached, procedures for closure of on-site structures would be finalized. Plans would be made for:

- removal of the rail spur;
- closure of the intermodal facility;
- removal or closure of unneeded on-site structures;
- recontouring and regrading of unneeded on-site roads;
- final disposition of utility structures (e.g., electrical and gas lines); and,
- stabilization of the landfill surface.

Existing federal regulations require that post-closure care and monitoring continue for at least 30 years after closure of the facility. For the proposed Mesquite Regional Landfill, this would begin after landfill capacity was reached and final site closure activities are completed. At the end of the 30-year period, a decision would be made whether to extend or not extend post-closure care and monitoring for an additional 30 years. This decision would be based on a determination of whether the closed landfill poses a potential threat to public health or safety, or to the environment.

Closure and post-closure activities would be modified, as appropriate, to remain consistent with changes in federal and state laws regarding landfill closure activities.

The proposed landfill would be closed with a cover system designed to prevent precipitation infiltration and avoid excessive soil erosion. The cover would also minimize long-term LFG emissions. The initially constructed perimeter stability berms would form the cover system for the perimeter sloped areas. The minimum thickness of soil at the perimeter berm would be about seven feet. The outside six inches to one foot of material on the slopes would consist of coarse, resistant mine overburden materials, to minimize erosion during occasional thunderstorms.

Comprehensive revegetation is not proposed by the Applicant because of the arid climate and minimal natural vegetation at the site. The Applicant would encourage the establishment of natural vegetation on appropriate areas. The Applicant would prevent the establishment of any vegetation that would impact the function and reliability of the surface liner during the post-closure care and monitoring period.

Consideration would be given to any long-term land uses that would be acceptable to the County, such as recreation on the closed landfill surface, or continued industrial use of on-site facilities. Future active uses of the site would be subject to all appropriate permits that would be required.

Flatter portions of the closed landfill top would be sloped to promote drainage to engineered control systems and to prevent ponding. The final cover for the top of the proposed landfill would include a layered soil and FML system to prevent moisture infiltration. The FML would be protected with geotextile fabric and a layer of soil to support construction equipment traffic. It is not anticipated that a special drainage collection layer above the FML would be required. The very high evaporation-to-rainfall ratio at the site would prevent the buildup of moisture in the top soil layer. The closure configuration would potentially vary with time to incorporate new technology.

Nearly horizontal benches, sloped to drain rainfall runoff, would be provided at approximately 50-foot vertical intervals along landfill slopes. The proposed horizontal bench configuration is illustrated in Figure 2-11. These benches would provide the following:

- intermediate drainage ditches with erosion protection for controlling storm runoff from the landfill surface; and,
- access to gas control headers, which also would be located at approximately 50-foot vertical intervals.

A LFG surface collection system could be provided beneath the low permeability liner in flat portions of the landfill, if appropriate, to supplement the horizontal collection system internal to the landfill. Example surface collection systems consist of either evenly spread trenches, or strips of permeable synthetic net immediately under the liner. Any surface collection configuration would be connected to the LFG control vacuum system.

The unvegetated slopes of the proposed landfill would somewhat resemble background conditions. Natural slopes are covered with sparsely scattered vegetation. Landfill corners and top would be designed to be curvilinear and variable, as opposed to having long straight lines.

2.1.18 FINANCIAL ASSURANCE

40 CFR Subpart G, Financial Assurance Criteria (effective date April 9, 1994) will require the owners and operators of all MSW landfills, except owners or operators who are state or federal government entities whose debts and liabilities are the debts and liabilities of a state or the United States, to provide financial assurance for landfill closure, post-closure care, and corrective action.

Owner/operators subject to the requirements of Subpart G will be required to provide written cost estimates for landfill closure, post closure care, and corrective action as described in §258.71, 258.72, and 258.73, respectively. The law provides that these estimates and the required financial assurance must be updated if conditions change, resulting in an increase or decrease in the

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estimated cost of closure, post closure care, or corrective action.

40 CFR Subpart G, §258.74 provides for 11 methods of providing the financial assurance that will be required beginning on April 9, 1994, under existing law. The Applicant proposes to provide the required assurance through one of these mechanisms or as required in the future.

landfill closure, post-closure care, and corrective action.

Owner/operators subject to the requirements of Subpart G will be required to provide written cost estimates for landfill closure, post closure care, and corrective action as described in §258.71, 258.72, and 258.73, respectively. The law provides that these estimates and the required financial assurance must be updated if conditions change, resulting in an increase or decrease in the estimated cost of closure, post closure care, or corrective action.

40 CFR Subpart G, §258.74 provides for 11 methods of providing the financial assurance that will be required beginning on April 9, 1994, under existing law. The Applicant proposes to provide the required assurance through one of these mechanisms or as required in the future.

2.2 ALTERNATIVES

2.2.1 INTRODUCTION

NEPA requires that an EIS contain an analysis of alternatives to the proposed action (42 U.S.C. § 4332 (C) (iii)). The BLM's National Environmental Policy Act Handbook (October 25, 1988, herein, "BLM Handbook") requires that the EIS "[d]escribe the no-action alternative and all reasonable alternatives, including related monitoring requirements, to the same level of detail as the proposed action." The same Handbook section requires that the EIS address "how each alternative, with the exception of the no-action alternative, will generally accomplish the purpose and need for the action...". (BLM Handbook Chapter 5, section (c)(3) (f)(3)). The BLM Handbook also requires that the EIS identify "alternatives considered but eliminated from detailed analysis." (Section (C)(3) (f)(3)).

CEQA requires an EIR to "describe a range of alternatives to the proposed project or to its location, that can feasibly obtain the project's basic objectives. . ." (CEQA Guidelines, § 15126(d), Pub. Res. Code Section 21100(s)). The key to alternative analysis under CEQA is to describe a range of reasonable alternatives to the project, or to the location of the project, which would reasonably attain the basic objectives of the project, and evaluate the comparative merits of the alternatives (State CEQA Guidelines, § 15126(d)); and, focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impeded to some degree the attainment of the project objectives, or would be more costly (State CEQA Guidelines, § 15126(d)(3)).

The methodology for analysis of alternatives in this EIS/EIR has taken into consideration the mandates and guidance from the above-referenced sources. Sections 2.2.2 through 2.2.6 describe the five alternatives that are analyzed in this EIS/EIR, including the No Action Alternative. Section 2.4 presents a broad range of additional potential geographic, design, and technology alternatives that have been considered but eliminated from further detailed analysis. The reasons for eliminating these potential alternatives are that they do not meet a majority of the project objectives as set forth in Section 1.1.4, and in some cases because they would be anticipated to cause a substantially greater impact to the environment than the Proposed Action.

It should be noted that other proposed regional landfills are currently in the planning process in Riverside, San Bernardino, and Imperial counties. Where appropriate, these projects have been discussed in this document as cumulative impacts (see Section 4.7) and not alternatives, since the projects are not necessarily alternatives in the true sense of the analysis required by NEPA and CEQA. The waste stream available from Southern California coastal communities is

capable of potentially supporting several regional landfills. Thus, the several proposed projects may in fact operate in concert, rather than alternatively. The cumulative analysis is also a more useful analytical tool, in that it identifies the combined effects of the proposed regional landfills rather than isolating the individual projects in a simplistic alternatives analysis.

2.2.2 BLM's PREFERRED ALTERNATIVE

BLM has considered the effects on the human environment of the Proposed Action and Alternatives to the Proposed Action and has determined that BLM's Preferred Alternative is the Proposed Action.

2.2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed Mesquite Regional Landfill would not be approved for development. The BLM would not complete the proposed land exchange or grant the ROWs requested by the Applicant. The County of Imperial would not issue the CUP or other permits listed in Table 1-2 that would authorize the development of the proposed regional landfill.

2.2.4 ALTERNATIVE I - SMALLER LANDFILL FOOTPRINT

The Lead Agencies examined this alternative because the smaller landfill footprint would avoid most of the eligible cultural resources that occur on the proposed site, would reduce the size of the proposed landform and associated visual impacts, and would impact 456 fewer acres of land and associated habitat for the threatened desert tortoise than the Proposed Action.

The configuration for this alternative is shown in Figure 2-35. The arrangement shown was selected so that the landfill would be located almost entirely on property controlled by Gold Fields. Implementation of this alternative would require a smaller land exchange and would result in less surface disturbance and no loss of mineral resources. The only federal land requiring an exchange for this alternative would consist of the approximate 135 acres identified as federal land managed by BLM shown in Figure 2-36. It is anticipated that the land used for exchange for these properties would be selected from the property in the SRMNSA shown in Figure 2-4 and discussed in Section 2.1.2.

Figure 2-35 also shows drainage facilities for Alternative I. These drainage facilities would be substantially the same as for the Proposed Action (Figure 2-16) and would integrate with the existing Mesquite Mine drainage structures. The basis for design of the Alternative I drainage facilities would be the maximum flow conditions allowed by Caltrans at the existing SR 78 swales (i.e., based on a 100-year storm).

The landfill operations for Alternative I would be very similar to that of the Proposed Action, except that the landfill capacity would be 480 million tons, as opposed to 600 million tons. Statistical comparisons between Alternative I and the Proposed Action are shown as follows.

	Alternative I	Proposed Action
Project Area	2,240	4,245*
Landfill Area	1,834	2,290
MSW Residue Disposal Capacity (million tons)	400	600
Estimated Landfill Operational Life (years)	85	100

* includes rail-spur

The Alternative I rail unloading intermodal facility would be very similar to the Proposed Action intermodal (Figure 2-8). For Alternative I, the mine access would be rerouted to a separate, new road, around the eastern end of the intermodal. ROWs for the short distance of new access road outside of the project boundary would be obtained from BLM. In addition, new ROWs would be needed to convey water and electricity from the existing Mesquite Mine facilities to the Alternative 1 facilities.

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Other design aspects of Alternative I, such as the landfill liner design and LFG control system, would be essentially the same as those identified for the Proposed Action.

2.2.5 ALTERNATIVE II - REDUCED DAILY VOLUMES

The Lead Agencies examined this alternative because reducing the volume of MSW residue that would be accepted at the proposed landfill would reduce environmental effects related to activities and employment on-site. By reducing daily MSW volumes, fewer vehicle trips and other dust-generating activities would occur. This would reduce, but not eliminate, the cumulative PM_{10} impacts. Also, by reducing employment on-site, fewer trips would occur on SR 78 during winter weekends and/or holidays. This would reduce, but not eliminate, the cumulative traffic impacts.

Alternative II would be similar to the Proposed Action, except the maximum disposal rate would be reduced from 20,000 to 12,000 tpd. This rate was selected because the Applicant indicated that a maximum rate below 12,000 tpd would not justify the large capital expenditures required for initial project development. Implementation of this alternative would result in less train traffic. The estimated rate of growth to achieve this condition would be as follows:

- 4,000 tpd for year 1.
- 8,000 tpd for year 2.
- 12,000 tpd after year 2.

This would result in an operational period of 165 years instead of the 100-year life estimated for the Proposed Action.

The primary differences between Alternative II and the Proposed Action would be:

- The maximum number of trains, each hauling 4,000 tons of MSW residue, would be three per day, in comparison with five for the Proposed Action. This would result in a maximum of six trips on the SP Main Line, compared to 10 for the Proposed Action.
- The rail intermodal at the landfill would be reduced from that shown in Figure 2-8. For example, one of the tracks would potentially be eliminated or the intermodal length could be reduced.
- The landfill staff would ultimately increase to about 183 employees, compared to 268 employees for the Proposed Action.

Additional, less encompassing changes would include minor size reduction of several of the buildings shown in Figure 2-8 and less MSW residue and cover handling equipment. The proposed land exchange would be required for this alternative.

2.2.6 ALTERNATIVE III - ALTERNATIVE MESQUITE REGIONAL LANDFILL SITE

2.2.6.1 Introduction

In accordance with the requirements of NEPA and CEQA, BLM and Imperial County have identified a reasonable alternative site for comparison to the proposed Mesquite Regional Landfill site. The identification of the alternative site is fully documented in Appendix A-3 of this EIR/EIS and is summarized in Section 2.4.1.2 of this EIS/EIR. BLM's and Imperial County's approval of a landfill at this site would require a new application for a change of zone, comprehensive general plan amendment, and conditional use permit application; and a new application for a BLM rail spur ROW and proposal for exchange of land. Implementation of a regional landfill at this alternative site would require the same authorizing actions described in Section 1.6 of this EIS/EIR.

2.2.6.2 Alternative Project Site

The alternative project site is located approximately 3.75 miles southeast of Glamis, 1.75 miles south of SR 78, east of the SP Main Line (Figure 2-1). This alternative site is

approximately four miles southwest of the proposed site. This site contains portions of Township 13 South, Range 19 East, San Bernardino Meridian and Township 14 South, Range 19 East, San Bernardino Meridian. The entire site consists of approximately 5,200 acres, all but one section of which are federal lands managed by the BLM. The remaining section (Section 16 of Township 14 South, Range 19 East) is privately owned. This section is divided into three parcels. Each parcel is owned by a different private owner. The landfill footprint contains approximately 2,080 acres. A conceptual site plan for a regional landfill at this alternative site is presented on Figure 2-37.

Real Estate Actions

In order to obtain the BLM land necessary to construct and operate a regional landfill at this alternative site, a land exchange, as described in Section 2.1.2, would be required. The exchange would involve private land in the SRMNSA and near the Chuckwalla Bench ACEC, to be exchanged for the BLM-managed land at this alternative site. The parcels offered by the Applicant for the Proposed Action along with additional parcels in these two areas would be required if Alternative III were implemented. Also, the Applicant would have to acquire the privately owned parcels within the alternative landfill site.

Landfill Construction

Landfill construction would occur in a manner similar to that described for the proposed site, with similar procedures and approximately the same 10-month construction period. The landfill footprint would have a rectangular shape. Figure 2-37 identifies potential cover and clay borrow areas on-site. These areas could also be used to stockpile cover materials that are excavated from the footprint. Though it would be feasible to undertake a deep cover material/clay recovery excavation and to site a landfill within the resulting pit, a below-grade landfill was not considered for this alternative site for the reasons presented in Section 2.4.2. Additional excavation, as compared to that proposed for the Mesquite Regional landfill, would be required at this site to allow for construction of the liner and LCRS because this alternative site slopes more steeply than the proposed site.

Landfill Operations

Landfill segment development, dust control, lighting, equipment, employees, traffic/trip generation, recyclable materials storage, and record keeping would all be essentially the same as described for the proposed project (Section 2.1.4). Surface water control facilities would be specially designed to meet the requirements of this alternative site.

Figure 2-37 shows a preliminary conceptual layout for drainage facilities for Alternative III. This layout would return flows back to the same desert washes from which they would be diverted around the project site. Drainage underpasses would be added, if necessary, to allow flows to pass under the SP Main Line without jeopardizing the track.

Liner and Leachate Management System

The proposed liner and leachate management system described in Section 2.1.5 would be implemented at this alternative site. The site plan identifies cover and clay borrow areas on-site; however, it is assumed that suitable materials do not exist on-site for construction of the clay portion of the triple composite liner. Therefore, clay or an equivalent material would be trucked or rail hauled to the site. A potential source of clay would be the claystone that is stock-piled at the Mesquite Mine; therefore, trucking of clay from the Mesquite Mine to this alternative landfill site is addressed in Chapter 4.

Landfill Gas Control

The LFG control system described in Section 2.1.6 would be implemented at this site.

AB 939 Compliance and Hazardous Materials Management

AB 939 compliance at the alternative site would occur as described in Section 2.1.8. Hazardous

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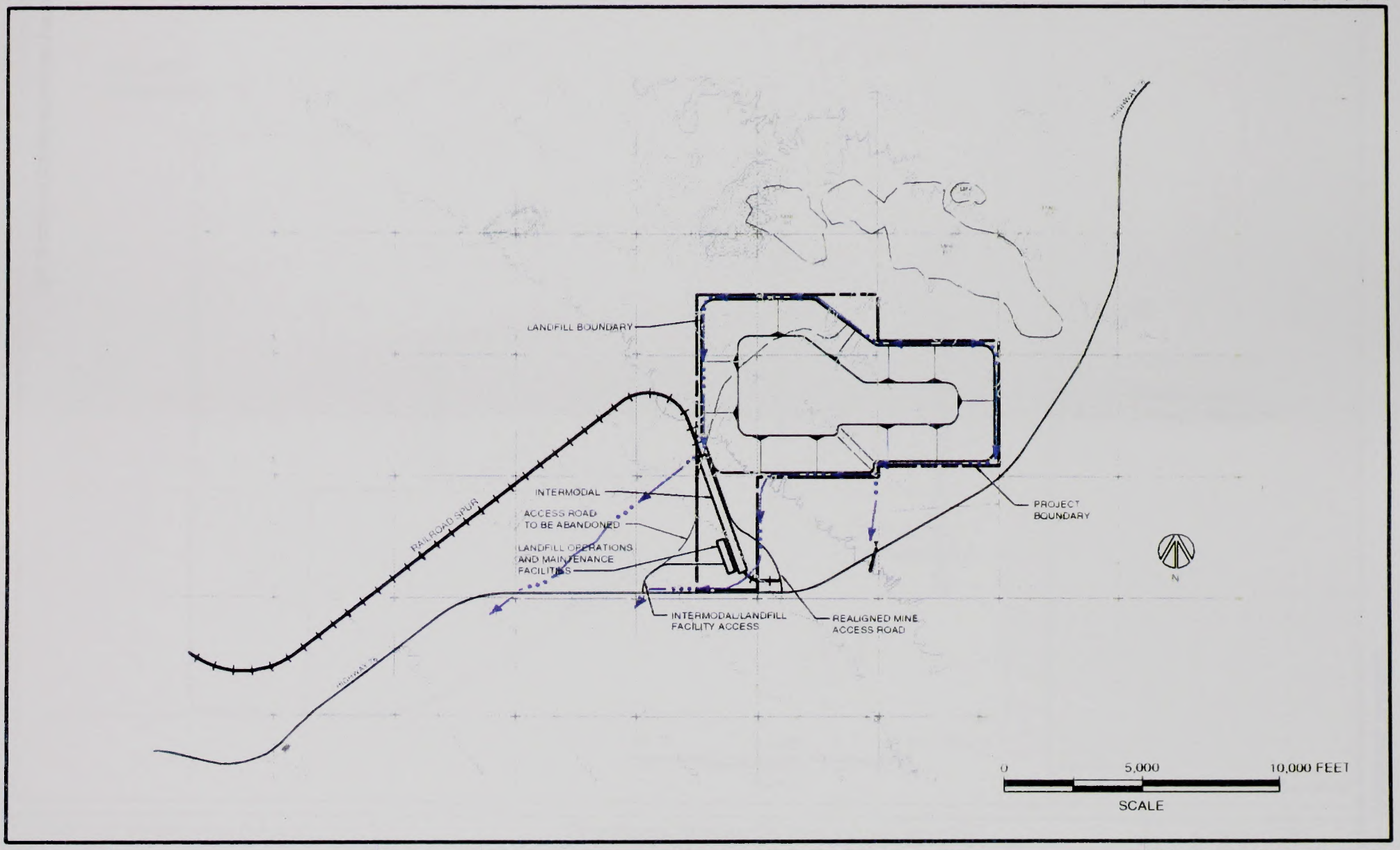

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Alternative I Landfill Configuration, Intermodal Configuration, and Drainage Plan

FIGURE

2-35

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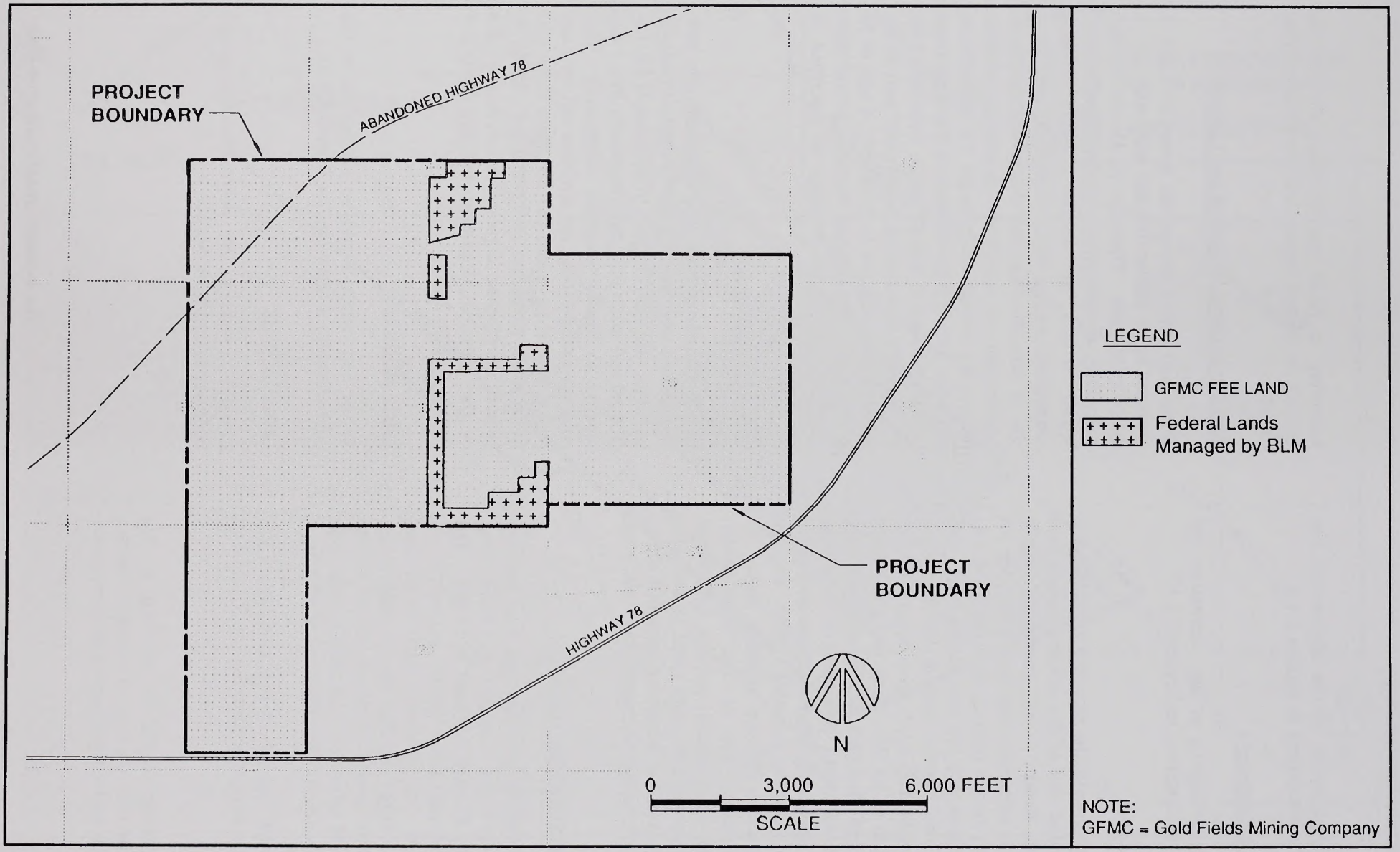

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Land Ownership within Boundary for Alternative I

FIGURE **2-36**

materials management at the alternative site would occur as described in Section 2.1.9.

Compliance Monitoring

Compliance monitoring at the alternative site would occur as described in Section 2.1.10.

Landfill Access

Highway access would be provided via SR 78 at a new intersection east of the existing intersection with Ted Kipf Road. A new intersection would be provided to minimize interference with the SP Main Line by trucks coming from the west and preparing to turn onto the new access road. The new access road would loop to the southeast, connecting with Ted Kipf Road approximately one mile south of SR 78. From that point south to the southern boundary of the proposed site, Ted Kipf Road would be improved to handle large trucks delivering supplies to the alternative site and to handle possible MSW residue container trucks. Private vehicles would be allowed continued use of Ted Kipf Road. Development of a landfill at this site would require the relocation of roads A262 (Vista Mine Road) and A2110 (an otherwise unnamed road). The details of these relocations have not been determined.

Landfill-Related Railroad Facilities

Rail access would be provided by a short rail spur that would connect with the SP Main Line, approximately 4 miles southeast of Glamis. The rail spur would feed MSW trains to an approximately 1.5-mile-long intermodal area that would roughly parallel the SP Main Line. The rail spur would continue south of the intermodal and reconnect with the SP Main Line approximately seven miles southeast of Glamis.

An intermodal facility at the alternative site would operate as described in Section 2.1.12.2.

Fencing

All new fencing would be required at this alternative site (i.e., there is no existing fencing). Therefore, the entire fence would be constructed according to BLM specifications for tortoise fencing, to prevent desert tortoises from entering the site.

Water Availability, Sanitation and Utilities

Water and utility use at the alternative site is expected to be similar to water and utility use at the proposed site. There are no known existing water lines or other utilities at the alternative site. Water would be obtained from newly-constructed, on-site wells. Since this alternative site is directly over the Amos-Ogilby Basin, construction of new wells should be feasible. Electricity would be brought in through an extension from IID power lines to the south (near the intersection of the SP Main Line and I-8). The power line would be constructed next to the SP Main Line, adjacent to the ROW. A new BLM ROW would be required for this power line. Sanitation would be provided as described in Section 2.1.14.

Off-site Improvements

Off-site improvements would include the new intersection with SR 78 and new access road, the rail spur, and utility lines. In addition, if LFG is cleaned and made into pipeline-quality gas, a gas pipeline to Niland would be constructed. This pipeline would follow the northern rail spur out of the site, cross under the SP Main Line, and travel north along the SP Main Line. North of Glamis, the pipeline alignment would be the same as the pipeline alignment for the Proposed Action (Figure 2-22).

Safety and Health

Safety and health would be maintained at the alternative site as described in Section 4.5.12.

Landfill Closure

Landfill closure at the alternative site would occur as described in Section 2.1.17.

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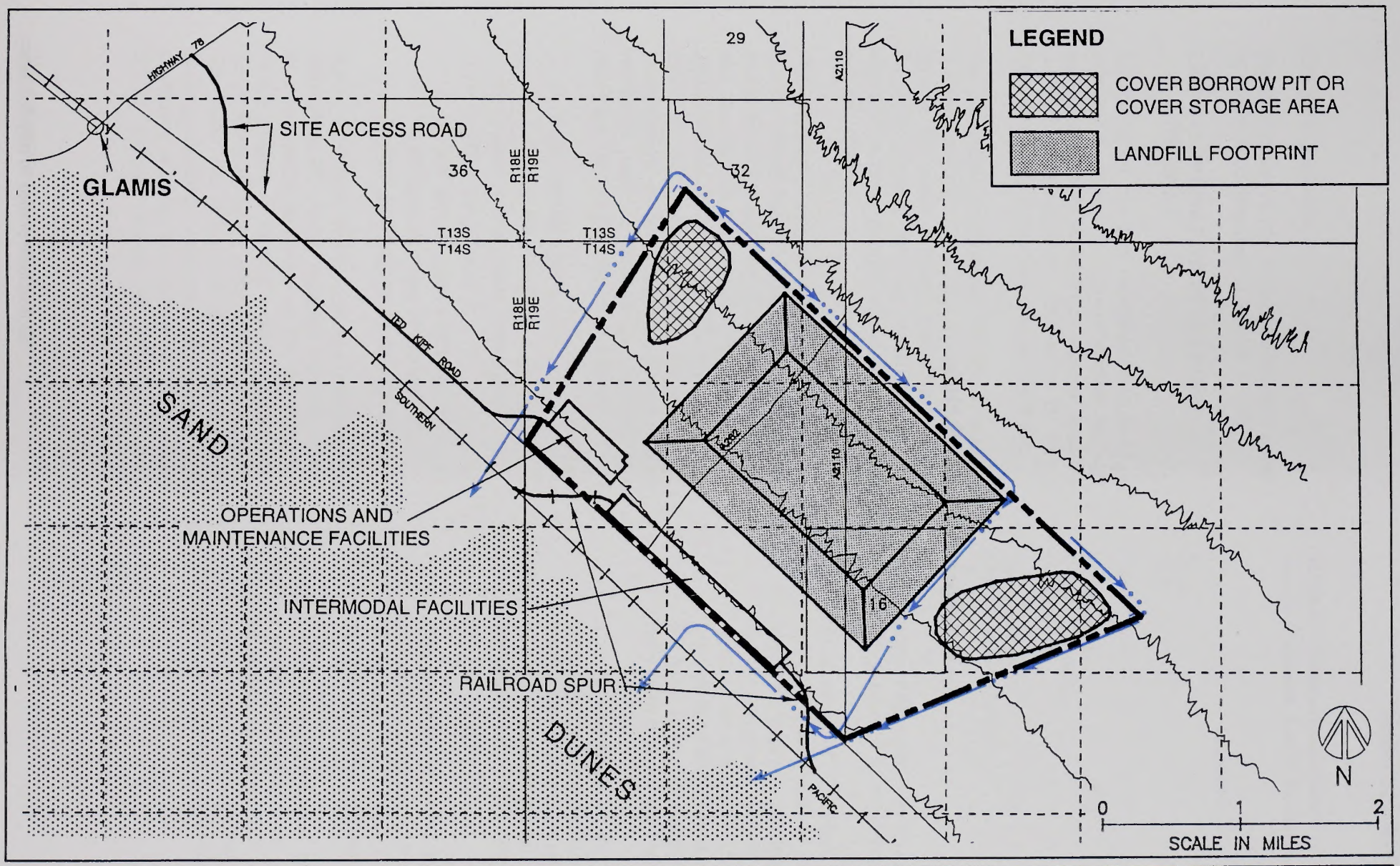

SOURCE: Environmental Solutions, Inc., 1993.

Proposed Mesquite Regional Landfill

Alternative Regional Landfill Site and Drainage Plan

FIGURE

2-37

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Financial Assurance

For the alternative site, financial assurance would be provided as described in Section 2.1.18.

2.2.7 ALTERNATIVE IV - LARGER PROJECT

Alternative IV could be implemented to avoid or reduce the cumulative environmental impacts associated with multiple future regional landfills or future local landfills. Alternative IV would consist of a larger landfill at the proposed site.

The conceptual configuration for this alternative is shown in Figure 2-38. The arrangement would include the same property boundaries as the Proposed Action, but the landfill would be expanded to cover portions of the property to the east and south.

This alternative would be similar to the Proposed Action, except that the maximum disposal rate would be increased from 20,000 to 30,000 tpd and the landfill area would be increased by approximately 35 percent. The maximum rate could be efficiently handled without major modification to the proposed design. The estimated rate of growth to achieve this maximum condition would be as follows:

- 4,000 tpd for year 1.
- 8,000 tpd for year 2.
- 12,000 tpd for years 3 through 6.
- 16,000 tpd for year 7.
- 20,000 tpd for years 8 through 13.
- 24,000 tpd for years 14 through 17.
- 30,000 tpd for years 18 through 90.

Figure 2-38 also shows drainage facilities for Alternative IV. These drainage facilities would be substantially the same as for the Proposed Action (Figure 2-16) and would integrate with the existing Mesquite Mine drainage structures. The basis for design of the Alternative IV drainage facilities would be the maximum flow conditions allowed by Caltrans at the existing SR 78 swales (based on 100-year storm).

Statistical comparisons between Alternative IV and the Proposed Action are shown below.

	Alternative IV	Proposed Action
Project Area	4,322	4,245*
Landfill Area	3,100	2,290
MSW Residue Disposal Capacity (million tons)	800	600
Estimated Landfill Operational Life (years)	90	100

* includes rail-spur

The primary differences between Alternative IV and the Proposed Action would be:

- An average of 7.5 trains per day, each hauling 4,000 tons of MSW residue would be required, in comparison with 5 for the Proposed Action. This would result in an average of 15 one-way train trips attributable to Alternative IV on the SP Main Line, compared to 10 one-way daily train trips for the Proposed Action.

- The rail intermodal at the landfill would be enlarged in approximately year 14 to handle the additional train traffic. For example, an additional track would potentially be added to the configuration shown in Figure 2-8.

- The landfill staff would ultimately increase to about 385 employees, compared to approximately 268 employees for the Proposed Action.

Additional, less encompassing changes would include minor enlargement of several of the buildings shown in Figure 2-8 and additional MSW residue and cover handling equipment to account for several more active disposal faces.

2.3 SUMMARY OF ENVIRONMENTAL IMPACTS

The environmental impact of the proposed action and alternatives are summarized in Table 2-5.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.4.1 ALTERNATIVE REGIONAL LANDFILL SITES

2.4.1.1 Sites Identified by the Southern California Association of Governments

Regional rail-haul landfill sites were identified in a report prepared by SCAG studying the feasibility of hauling solid waste to regional landfills in the Southern California area (SCAG, 1988). In that report, the following nine potential rail-haul sites were identified:

- Eagle Mountain (Riverside County)
- Morongo Indian Reservation (Riverside County)
- Blythe (Riverside County)
- Niland (Imperial County)
- Tehachapi (Kern County)
- Oro Grande (San Bernardino County)
- Dunn (San Bernardino County)
- Hector (San Bernardino County)
- Amboy (San Bernardino County)

Figure 2-39 shows the location of each of these potential rail-haul sites. Table 2-6 contains a brief summary of key elements for each of these sites. All of these sites could potentially satisfy the objectives of the State and other regional agencies. The degree to which the BLM objectives would be satisfied could not be determined from the available information. All except the Niland (Chocolate Mountain) site were eliminated from detailed consideration by application of a key Imperial County objective, which is to build Imperial County's economy by approving an environmentally and economically sound project that provides long-term employment opportunities. The Niland site was eliminated from detailed analysis because it did not meet criteria established in the Alternative Mesquite Regional Landfill Site Selection Study (Appendix A-3). See Section 2.4.1.2 for further discussion of the alternative site selection study. The Eagle Mountain site (Proposed Eagle Mountain Regional Landfill) and the Niland site (Proposed Chocolate Mountain Regional Landfill) are discussed and evaluated in the cumulative analyses (Section 4.7) because these projects have been proposed by private applicants and because they would use most of the same rail-haul route as the Proposed Action, if they were to be approved.

2.4.1.2 Remaining Alternative Mesquite Regional Landfill Sites

In preparing this EIS/EIR, an analysis of potential alternative sites for the proposed Mesquite Regional Landfill was conducted. The *Alternative Mesquite Regional Site Selection Study* is contained in Appendix A-3 of this EIS/EIR. It should be noted that this study is not intended to be a comprehensive landfill site selection study identifying feasible landfill sites in Imperial County. Rather, this study identifies reasonable alternative landfill sites for the proposed Mesquite Regional Landfill. Because of its limited scope, this study would not limit Imperial County or the BLM from the future approval of new local or regional landfill projects or an expansion of existing landfills at any location in Imperial County. All such projects would be subject to site-specific environmental analysis pursuant to the CEQA or NEPA.

The purpose of performing an analysis of potential off-site locations in Imperial County for the proposed Mesquite Regional Landfill is to comply with the provisions of Title 14 of the CCR § 15126(d) and 40 CFR § 1502.14. CEQA 14 CCR § 15126(d) provides that the environmental analysis shall:

"Describe a range of reasonable alternatives to the project, or to the location of the project,

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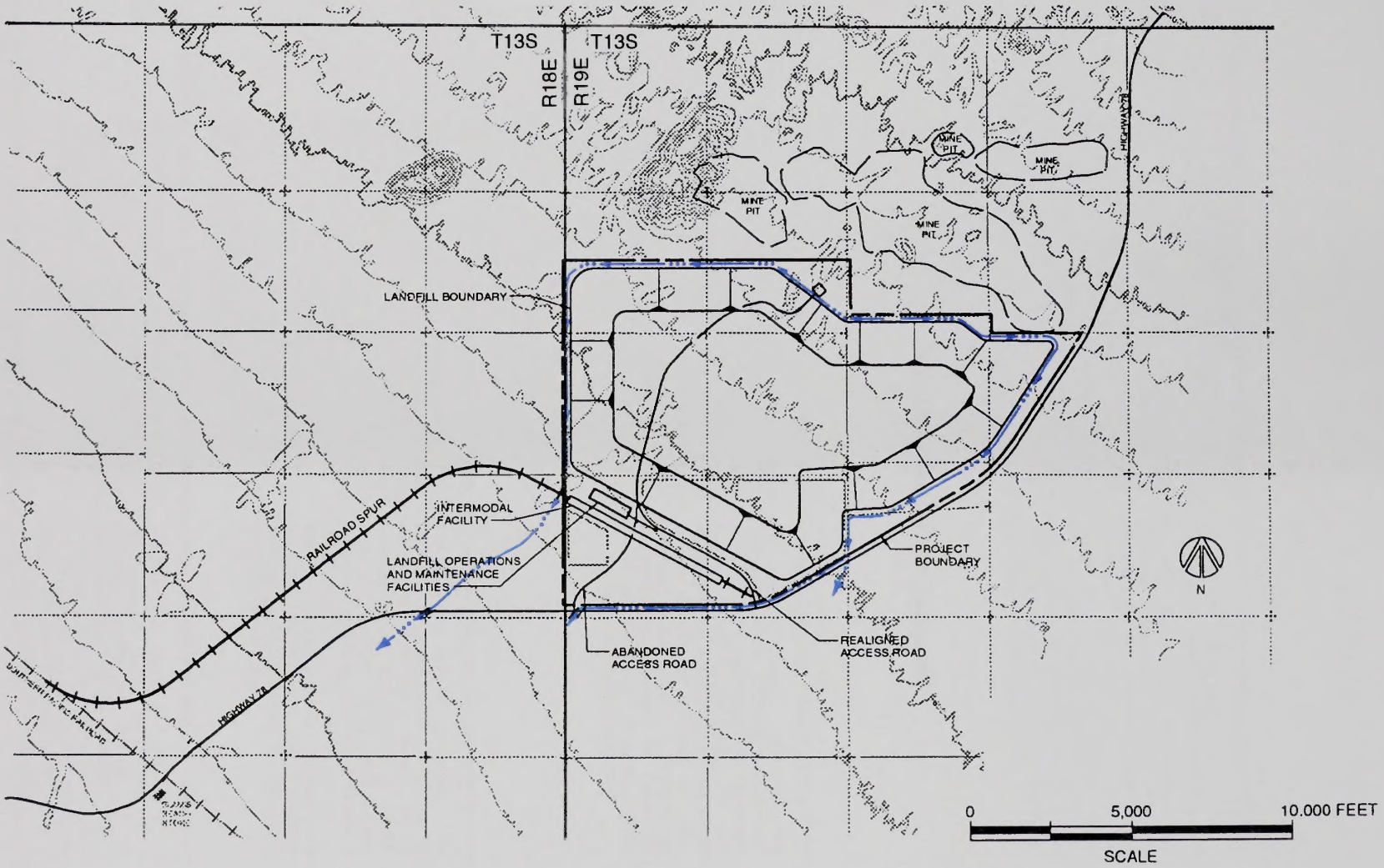

SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Alternative IV Landfill Configuration, Intermodal Configuration, and Drainage Plan

FIGURE

2-38

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TABLE 2-5
Comparison of Impact for the Alternatives
Proposed Mesquite Regional Landfill

Issue Area	Proposed Action (BLM's Preferred Alternative)	Alternative I (Smaller Landfill Footprint)	Alternative II (Decreased Disposal Rate)	Alternative III (Alternative Site)	Alternative IV (Larger Project)	No Action
Geology, Soils, & Mineral Resources	The proposed facilities would be constructed to withstand an earthquake larger than the maximum probable earthquake on the nearest fault. Also, subsidence would not be expected on-site. Runoff of precipitation could cause erosion on slopes of the landfill. In addition, there would be the potential for increased erosion where precipitation runoff diversion channels discharge into existing washes. Neighboring gold resources would not be impacted. Gravel resources on-site would be used for landfill construction. There would be no impact to other mineral or leaseable mineral resources. With implementation of mitigation measures, potential impacts to geology, soils and mineral resources would not be significant.	Development Alternative I would eliminate impacts to approximately 640 acres of BLM's gravel withdrawal area that are included in the Proposed Action. Other potential impacts (e.g., erosion and seismic effects) would be the same as those for the Proposed Action and would not be significant.	Alternative II would be operationally the same as the Proposed Action and require the same land area. Therefore, the potential impacts to geology, soils and mineral resources would be the same as those of the Proposed Action and would not be significant.	Impacts at the alternative site would be similar to those associated with the Proposed Action; however, the landfill subgrade would require special preparation to mitigate subsidence potential. Mesquite Mine leached-ore and over burden piles would not be used for cover material at this site. Impacts would not be significant.	Alternative IV would result in impacts that are substantially the same as for the Proposed Action. This is because the larger landfill alternative would be contained within the same project boundary as the Proposed Action. Additional mine overburden and clay materials would be required for cover and liner development of the larger landfill. Impacts would not be significant.	For the No Action alternative, the geology, soils, and mineral resource described for the Proposed Action would not occur. The overburden piles and ore residue from the mining activities would not be used by for landfill cover or construction. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Water Resources	The Proposed Action includes a triple composite liner, leachate collection and recovery system, and subsurface monitoring systems to protect groundwater from landfill-related impacts. The project would increase localized runoff from landfill slopes, the paved intermodal facility, and permanent road systems, with a corresponding increase in potential erosion and the potential degradation of stormwater quality. Water quality could be degraded by minor spills of fuels, solvents and other liquids. On-site water use would be within permitted limits. With implementation of mitigation measures, these potential impacts to water resources would not be significant.	Water resource consequences associated with Alternative I would be only slightly less than for the Proposed Action. Groundwater use would occur for 85 years compared to 100 years for the Proposed Action. An incremental decrease in the chance of a leak in the liner because of a smaller lined area would reduce the potential for ground water contamination. Impacts would not be significant.	Alternative II would be operationally the same as the Proposed Action and require the same land area except landfilling activities would be reduced by about 40 percent. Therefore, the potential impacts to water resources would be the essentially same as those of the Proposed Action and would not be significant. Ground water use would continue until the landfill closes in year 165.	The potential for water quality impacts at the alternative site would be greater than at the proposed site because of the alluvial materials underlying the site. Otherwise, impacts and mitigation would be the same as for the Proposed Action. With mitigation, impacts would not be significant.	Water resource consequences associated with the Alternative IV would be slightly greater than for the Proposed Action. The primary differences would be use of groundwater for 90 years instead of 100 years for the Proposed Action and because the larger lined area would incrementally increase the chance of a leak in the liner. Impacts would not be significant.	For the No Action alternative, the estimated 1,000 to 4,033 acre-feet per year of water from the existing Gold Fields well field would not be used during 100 years for landfilling activities and there would be no chance of leachate or other Proposed Action impacts to occur at the proposed site. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Biological Resources	Loss of migratory bird habitat, desert microphyll woodland, and creosote bush scrub would be incremental compared to existing habitat area in the California Desert and would not be significant. The Proposed Action would result in the loss of Class III habitat for the desert tortoise, a federal and state threatened species. Impacts to other species would not be significant. With implementation of the mitigation measures described in this EIS/EIR, potential impacts to the desert tortoise would not be significant.	For Alternative I, fewer acres of habitat would be disturbed as compared to the Proposed Action. The BLM would receive substantially fewer acres of desert tortoise critical habitat as compensation for tortoise impacts. Otherwise, biological consequences would be similar to those for the Proposed Action and, with mitigation, would not be significant.	Alternative II would be operationally similar to the Proposed Action and would impact the same land area. Therefore, the potential biological impacts would be the same as those of the Proposed Action and, with mitigation, would not be significant.	Alternative III impacts would be similar to those associated with the Proposed Action because habitats and associated wildlife at the alternative site are similar to those at the proposed site. However, an approximate 1,550 acres of additional habitat would be impacted. The loss of additional habitat would be considered significant and would be mitigated by providing additional compensation lands to BLM. With mitigation, impacts would not be significant.	Alternative IV would not result in any additional disturbance of desert habitat, because the larger landfill alternative would be contained entirely within the same project boundary as the Proposed Action. With mitigation, impacts would not be significant.	For the No Action alternative, the Mesquite Regional Landfill would not be developed, and there would be no resulting impacts to vegetation or wildlife at the proposed site. BLM would not gain Category I desert tortoise critical habitat as compensation for disturbance to Category III habitat at the proposed site Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Cultural Resources	The Proposed Action would result in the disturbance of 10 cultural resources within the project area that are eligible for inclusion on the National Register of Historic Places. With mitigation, these impacts would not be significant.	Alternative I would impact three cultural resources that are eligible for inclusion on the National Register of Historic Places. With mitigation, these impacts would not be significant.	Alternative II would require the same project configuration as the Proposed Action, and therefore, would result in the same impacts to cultural resources as the Proposed Action. With mitigation, impacts would not be significant.	One potentially significant cultural resource was identified on the alternative site during a cultural resources record search. Prior to approval of a project at this site, full cultural resources surveys would be required. Impacts likely could be mitigated as described for the Proposed Action.	Implementation of Alternative IV would result in exactly the same disturbance of identified cultural resources as the Proposed Action. With mitigation, impacts would not be significant.	If the No Action alternative is implemented, there would not be a regional landfill on the site of the Mesquite Mine and the identified cultural resources within the proposed site would not be disturbed. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.

TABLE 2-5
(Continued)

Issue Area	Proposed Action (BLM's Preferred Alternative)	Alternative I (Smaller Landfill Footprint)	Alternative II (Decreased Disposal Rate)	Alternative III (Alternative Site)	Alternative IV (Larger Project)	No Action
Paleontological Resources	No paleontological resources exist at the proposed site. Therefore, impacts would not be significant.	No paleontological resources exist at the proposed site. Therefore, impacts would not be significant.	No paleontological resources exist at the proposed site. Therefore, impacts would not be significant.	No paleontological resources exist at the alternative site. Therefore, impacts would not be significant.	No paleontological resources exist at the proposed site. Therefore, impacts would not be significant.	Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Transportation	The Proposed Action would increase the number of train trips along the rail-haul route and vehicle trips along SR 78. With implementation of mitigation measures, these impacts would not be significant. Project-related employee traffic on SR 78, in the vicinity of the proposed site, from the afternoon before to the morning after weekends and/or holidays from October 1st through May 31st would be cumulatively significant. Other project-related trips would be scheduled to avoid this period.	Alternative I would be operationally the same as the Proposed Action, including the same vehicular and rail-haul traffic generation. Therefore, the potential transportation impacts of this alternative would be the same as those for the Proposed Action and would be cumulatively significant as described for the Proposed Action. Impacts would only occur for 85 years as compared to 100 years for the Proposed Action.	Alternative II would generate six trips per day on the rail-haul route, compared to ten for the Proposed Action. Also, fewer personnel would be employed, resulting in less traffic on SR-78. Impacts would continue for 165 years as compared to 100 years for the Proposed Action. Impacts would be cumulatively significant as described for the Proposed Action.	Impact would be similar to the Proposed Action except SR 78, Ted Kipf Road, and the Mesquite Mine Access Road would all have to be improved. Also, two new at-grade railroad crossings would be required for the rail-spur crossings of Ted Kipf Road. Portions of the Vista Mine Road and A2110 would have to be relocated. Trucking of clay material by 200 trucks per day, 60 days per year, would be required for liner construction at this site. Impacts would be significant during days when clay is trucked. Impacts would be cumulatively significant as described for the Proposed Action.	Alternative IV would result in daily MSW residue deliveries of up to 30,000 tpd. This would increase the daily number of train trips to and from the Mesquite Regional Landfill to a maximum of 16. This increased train traffic would cause more at-grade railroad crossing delays than the Proposed Action. Also, traffic on SR 78 would increase. Impacts would occur for 90 years, compared to 100 years for the Proposed Action. As described for the Proposed Action, impacts would be cumulatively significant.	Implementation of the No Action alternative would avoid the cumulatively significant impacts associated with the Proposed Action. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Noise	The Proposed Action would increase noise events in the site area and along the rail-haul route. However, due to the lack of sensitive receptors near the project area, and the insignificant overall increase in project-related noise levels along the SP route, potential noise impacts would not be significant.	Alternative I impacts would be the same as described for the Proposed Action except they would only occur for 85 years, as compared to 100 years for the Proposed Action. Impacts would not be significant.	Alternative II impacts would be about 40 percent less than those described for the Proposed Action. Impacts would occur for 165 years, compared to 100 years for the Proposed Action. Impacts would not be significant.	Alternative III impacts would be essentially the same as those described for the Proposed Action but they would occur in the vicinity of the alternative site. Impacts would not be significant.	Alternative IV would result in an increase in noise events along the rail-haul route and at the site. However, this increase would not be significant. Impacts would occur for 90 years, compared to 100 years for the Proposed Action.	If the No Action alternative is implemented the noise impacts described for the Proposed Action would be avoided. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Air Quality	Stationary source air emissions from the proposed landfill would exceed threshold criteria and would be significant. Offsets obtained by diverting agricultural plant material from burning or from the closing of the Mesquite Mine, along with LFG collection and destruction/ transformation, dust control, and proper vehicle maintenance; would substantially reduce emissions. It was determined that the landfilling of 20,000 tons per day of MSW residue in the Imperial County Air Basin rather than in the South Coast Air Basin and the associated reduction in MSW transport truck traffic in the South Coast Air Basin would improve air quality in the Los Angeles Basin, and reduce ozone transport to Coachella and Imperial valleys. With mitigation, air quality impacts would not be significant except that emissions of PM_{10} would be cumulatively significant during periods when background PM_{10} concentrations exceed air quality standards. Impacts from airborne toxics and odors would not be significant.	For Alternative I, emissions would be similar to those described for the Proposed Action, but would begin to decline 15 years earlier than with the Proposed Action. With mitigation, impacts would not be significant except PM_{10} emissions would be cumulatively significant as described for the Proposed Action.	Alternative II would result in a reduction in emissions as compared to the Proposed Action. Emissions would continue at peak levels for 65 years longer than for the Proposed Action (the peak level for Alternative II would be lower than the peak level for the Proposed Action). With mitigation, impacts would not be significant except PM_{10} emissions would be cumulatively significant as described for the Proposed Action.	For Alternative III, emissions would be very similar to Proposed Action emissions except additional mobile source emissions would occur as cover material is excavated and clay is trucked from the Mesquite Mine. With mitigation, impacts would not be significant except PM_{10} emissions would be cumulatively significant as described for the Proposed Action.	For Alternative IV, emissions would be approximately 50 percent greater than Proposed Action emissions. Emissions would begin to decline after 90 years as compared to 100 years for the Proposed Action. With mitigation, impacts would not be significant except PM_{10} emissions would be cumulatively significant as described for the Proposed Action.	The No Action alternative could result in the 20,000 tpd of MSW residue, proposed for rail-haul to the Mesquite Regional Landfill, being transported instead by transfer trucks to existing and future landfills in the South Coast Air Basin (SOCAB), and the subsequent transport of O_3 to Imperial County. The No Action Alternative could therefore result in greater emissions of all criteria pollutants in the SOCAB. If the MSW residue is instead transported out of the SOCAB, beneficial impacts associated with removing landfill-related emissions in the SOCAB, as described for the Proposed Action could also occur. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.

TABLE 2-5
(Continued)

Issue Area	Proposed Action (BLM's Preferred Alternative)	Alternative I (Smaller Landfill Footprint)	Alternative II (Decreased Disposal Rate)	Alternative III (Alternative Site)	Alternative IV (Larger Project)	No Action
Land Use	The proposed landfill would be compatible with surrounding land uses. Land uses along the existing rail line that would be used to transport MSW residue to the proposed site would not be significantly impacted by the Proposed Action. The proposed General Plan Amendment, zone change, BLM land exchange, and CDCA Plan Amendment would bring the proposed landfill into conformance with the Imperial County General Plan, Imperial County Zoning Ordinance, and the BLM CDCA Plan. Implementation of these measures would eliminate potential land use impacts.	The potential land use impacts for Alternative I would be similar to those for the Proposed Action. However, fewer federal lands would be required, and the CDCA Plan Amendment to exclude the portion of the Singer Geoglyphs ACEC located north of SR 78 would not be required. Impacts would not be significant.	Alternative II land use impacts would be the same as the Proposed Action. Impacts would not be significant.	Alternative III land use impacts would be similar to the Proposed Action except more federal land would be required and the CDCA Plan Amendment to exclude the portion of the Singer Geoglyphs ACEC located north of SR 78 would not be required. Impacts would not be significant.	The potential land use impacts for the Alternative IV would be the same as those of the Proposed Action since the expanded footprint would be entirely within the proposed landfill site. Impacts would not be significant.	For the No Action alternative, impacts identified for the Proposed Action would not occur. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Recreational Resources	The Proposed Action would result in the loss of approximately 1,750 acres of federally-owned land that is currently designated for recreational uses. With mitigation of the Mesquite Mine overlook trail, impacts would not be significant.	For Alternative I, fewer federal lands designated for recreation would be required. With mitigation of the Mesquite Mine overlook trail, impacts would not be significant.	Alternative II would require the same land as the Proposed Action. With mitigation of the Mesquite Mine overlook trail, impacts would not be significant.	This alternative would result in the loss of approximately 4,450 acres of federal land currently designated for recreational uses. With relocation of the Vista Mine Road and A2110 and improvement of Ted Kipf Road between SR 78 and the alternative site, impacts would not be significant.	Alternative IV would require the same land as the Proposed Action. With mitigation of the Mesquite Mine overlook trail, impacts would not be significant.	For the No Action alternative, impacts associated with the Proposed Action would be avoided. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Visual Resources	There would be a potentially significant landfill lighting impact to military pilots wearing night vision devices. However, with mitigation, these impacts would not be significant. Landform alteration impacts would be significant and unavoidable.	Visual resource consequences of the Alternative I would be similar to those described for the Proposed Action. Minor differences would be visible from Viewpoint Nos. 2 and 3, but would not perceptively change visual characteristics of the landfill. Landfill lighting would occur for 85 years. Landform alteration impacts would be significant and unavoidable.	Visual resource impacts of Alternative II would be the same as those described in the Proposed Action, except that lighting associated with landfill operations would occur for 165 years instead of 100 years. Landform alteration impacts would be significant and unavoidable.	Use of this alternative site would not result in potential night vision impacts to military pilots. Landform alteration impacts would be significant and unavoidable.	Potential visual resource impacts of the Larger Project alternative would be similar to those described the Proposed Action. The greatest visual difference would be that the landfill would be closer to SR 78 for approximately three miles, and practically all of the mine overburden piles would be removed. Landfill lighting would occur for 90 years. Landform alteration impacts would be significant and unavoidable.	For the No Action alternative, the Proposed Action significant landform alteration impacts would be avoided. The predominant visual features at the site would continue to be the mine overburden and leached-ore residue piles. Lighting at the site would end in 10 to 15 years. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Environmental Health and Public Safety	The Proposed Action could result in the potential for contamination of precipitation runoff, groundwater, and soils from the possible escape of leachate and LFG. Increased train and vehicle traffic would increase the potential for health and safety impacts. Finally, landfill-related air emissions would include toxic compounds. With implementation of the mitigation measures described in this EIS/EIR, these potential impacts would not be significant.	Impacts described for the Proposed Action would also occur if Alternative I is implemented except that impacts would occur for 85 years, compared to 100 years for the Proposed Action. With mitigation, impacts would not be significant.	Alternative II would have a reduced potential to impact health and safety, compared to the Proposed Action, because MSW volumes delivered to the site would be reduced by 40 percent. Impacts would occur for 165 years as compared to 100 years for the Proposed Action. With mitigation, impacts would not be significant.	Impacts for Alternative III would be similar to the Proposed Action except the existing railroad crossing of SR 78 in the vicinity of Glamis would be impacted, two new at-grade railroad crossings of Ted Kipf Road would be required, and trucking of clay would increase traffic on SR 78. With mitigation, impacts would not be significant.	Alternative IV would require 50 percent increases in daily train trips and air emissions compared to the Proposed Action. The increase in vehicular and train traffic resulting from this alternative would increase the potential for at-grade railroad crossing safety hazards along the rail-haul route. The increased train traffic would also result in the increased potential for a landfill-bound train having an accident. Impacts would only occur for 90 years as compared to 100 years for the Proposed Action. With mitigation, impacts would not be significant.	If the No Action alternative is implemented, the impacts described for the Proposed Action would be avoided. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.

TABLE 2-5
(Continued)

Issue Area	Proposed Action (BLM's Preferred Alternative)	Alternative I (Smaller Landfill Footprint)	Alternative II (Decreased Disposal Rate)	Alternative III (Alternative Site)	Alternative IV (Larger Project)	No Action
Socioeconomics	Potentially, significant impacts related to public liability for landfill-related environmental impairment and long-term care would be mitigated by providing legally mandated financial assurance. Several beneficial effects were identified, including job creation, increased earnings, and a net increase in County revenues from normal County revenue sources as well as the payment of a host fee. With the provision of financial assurances, impacts would not be significant.	Alternative I would not result in any socioeconomic changes from those described for the Proposed Action except that project related benefits would cease after 85 years compared to 100 years for the Proposed Action. With the provision of financial assurances, impacts would not be significant.	Alternative II would produce fewer jobs, earnings and revenues per year, compared to the Proposed Action. Jobs, earning, and revenue benefits would continue for 165 years, compared to 100 years for the Proposed Action. With the provision of financial assurances, impacts would not be significant.	Impacts associated with the alternative site would be essentially the same as the Proposed Action except additional jobs and earnings would be created. With the provision of financial assurances, impacts would not be significant.	Alternative IV would produce greater job, earning, and revenue benefits per year to the County compared to the Proposed Action. These benefits would last 90 years compared to 100 years for the Proposed Action. With the provision of financial assurances, impacts would not be significant.	Under the No Action alternative, the job, earning, and revenue benefits described for the Proposed Action would not occur. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Public Services and Utilities	No significant impacts to public services or utilities were identified for the Proposed Action.	No significant impacts to public services or utilities were identified for Alternative I. Impacts would occur for 85 years compared to 100 years for the Proposed Action.	No significant impacts to public services or utilities were identified for Alternative II. Impacts would occur for 165 years compared to 100 years for the Proposed Action.	No significant impacts to public services or utilities were identified for Alternative III, provided the Applicant upgrades Ted Kipf Road, relocates the Vistas Mine Road and A2110, and provides other required improvements. With mitigation, impacts would not be significant.	No significant impacts to public services or utilities were identified for Alternative IV. Impacts would occur for 90 years compared to 100 years for the Proposed Action.	For the No Action alternative, the Proposed Action-related impacts would be avoided. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.
Energy Consumption/ Conservation	No significant impacts to energy consumption/conservation were identified for the Proposed Action. Beneficial effects could result from the on-site generation of electricity or methane through collection and processing of LFG at the project site.	Alternative I would have the same impacts to energy consumption and conservation as the Proposed Action. Impacts and the ability to generate energy from LFG would occur 15 fewer years than would occur under the Proposed Action. Impacts would not be significant.	Alternative II would require a similar amount of energy per ton of MSW landfilled as the Proposed Action. Impacts and the ability to generate energy from LFG would occur for 65 more years than would occur under the Proposed Action. However, it may be less feasible to generate energy under this alternative. Impacts would not be significant.	Project-related energy usage and creation would be similar to the Proposed Action except slightly more diesel fuel would be required to truck clay from the Mesquite Mine to the alternative site. Impacts would not be significant.	Alternative IV would require a similar amount of energy per ton of MSW landfilled as the Proposed Action. Impacts and the ability to generate energy from LFG would occur for 10 fewer years than would occur under the Proposed Action. However, it may be more feasible to generate energy under this alternative. Impacts would not be significant.	For the No Action alternative, energy to landfill a equivalent amount of MSW residue near the community of origin would be about 72 percent of that required to landfill the MSW residue at the proposed regional landfill. The excess energy use required to haul the MSW residue to the proposed site would not be significant. Impacts of future No Action alternative-required landfills cannot be reasonably predicted at this time.

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Location Of Potential Regional Landfills

FIGURE **2-39**

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TABLE 2-6

Potential Remote Waste-By-Rail Landfill Sites

Proposed Mesquite Regional Landfill

Site	Rail Line	Site Area	SCAG Remarks
Imperial County			
Niland	Southern Pacific	60 * square miles	--
Kern County			
Tehachapi	Southern Pacific	1,050 acres	• Proposed for Kern County waste.
Riverside County			
Blythe	ATSF	N/A	• Gasification plant proposed. • ATSF is not interested in hauling waste to Blythe due to economics and need to upgrade line.
Eagle Mountain	Southern Pacific	N/A	• Former Kaiser Steel Iron Mine.
Morongo Indian Reservation	Southern Pacific	N/A	• 36,000-acre reservation, only 1,000 acres inhabited.
San Bernardino County			
Amboy	ATSF	N/A	--
Dunn	Union Pacific	285 acres	• Proposed as possible preferred alternative to Oro Grande waste separation solid waste gasification plant.
Hector	ATSF or Union Pacific	12,000 acres (some BLM land)	• Hazardous waste repository being considered. • Need spur line of 5 to 15 miles. • This area may be involved in or border proposed Desert National Park.
Oro Grande	ATSF or Union Pacific	75 acres	• Waste separation plant and solid waste gasification plant proposed.

Notes:

* Taken from SCAG report, 60 square miles may be a typographical error.

ATSF = Atchinson, Topeka, and the Santa Fe Railroad.

N/A = Not available. The 1988 SCAG rail haul feasibility study did not provide consistent information for each site.

Source: SCAG, 1988.

which could feasibly attain the basic objectives of the project, ..."

The off-site analysis was also conducted to address the policy described in that same regulation which states:

"The discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance . . ."

40 CFR § 1502.14(a)(b) and (c) require that an EIS:

(a) Rigorously explore and objectively evaluate all reasonable alternatives, . . .

(b) Devote substantial treatment to each alternative considered in detail, including the proposed action, . . .

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

Similarly, the BLM Handbook requires that an EIS describe all reasonable alternatives to the Proposed Action to the same level of detail as the Proposed Action and that an EIS address how each alternative, with the exception of the No Action Alternative, will generally accomplish the purpose and need for the action (BLM Handbook, Chapter V, Section (C)(3)(f)(3)).

The *Alternative Mesquite Regional Landfill Site Selection Study* was prepared using existing data sources and assumed that only the location of the landfill would be changed. The remaining elements of the Proposed Action, including but not limited to the size of the landfill, scope of operations, and the landfill's life span, were assumed to be similar to those identified for the Proposed Action.

In searching for potential alternative sites for the Mesquite Regional Landfill, several key site selection criteria were established. These criteria were based on required regulatory landfill design factors, obvious land use conflicts, and environmental resources that could be affected by the siting of a landfill. The site selection criteria were as follows:

- The site's substrate must offer natural hydrogeologic conditions that result in at least 5 feet of separation from underlying ground water as required by 23 CCR Chapter 15.

- The site must not be located within 200 feet of a potentially active (Holocene) fault as required under Subtitle D of the RCRA.

- The site must not be located in an area where BLM multiple-use class guidelines preclude a land exchange.

- The site must not be located on U.S. Department of Defense (U.S. DOD) lands or other federal lands withdrawn for U.S. DOD use. Such lands are generally referred to as U.S. DOD lands in this EIS/EIR.

- The site must not be located on a Native American Indian Reservation.

- The site must not be located on land containing topography that is incompatible with landfill development (e.g., mountainous terrain or sand dunes).

- Relative to the proposed Mesquite Regional Landfill Site, the alternative site must not be located within a region where landfill development would result in additional significant impacts to sensitive biological resources known to occur in the area.

- The site must not be located within an area identified in the Imperial County General Plan (1993) as being "very sensitive" for prehistoric cultural resources.

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- The site must not be located within three-miles of an incorporated city or unincorporated community with a population of 1,000 or more persons.

Application of all of the foregoing site selection criteria resulted in the identification of six distinct regions of Imperial County as potential alternative locations for the proposed Mesquite Regional Landfill. Figure 2-40 contains a composite of the remaining regions. These regions are numbered 1A, 1B, 1C, 2, 3 and 4 for ease of reference and are briefly described below.

Region 1A consists of an area that extends from the western border of Imperial County to approximately eight miles west of the Salton Sea/West Shore area (Figure 2-40). Region 1A consists of part of Township 10 South (10S), Range 9 East (R9E) on the USGS Seventeen Palms 7.5-minute series quadrangle and is located approximately six miles south of the northern border of Imperial County and approximately 11 miles north of SR 78. Region 1A contains approximately 3,500 acres of both state- and privately-owned land (approximately 5.5 square miles) and is smaller than the 4,300 acre proposed site.

Region 1B is located approximately four miles north of SR 78, six miles east of the Imperial County western border, and one mile west of State Route 86 (SR 86). Region 1B contains approximately 1,680 acres of BLM-managed land and state- and privately-owned land (approximately 2.6 square miles) within T11S, R10E on the USGS Kane Spring NW 7.5-minute series quadrangle. Similar to Region 1A, Region 1B is smaller than the 4,300 acre proposed site.

Region 1C is generally located west of the Salton Sea, at the point where SR 78 and SR 86 merge (Figure 2-40). Region 1C contains 5,520 acres (8.6 square miles) of BLM-managed and privately-owned land and overlays portions of the SR 78 and SR 86 rights-of-way. Region 1C is located with T12S, R11E; T13S, R11E; T13S, R10E; and T12S, R10E on the USGS Kane Spring, Kane Spring, NW, and Kane Spring NE 7.5-minute series quadrangles.

Region 2 consists of an area located west of Calexico and southwest of El Centro (Figure 2-40). This region is approximately 2.5 miles south of Interstate 8 and contains approximately 18,000 acres (approximately 28 square miles). Region 2 is approximately one mile west of the New River. Region 2 consists of portions of T16S, R12E; T16 1/2S, R12E; T15S, R12E; T15S, R13E; and T16S, R13E on the Heber and Mount Signal USGS 7.5-minute series quadrangles. Land ownership is primarily federal, under BLM management, and includes few privately-owned sections.

Region 3 is bounded on the north by the Chocolate Mountains Aerial Gunnery Range and on the southwest by approximately Ted Kipf Road (Figure 2-40). It extends as far east as approximately Ogilby Road and its southernmost point is about 12 miles southeast of Glamis as measured along Ted Kipf Road). Region 3 contains approximately 54,099 acres (approximately 84.5 square miles) of primarily federally-owned land, under BLM management, and includes a few privately-owned sections. It consists of portions of T13S, R19E; T13, R18E; T13S, R20E; T14S, R19E; T14S, R18E; and T14S, R20E on the Acolita, East of Acolita, Gables Wash, Glamis, Clyde and Hedges USGS 7.5-minute series quadrangles.

Region 4 is comprised of approximately 2,000 acres (approximately 3.1 square miles) of primarily BLM managed land located north of Tumco and Gold Rock Ranch and northwest of the Cargo Muchacho Mountains (Figure 2-40). This area is located within T15S, R20E on the USGS Hedges 15-minute series quadrangle.

Additional site evaluation considerations were identified and applied to the remaining regions within the County to determine whether a landfill in the remaining regions would avoid a significant impact identified at the proposed site, or reduce the impact to below a level of significance. Included as part of this

determination was an evaluation of suitability for development and a determination of whether an alternative site would meet the project objectives identified in Section 1.1.4 of the EIS/EIR. The site consideration criteria include the following:

- Productive Agricultural Lands: The County has established the protection of productive agricultural land as an important land use planning goal. In recognition of the importance of agricultural production in Imperial County, an Agricultural Element was added to the County of Imperial General Plan Update (Imperial County, 1993b). As a result, protection of agricultural land was a site consideration, though not an elimination criteria, in selection of an alternative site for the proposed Mesquite Regional Landfill. In addition, information from the California Department of Conservation Farmland Mapping and Monitoring Program (State of California, 1990) has also used in the site selection study.

- Transportation Access: The proposed regional landfill would require rail-haul for the delivery of MSW residue. Proximity to existing rail facilities was an important consideration, as was the availability of access roads. While these facilities could be constructed for any selected site area, a new rail access spur or off-site project access road of greater than 10 to 15 miles was considered to be significant, based on the new disturbance, the associated environmental impacts, and the considerable costs that would result from its construction.

- Availability of clay and cover material: The proposed regional landfill would require up to 200 million cubic yards of material for daily and intermediate cover. An additional 7- to 8-million cubic yards of clay would be required for construction of the landfill liner. Without the overburden and ore residue piles from the Mesquite Mine, cover materials would have to be excavated from a borrow area within the site boundaries. Initially, the excavations could occur within the landfill footprint. However, excavations within the landfill footprint could not extend to closer than 15 feet above the water table. This would allow room for additional excavations to construct the base liner and monitoring systems and still comply with state regulations requiring at least 5 feet separation between the bottom of the landfill and the highest natural level of ground water. Since the remaining regions have a depth to ground water of no more than approximately 30 to 35 feet, a maximum of 15 feet of excavation within the landfill footprint could occur.

  In order to provide enough land for excavation of 200 million cubic yards of cover material, it was anticipated that a project site of up to 5,200 acres would be required. The availability of a site this large (5,200 acres) was therefore an additional consideration that would affect the feasibility of a potential alternative site location.

  Off-site importation of 200 million cubic yards of cover material, while technically feasible, would not be desirable due to associated costs and potential transportation and air quality impacts. It was estimated that approximately 500 daily, one-way truck trips, 365 days a year, would be required to deliver cover material. If on-site clay materials do not exist, off-site importation of 7-to 8-million cubic yards of clay, or an alternative liner design, would be considered. Importation of clay materials would require an estimated 200 daily, one-way truck trips, about 60 days per year.

Based on application of the site selection criteria and further evaluation of the site evaluation

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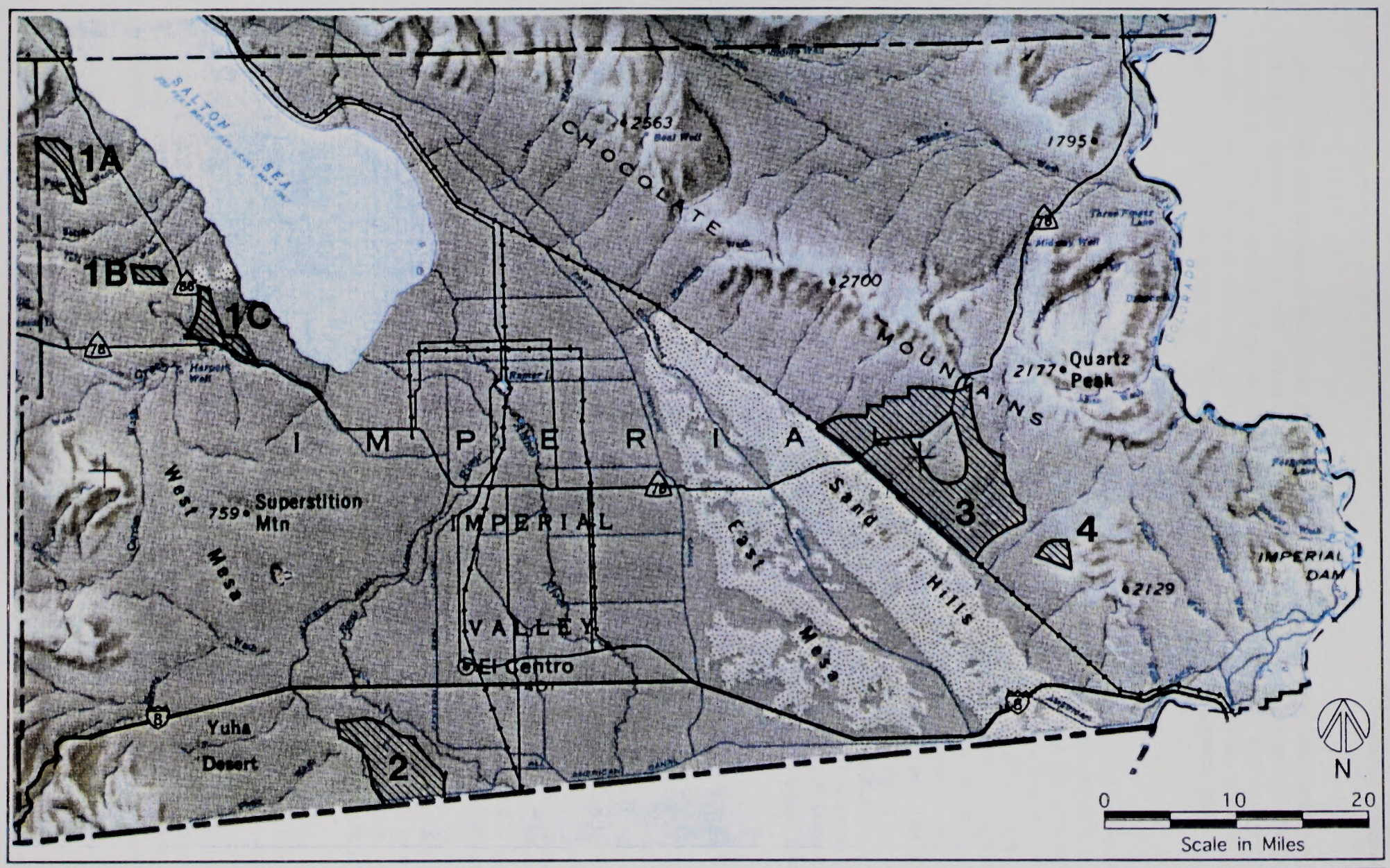

SOURCE: The Butler Roach Group, 1993.

Basemap: USGS 1:100,000 Scale Map of California, 1971.

Proposed Mesquite Regional Landfill

Remaining Regions for Alternative Landfill Site

FIGURE

2-40

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criteria, a feasible alternative site for the proposed Mesquite Regional Landfill was identified within Region 3. The Alternative Mesquite Regional Landfill site is described in Section 2.2.6 of this EIS/EIR and is depicted on Figure 2-37. Additional remaining regions analyzed in Appendix A-3 were found to be constrained by a number of environmental impacts that would not occur at the proposed site and may not be mitigable to below a level of significance. The findings of the Mesquite Regional Landfill Site Selection Study, relative to Regions 1A, 1B, 1C, 2, and 4 (shown on Figure 2-40) are presented below.

Regions 1A, 1B, and 1C

Based upon the application of site selection and site evaluation criteria identified in the Site Selection Study, siting the proposed Mesquite Regional Landfill within Regions 1A, 1B, or 1C would require a longer rail spur than would be required at the proposed site. These regions were eliminated from consideration primarily as a result of the increased surface disturbance associated with the required rail spurs. In addition, a landfill in these regions could result in additional impacts to cultural resources, associated with aligning the required rail spur through areas identified in the Imperial County Updated General Plan as being "very sensitive" for cultural resources. These regions may also require the importation of clay and cover materials. Region 1B would require importation of clay/cover materials because there would not be sufficient land for on-site borrow.

Region 2

Based upon the application of site selection and site evaluation criteria identified in the Site Selection Study, siting the proposed Mesquite Regional Landfill within Region 2 would result in the loss of up to 5,200 acres of "Prime Farmland" and "Farmland of Statewide Importance." This was the primary reason this region was eliminated from consideration. The existing irrigation canal system in the area would also be affected by the construction of the required rail spur, a minimum of 5-miles in length. This rail spur likely would be aligned through agricultural areas which would increase the loss of agricultural land. These impacts would not occur at the proposed Mesquite Regional Landfill site.

Region 4

Based upon the application of site selection and site evaluation criteria identified in the Site Selection Study, siting the proposed Mesquite Regional Landfill within Region 4 would require the development of a rail spur through a seismically sensitive area. In addition, Region 4 is not large enough to allow for the on-site excavation of cover materials and clay, should they exist within the region. The importation of such materials would result in a long-term increase in traffic volumes along Ogilby Road. These impacts would not occur at the proposed site. Siting the proposed Mesquite Regional Landfill in Region 4 could also result in significant visual impacts.

2.4.2 FILLING THE MESQUITE MINE PITS

The Mesquite Mine is currently active and is expected to continue operating for approximately 10 to 15 years. As a result, to begin a landfill project prior to that time, an interim above-ground landfill would have to be constructed. Since, the engineering requirements of an above-ground landfill are substantially different than a landfill in the mine pits, the timing of mine closure would effectively create two separate landfill projects: an initial above-ground landfill during the remaining period of mine operations, and a landfill in the mine pits after mine operations have ceased. This would result in an unnecessary increase in the cost of operating the landfill.

Using the mine pits as a repository for MSW residue would also prevent future mining of these areas. Substantial quantities of gold mineralization will remain outside the final walls and floor of the existing mine pits after completion of mining activities because recovery of that gold is "marginal" under present

economic and technological conditions (i.e., the gold resources cannot be economically retrieved). Should the economic climate improve and/or process technology advance, these gold resources could be a viable reserve in the future. Using the mine pits for a landfill would preclude the opportunity for future recovery of this remaining mineralization. Therefore, the Filling the Mine Pits Alternative would be in conflict with one of the primary purposes of federal and state statutes (1975 California Surface Mining and Reclamation Act, as amended; and FLPMA), which is to protect potential future use of mineral resources in mining areas prior to site abandonment. Therefore, implementation of this alternative could result in a potentially significant loss of natural resources.

A mine-pit based landfill that could begin construction in 10 to 15 years would offer substantially fewer benefits than the proposed above-ground landfill. The above-ground landfill would have a 100 to 300 foot separation from the existing water table compared to only a 20-foot separation if the mine pits are filled. In addition, the vadose zone materials for the landfill in the mine pits (i.e., the artificial fill that would be required to raise the bottom of the mine pits above the ground water table) would be substantially more permeable to infiltration by liquids or gas in the event of a leak in the liner system. Placement of the landfill in the mine pit would require construction of a LCRS that would include pumps to convey collected above-liner liquids out of the pits, instead of the more reliable gravity-based system planned for the proposed aboveground project. Because of the limited capacity of the mine pits, filling the mine pits would still result in 300- to 400-foot aboveground land configurations as with the proposed project. This alternative would reduce some impacts identified for the Proposed Action, but those impacts would still be significant. For all of these reasons, using the mine pits as the location of the landfill on this site was eliminated from further study.

2.4.3 ALTERNATIVE WASTE MANAGEMENT PRACTICES

Provision of efficient and effective waste management practices will be an important goal for the State of California and local governments as its population continues to grow and expand. AB 939 has expressed this important goal through, among other things, its requirement of the development of local integrated waste management plans and the diversion of 25 and 50 percent of the existing waste stream through recycling by the years 1995 and 2000, respectively. As part of implementing these requirements, the CIWMB and local governments are specifically required to do both of the following:

- Promote the following waste management practices in order of priority:
  - Source reduction.
  - Recycling and composting.
  - Environmentally safe transformation and environmentally safe land disposal, at the discretion of the city or county.
- Maximize the use of all feasible source reduction, recycling, and composting options in order to reduce the amount of solid waste that must be disposed of by transformation and land disposal. For wastes that cannot feasibly be reduced at their source, recycled, or composted, the local agency may use environmentally safe transformation or environmentally safe land disposal, or both of those practices.

The proposed Mesquite Regional Landfill would be developed to provide an environmentally-safe land disposal option for use, at the discretion of Southern California counties and cities, after other waste management practices have been applied to reduce local community waste streams. As discussed in the description of the Proposed Action in Section 2.1, the Mesquite Regional Landfill would not accept MSW residue

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containers that have not been sorted and processed at transfer stations. In addition, the proposed landfill would not accept MSW residue containers from transfer stations in communities that could not demonstrate compliance with AB 939 or were not operating in good faith, as determined by the CIWMB, to comply with AB 939. The waste stream analysis, upon which this document is based, accounts for full compliance with AB 939. This would assure consistency with AB 939's goal of reducing the amount of waste that needs to be landfilled while providing environmentally-safe land disposal options for those wastes that cannot feasibly be disposed of in any other way.

Additional specific recycling practices conducted at the site were eliminated from further detailed analysis in this EIS/EIR because the proposed landfill would only accept MSW residue (i.e., MSW that has already undergone source reduction and recycling).

2.4.4 ALTERNATIVE DELIVERY PROCEDURES

2.4.4.1 Truck Hauling

Truck hauling of MSW residue from Southern California communities to the proposed Mesquite Regional Landfill was rejected as an alternative to rail hauling primarily because the anticipated environmental impacts would be substantial, especially along any potential route from the Los Angeles Basin. In addition, comparison of the costs of truck haul with the costs of rail haul indicates that truck hauling would result in a substantial increase in the cost to the public for use of the proposed Mesquite Regional Landfill. Short-term truck haul would be used in the event disruption to the SP Main Line prevented MSW residue delivery by rail (Section 4.6.1).

The most reasonable route for truck haul of MSW residue from the Los Angeles Basin to the Mesquite Regional Landfill would be south on Interstate 5 into Orange and San Diego Counties, south on Interstate 805, east on Interstate 8 into Imperial County, north on SR 111, and east on SR 78 to the project access road. This route would minimize travel on narrow roads in population centers. The one-way trip along this route would be approximately 250 miles from the Los Angeles Basin and would be five to six hours in duration. This would result in 12 hours of driving time. The number of trucks per day would vary with the number of trucking days per week. To avoid peak recreation vehicle-related traffic conditions, MSW residue trucking from October 1st through May 31st each year would be limited to 5 days per week (i.e., Monday through Friday). At the landfill operating capacity of 20,000 tpd, an estimated 800 to 960 trucks per day, respectively, would be required to deliver MSW residue to the proposed landfill for the 6- and 5-day delivery weeks (1,600 to 1,920 one-way truck trips per day, respectively, for the 6- and 5-day delivery weeks).

The potential environmental impacts of 1,600 to 1,920 one-way trips per day of sustained truck traffic would be substantial enough to make truck-haul of MSW residue undesirable. The following table shows the results of a preliminary analysis of the air quality impacts of truck-haul of MSW residue as compared to rail haul:

lbs/day	Trucks (5 days/ week)	Trucks (6 days/ week)	Trains (6 days/ week)
NO_x	12,720	10,600	7,231
ROG	1,320	1,100	325
PM_{10}	1,253	1,044	215
SO_x	586	488	157
CO	6,114	5,095	1,015

Averaged over one week, trucks traveling to the proposed Mesquite Regional Landfill would emit over 40 percent more NO_x, over three times more ROG, and five times as much CO as trains traveling to the same location. These emissions are important precursors of ozone. The air basins traversed to reach the proposed Mesquite Regional Landfill do not currently meet the federal or state ozone standards, therefore, emission of ozone precursors in these air basins is an important environmental consideration.

The potential transportation and public health and safety impacts of 1,600 to 1,920 semi-truck trips each day, respectively for 6- and 5-day delivery weeks, along two lane state highways and through the Imperial Sand Dunes Recreation Area (ISDRA) would also be substantial. The average number of trips per hour would vary from about 130 to 160 depending on the number of delivery days. The maximum rate could be twice this high due to bunching of traffic during certain portions of the day.

This high volume of truck trips could result in periods when trucks would be backed up on SR 78 waiting to make the left turn onto the project access road. Also, operational considerations for this transportation alternative would require that there be a holding area on-site to allow the drivers and trucks to be sent to the landfill disposal faces at a fairly uniform rate. This condition would not occur for the Proposed Action because the containers would be off-loaded directly from railroad cars to a fixed number of dedicated trucks used only for the short on-site haul distance to the disposal face.

The cost per ton of truck haul to the proposed Mesquite Regional Landfill is estimated to be at least 50 percent greater than for the proposed rail haul method. The cost increase would be primarily associated with the substantial distance (approximately 500 miles round trip) required for delivery of MSW residue to the proposed Mesquite Regional Landfill from the Los Angeles Basin (pers. comm., J. Cal Transportation, 1992). With a round-trip travel and wait time of 12 hours or more, more than one driver could be required for each truck trip, requiring special compensation (e.g., overtime or per diem provisions). In addition, it is estimated that 480,000 gallons of diesel fuel would be required each week for long-haul truck transport of MSW residue to the proposed Mesquite Regional Landfill operating at maximum capacity. This would be substantially greater than the approximately 120,000 gallons per week of diesel fuel that would be required to haul the same amount of waste to the Mesquite Regional Landfill by train.

For all of the above reasons, the use of truck-haul as an alternative to rail haul for the Mesquite Regional Landfill was eliminated from further consideration.

2.4.4.2 Alternative Rail-Haul Route

One of the questions raised during the public scoping process is whether consideration had been given to an alternative rail haul route. As indicated in the description of the Proposed Action, the SP Main Line passes approximately four to five miles to the west of the proposed project boundary. There is no shorter rail haul route, nor any other potential rail haul route that passes near the site. The shortest alternative route to the site would be along several rail lines extending from Los Angeles to Phoenix and Yuma, Arizona, and then to the site as shown in Figure 2-41. This route was rejected because it:

- Is approximately 800 miles long (almost four times the proposed route) and would take two days for a single round trip.

- Would require the MSW residue trains to travel through Phoenix and Yuma, Arizona.

2.4.4.3 Alternative Railroad Spur Location

Figure 2-42 shows the three alternative rail spur alignments that were considered for the Proposed Action. The choice among these three alternatives was based primarily on the following considerations:

- The area is Category III habitat for the state and federal threatened desert tortoise, and the habitat quality generally improves with distance north of SR 78;

- Camping and off-highway vehicle (OHV) riding occur throughout the area, but these uses are more prominent south of SR 78, near Glamis and the ISDRA; and,

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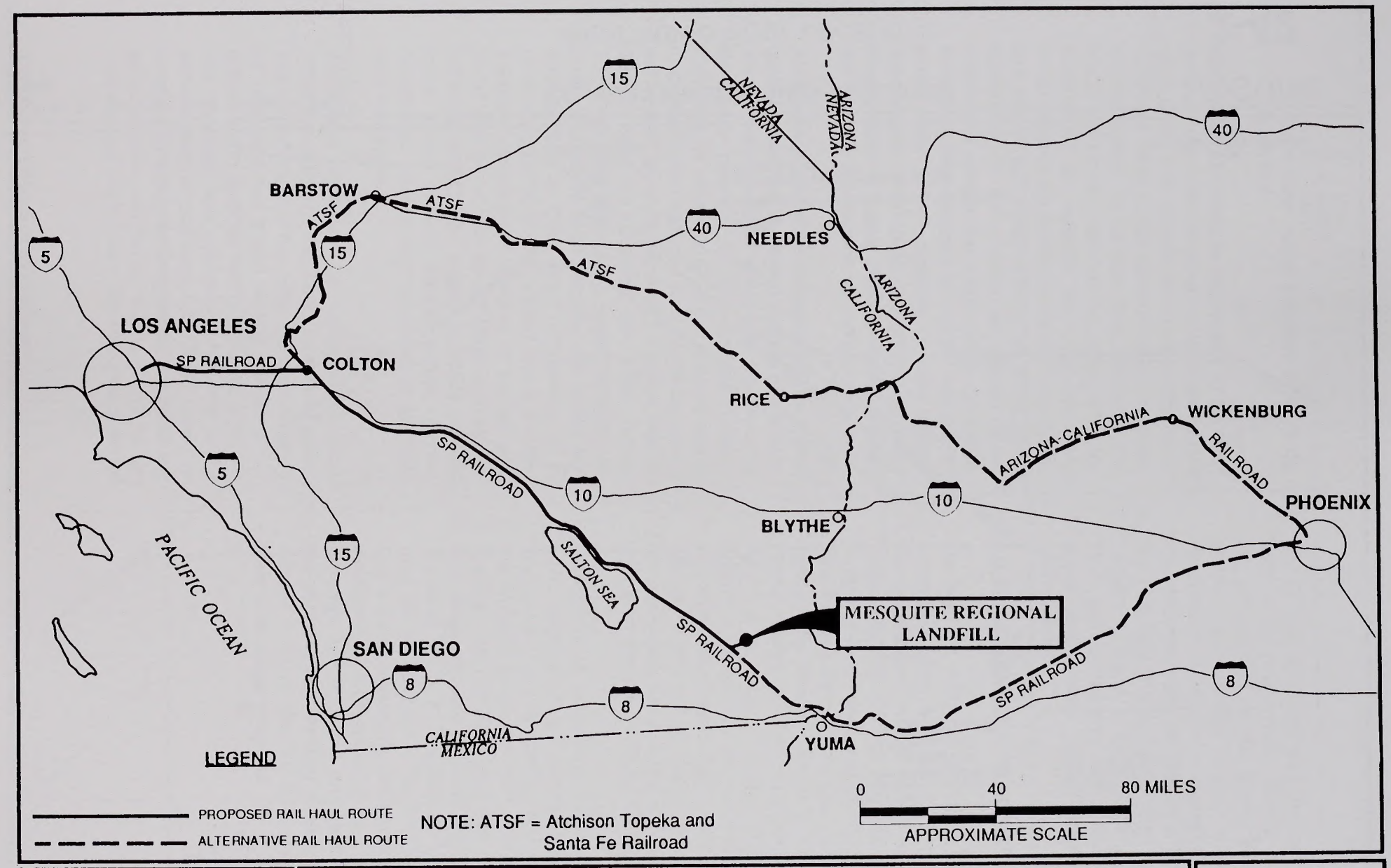
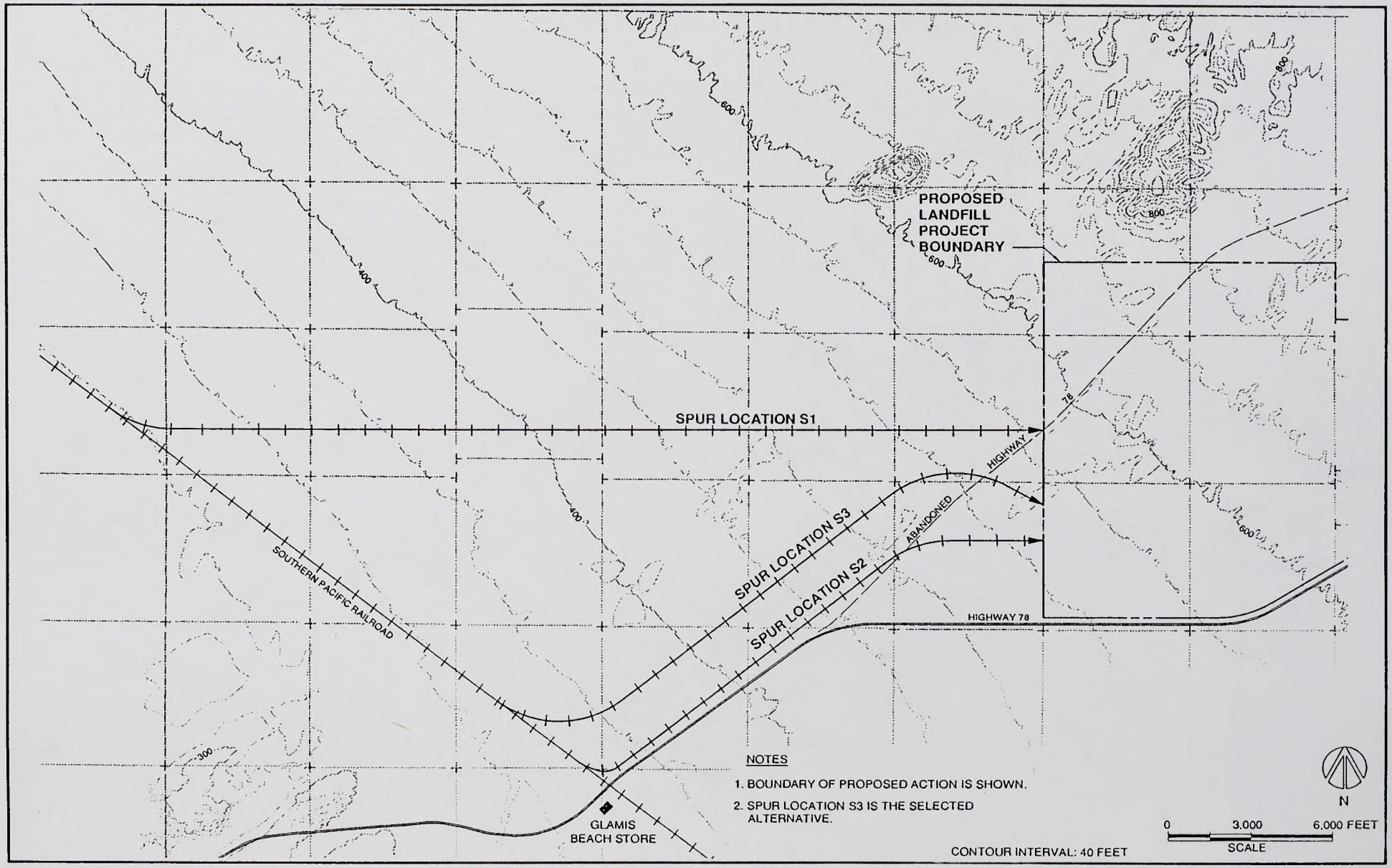


SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Alternative Rail Haul Route

FIGURE **2-41**



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Alternative Spur Locations

FIGURE

2-42

- Storm water runoff primarily flows to the southwest.

Alternative S1 would be constructed in the most pristine habitat for the desert tortoise and would result in the most surface disturbance. Therefore, S1 would result in the greatest impact to desert tortoise habitat. At the same time, this alternative would be located the farthest away from the majority of the campers and OHV users and would produce the fewest potential noise, access, and health and safety effects to these users. Alternative S1 also crosses the existing desert washes in a manner that would require substantial man-made improvements to channel and convey storm water runoff, resulting in more ground disturbance, potentially greater maintenance requirements to repair erosion-related damage, and a higher construction and operations cost.

Alternative S2 would be constructed in the lowest quality habitat for the desert tortoise of the three alternatives considered and would also result in the least amount of surface disturbance. Therefore, S2 would result in the smallest impact to desert tortoise habitat. This alternative would be located in close proximity to land that is heavily used for camping and OHV riding. Therefore, this alternative would produce the greatest potential noise, access, and health and safety effects to these users. Alternative S2 is primarily parallel to the existing desert washes. Therefore, storm water crossing of the rail spur would only occur near the SP Main Line and the proposed landfill site, requiring greatly reduced storm water control improvements, ground disturbance, maintenance requirements and cost than Alternative S1.

Alternative S3 would be constructed at least 2,500 feet north of SR 78 in an area of desert tortoise habitat that has been partially disturbed by past sand and gravel mining but is still of higher quality than the habitat adjacent to SR 78. The minimum approximately 2,500-foot buffer between the railroad track and SR 78 would be adequate to minimize the potential for significant noise, access, and public safety effects to the campers and OHV riders that use areas south of SR 78 and who comprise the majority of the users in the project area. Similar to Alternative S2, Alternative S3 would require greatly reduced storm water control improvements, ground disturbance, maintenance requirements and cost than Alternative S1. Alternative S3 was chosen as the proposed alignment because it minimizes impacts to desert tortoise habitat, campers and OHV users in the area, and would require only minor storm water control improvements to control runoff.

2.4.5 ORIGINALLY PROPOSED LINER

On April 27, 1992, the Applicant submitted the Imperial County *Change of Zone Application, Comprehensive General Plan Amendment, And Conditional Use Permit Application; and U.S. Bureau of Land Management Rail Spur Right-of-Way Application and Proposal for Exchange of Land for the Mesquite Regional Landfill,* herein, "Land Exchange/CUP Application." Section 4.3.3, of the Land Exchange/CUP Application described a composite liner system consisting of a flexible membrane liner underlain by clay. This is the type of liner that is currently proposed for implementation at Class III Landfills by the federal government (RCRA, Subtitle D).

Subsequent to submitting the Land Exchange/ CUP Application and during ongoing landfill design, the Applicant had several meetings with the RWQCB to discuss liner systems. At these meetings, the RWQCB stated that, because of the size of the proposed landfill and the 100-year operating life, a RCRA Subtitle D liner system may not be adequate. The RWQCB suggested that a more protective liner system should be considered by the Applicant. As a result of these meetings, the Applicant proposes to implement the triple composite liner system described in Section 2.1.5 of this EIS/EIR and the original liner is no longer proposed.

3.0

CHAPTER 3.0

AFFECTED ENVIRONMENT

3.1 PROPOSED ACTION

3.1.1 GEOLOGY/SOILS/ MINERAL RESOURCES

3.1.1.1 General

Within this section, information sources that are not specifically cited are based on data from the following references listed in Chapter 8.0:

- Environmental Solutions, Inc., 1987a
- Environmental Solutions, Inc., 1993a (included as Appendix C)
- Environmental Solutions, Inc., 1993b (included as Appendix B)
- Sergent Hauskins & Beckwith, 1984
- Gold Fields Mining Corporation, 1987

Other incorporated references are specifically cited in the text, where appropriate.

3.1.1.2 Scope and Regulatory Status

Discussion of the existing geology/soils/mineral resources environment focuses on topics that are pertinent to: (1) seismic effects that could potentially affect the proposed landfill and associated facilities; and (2) the effects development and operation of those facilities could have on geology/soils/mineral resources.

The Colorado River Regional Water Quality Control Board (RWQCB) in Palm Desert, California, is the regulatory agency responsible for issuing a permit (Waste Discharge Order, herein, "WDO" for the proposed project. Demonstrated project compliance with Chapter 15, Discharges of Waste to Land, of Title 23 of the California Code of Regulations (CCR) would be required for the issuance of the WDO. Chapter 15 is designed to ensure that the landfill foundation and leachate and landfill gas (LFG) controls would not be damaged by earthquakes and that surface storm water runoff over landfills would be controlled so that it would not wash out the landfilled materials and impact areas downstream. In accordance with Title 23, the proposed landfill could not be built within 200 feet of land that has been ruptured by Holocene faults (i.e., active within the past 10,000 years).

Uniform Building Code (UBC) Seismic Zone 4 requirements, the most stringent in the UBC, would be met during the design and construction of all facilities and structures that are subject to the UBC. Other appropriate civil-structural design criteria include the American Institute of Steel Construction "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings"; the American Concrete Institute Building Code Requirements for Reinforced Concrete; and, the American Society for Testing and Materials, for various construction materials.

3.1.1.3 Proposed Landfill Site

Geologic Setting

Regional Geology

The proposed project is located at the eastern margin of the Colorado Desert Physiographic Province near its boundary with the Mojave Desert Physiographic Province. The region is characterized by topographical trends expressed as northwest-trending mountain ranges separated by valleys. The dominant feature in the area is the Salton Trough (Figure 3-1), a large northwest/southeast-trending depression that extends from near Palm Springs to the head of the Gulf of California in Mexico.

The floor of the Salton Trough and the gently sloping trough margins are part of the Colorado Desert Province. The mountains east of the Salton Trough, including the Chocolate, Cargo Muchacho, Picacho, and Palo Verde mountains, are part of the Mojave Desert Province (CDMG, 1952). The proposed landfill site is located near the top of the gently sloping (average of about 80 feet per mile) Chocolate Mountains trough margin.

The Chocolate Mountains reach a maximum elevation of about 2,400 feet at Mount Barrow, about seven miles north of the project area. The mountains are composed of Precambrian to Mesozoic Age basement rocks (Figure 3-2). These are overlain by Tertiary and Quaternary Age nonmarine sediments and volcanic units that are exposed in the foothills. The materials comprising the outcrops near the project area are similar to the materials exposed in the mountains and foothills to the north.

The gentle slope extending southwestward from the project site area is a piedmont fan, which is an alluvial surface underlain at shallow depth by an eroded rock surface (pediment). Exposed alluvial units comprising the surface are of three different ages, differentiated according to the degree of dissection and the development of pedogenic soils. Other than the presence of an intricate braided network of shallow incised channels, the piedmont fan surface is relatively featureless. The gently sloping surface terminates at the Algodones Dunes, about 6 miles southwest of the project site.

Tectonic Setting

The site lies several miles east of the eastern Salton Trough boundary. This large trough formed as a result of crustal spreading between the North American and Pacific tectonic plates along the San Andreas Fault System. During Pliocene time (2 to 5 million years ago), Baja California rifted from the mainland of Mexico along what is now the Gulf of California. Spreading progressed northward into the Salton Trough from the gulf, resulting in the widening and elongation of Imperial Valley. Large horizontal displacements (transverse faulting) along the San Andreas Fault System formed the eastern boundary of the Salton Trough. As the gulf and Salton Trough continued to open, thick sediments were deposited causing subsidence at the flanks of Imperial Valley. Tectonic activity continues today as spreading continues in the trough area. This activity is primarily associated with fault systems 26 or more miles from the proposed landfill site.

Site Geology

A total of five geologic units have been defined near the proposed landfill (Appendix C, Plate 1). From youngest to oldest, these units include:

- Very recent alluvium (Qal)
- Intermediate alluvium (Qil)
- Older alluvium (Qtol)
- The Bear Canyon Conglomerate bedrock unit (Tbc)
- Undifferentiated metamorphic and igneous basement rocks (bc)

Figure 3-3 presents a simplified version of Plate 1 in that all of the alluvial units are combined into one category, Quaternary Alluvium (undifferentiated). Intermediate and older age alluvium cover the majority of the site. The most recent alluvial unit is of Holocene age (less than 10,000 years old) and is constrained to the active channel floors. It consists of loose sands and gravels with a generally low silt content.

The intermediate alluvial unit is represented by a set of perched alluvial fan surfaces that lie up to 4 feet above the active channels. The intermediate alluvium is slightly coarser grained than the younger recent alluvium, being composed of poorly consolidated sand, gravel and silt that has undergone some weathering. A moderately-developed desert pavement and desert varnish have formed on the weathered surface. The weathered surface of the intermediate alluvium ranges between late Pleistocene and early Holocene age (8,000 to 17,000 years old) (Shlemon, 1993).

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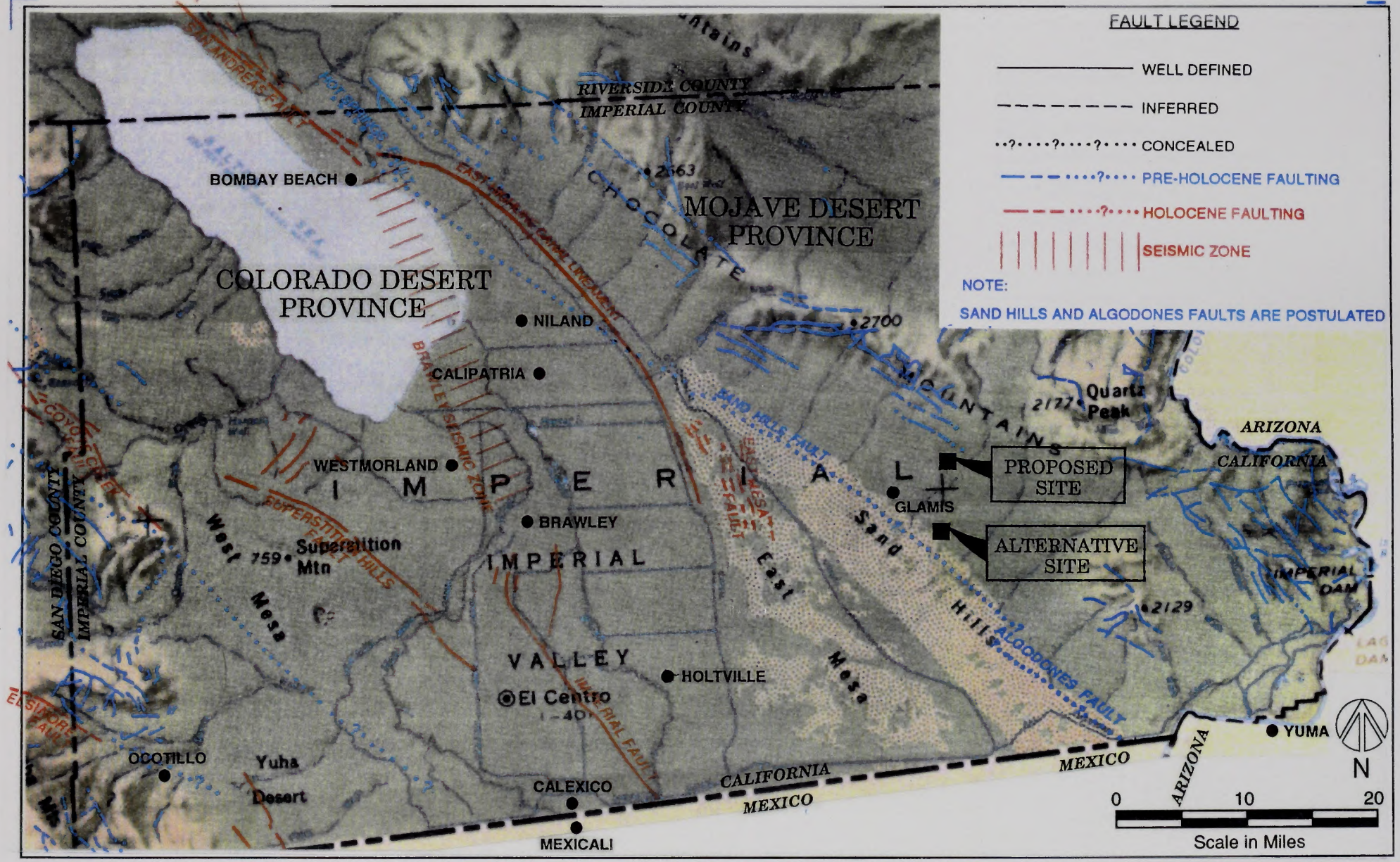

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Physiographic Map

FIGURE

3-1

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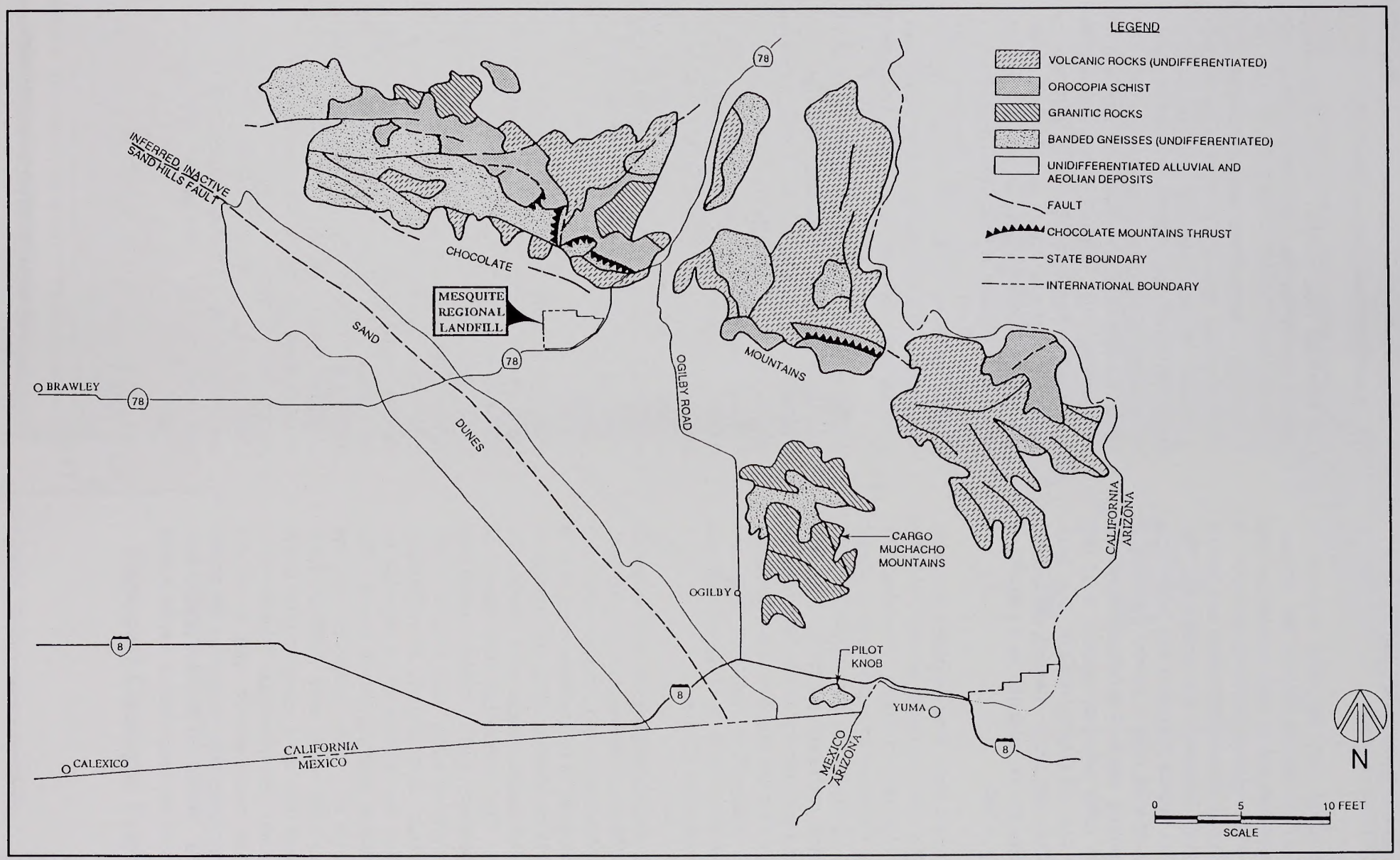

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Regional Geologic Map

FIGURE

3-2

The third alluvial unit, the older alluvium, is represented by the highest alluvial fan surfaces. This older alluvium unit is very conspicuous and widespread with a distinct yellowish-red color. It consists of poorly consolidated sands and gravels that are slightly indurated and weathered. The older alluvium surface displays a very continuous and well-developed desert varnish and desert pavement (patina), and well-developed desert soil layers. The older alluvium surface is of late Pleistocene age (35,000 to 40,000 years old), (Shlemon, 1980 and 1993). Beneath the surface, the older alluvium is estimated to be 60,000 to 70,000 years of age.

All three alluvial units were deposited as eroded materials from the Chocolate Mountains. The maximum alluvial thickness overlying the bedrock and basement rock pediment is judged to be about 20 feet, though it varies due to an uneven buried pediment surface. Fine silt deposits associated with the recent Salton Sea, or ancient Lake Cahuilla that previously occupied the Imperial Valley Floor, inclusive of the old shorelines, lie far to the west of the site area and below an elevation of 100 feet.

The bedrock unit underlying the older alluvium is the Bear Canyon Conglomerate (Figure 3-4). It is Upper Miocene (5 to 11 million years old) to Lower Pliocene (3 to 5 million years old) in age (Dillon, 1975; Morton, 1977) and consists of nonmarine sedimentary rocks with interbedded basalt flows. The sedimentary units consist of poorly stratified and variably indurated sandstone, conglomerate, and breccia. The formation varies from slightly to moderately well-cemented; the cementation is provided by calcium carbonate and/or a clayey matrix. The measured shear wave velocity in the conglomerate rock varies from 4,600 to 8,300 feet per second (fps) for a seismic profile across the footprint area (Environmental Solutions, Inc., 1993a). The conglomerate unit is locally exposed in rounded hills protruding above the piedmont fans. Within the proposed landfill area, the thickness of the conglomerate can be several hundred feet.

The basement rock consists of pre-Tertiary age (greater than 65 million years old) igneous and metamorphic rocks. Foliation in the metamorphic members is well developed, and where exposed, this unit is fresh to moderately weathered. At the surface, the rock appears to be highly fractured and jointed. At depth, these discontinuities become fewer in number and tighter because of confinement by the weight of the overlying rock. Within the proposed landfill area, depth to basement rock varies from zero at outcrops to depths in excess of 1,000 feet. Gold ore, currently being recovered at the adjacent Mesquite Gold Mine and Ore Processing Facility (Mesquite Mine) pits, occurs in gneiss and granitic basement rock in essentially free or native form. It is concentrated in microfractures in minute sizes and amounts.

Within the site area, a thin mantle of alluvial outwash debris overlies the rock surface of the pediment. It is believed that the buried basement rock surface was deeply eroded as the mountain front receded. Prior to the formation of this surface, the Bear Canyon Conglomerate was deposited adjacent to the mountain front. Preceding and accompanying this period of deposition, faulting occurred, breaking the terrain up into discrete fault blocks with distinct rock types (Tosdal, et al., 1991).

Two sets of faults have been identified in the Mesquite Mining District. An older set strikes to the northwest and is of Oligocene age (i.e., 24 to 37 million years old), the time which gold mineralization occurred locally. A younger fault set strikes to the northeast and displays left lateral oblique slip faulting, which resulted in the displacement of the Bear Canyon Conglomerate. Based on detailed investigations, as further described in the site faulting discussion, this younger fault set is Pre-Holocene in age (i.e., greater than 10,000 years old). Eroded fault block remnants (inselburgs) such as the Brownie and Chocolate Drop Hills still protrude above the pediment surface in the greater site region (Figure 3-3).

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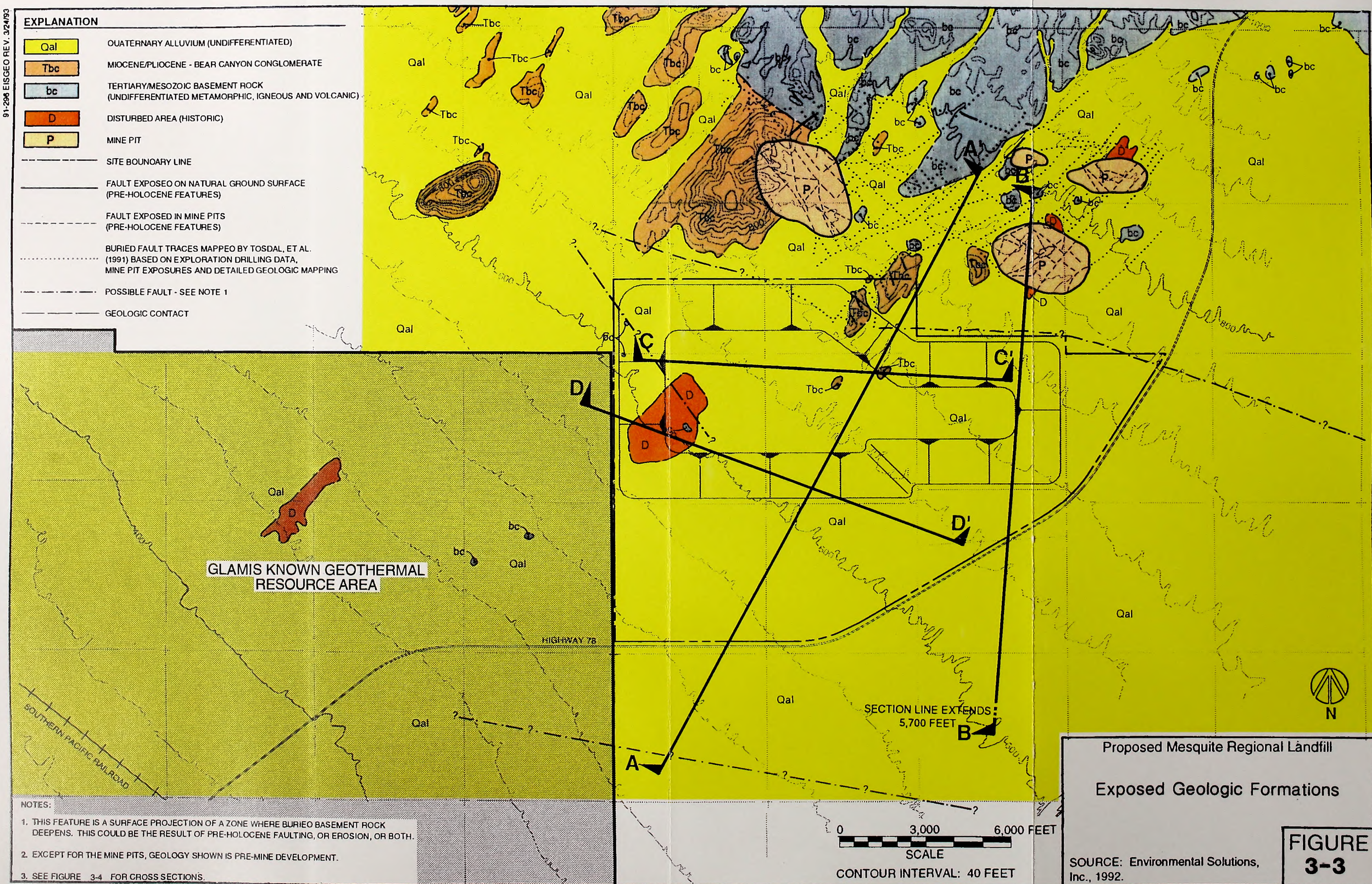

NOTES:

1. THIS FEATURE IS A SURFACE PROJECTION OF A ZONE WHERE BURIED BASEMENT ROCK DEEPENS. THIS COULD BE THE RESULT OF PRE-HOLOCENE FAULTING, OR EROSION, OR BOTH.
2. EXCEPT FOR THE MINE PITS, GEOLOGY SHOWN IS PRE-MINE DEVELOPMENT.
3. SEE FIGURE 3-4 FOR CROSS SECTIONS.

Proposed Mesquite Regional Landfill

Exposed Geologic Formations

SOURCE: Environmental Solutions, Inc., 1992.

FIGURE 3-3

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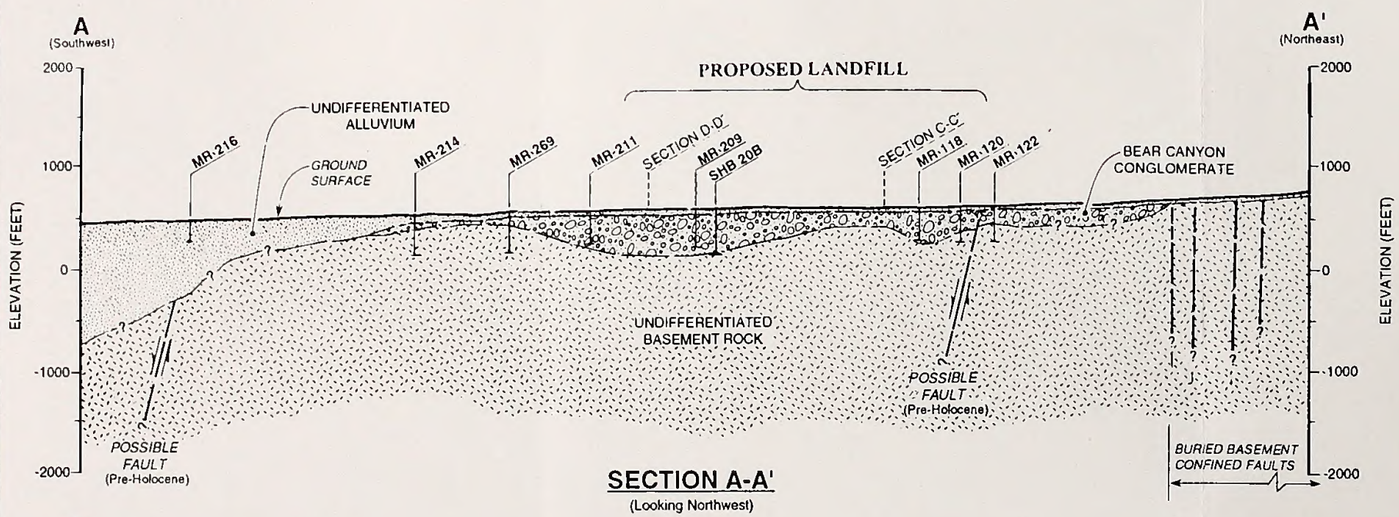
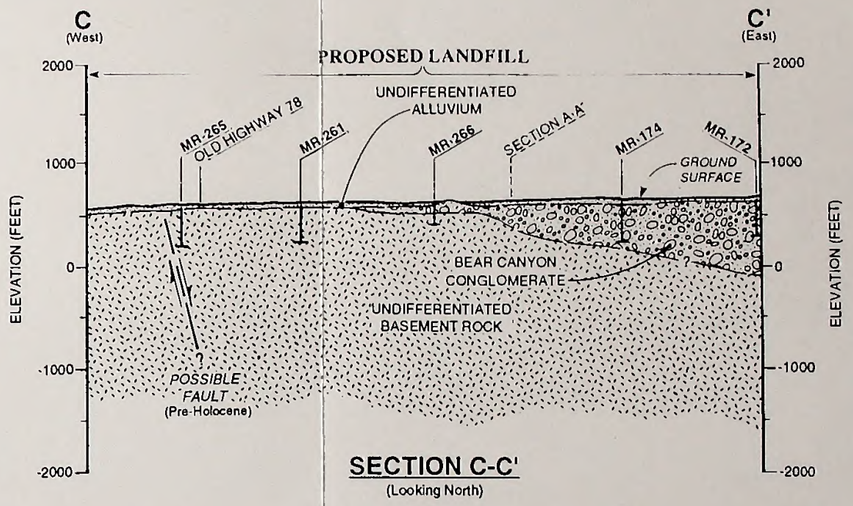
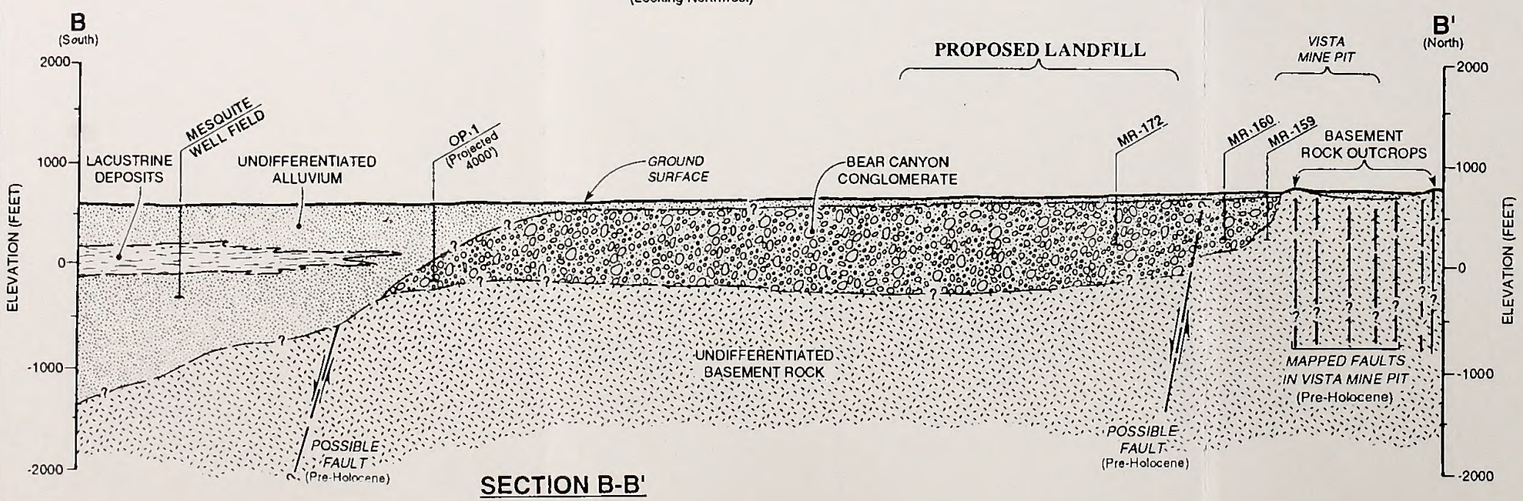


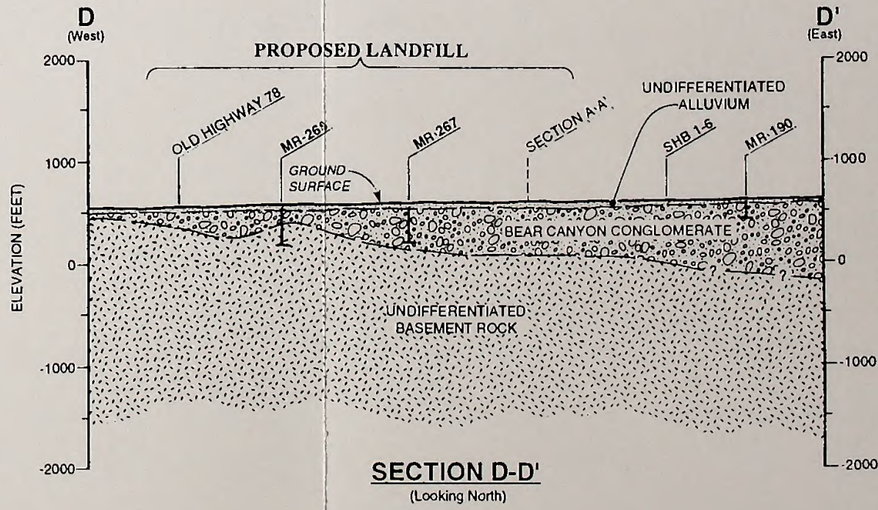
SECTION A-A'
(Looking Northwest)



SECTION C-C'
(Looking North)



SECTION B-B'
(Looking West)



SECTION D-D'
(Looking North)

0 3,000 6,000 FEET
HORIZONTAL SCALE

0 1,500 3,000 FEET
VERTICAL SCALE

NOTES:

1. ALL SECTIONS DRAWN ON PRE-MINE DEVELOPMENT SURFACE.
2. SEE FIGURE 3-3 FOR CROSS SECTION LOCATION.

Proposed Mesquite Regional Landfill

Geologic Cross Sections

SOURCE: Environmental Solutions, Inc. 1993.

FIGURE
3-4

Soils

A soil survey conducted by Borst (1983) for the adjacent Mesquite Mine facility, covered the southern half of Section 5 and Sections 8, 17, 20, 21, and 29 of T13S, R19E, SBBB. Based on the similar physiography of the soil survey area throughout the project area and on prior analysis of aerial photographs, soils in the project area are expected to be similar and occur in approximately the same relative percentages as in the soil survey area. The data presented in this section are based on the soils reported by Borst (1983).

Four major types of soil are present in the approximate proportions shown in Table 3-1. All four major soil types are low in nutrients, and tend to occur in thin layers. The most common type, Chuckwalla gravely loam, contains high concentrations of salts that tend to preclude plant growth. Consequently, soils present in this area are either barren or support sparse amounts of vegetation.

Soils associated with ephemeral drainages are relatively loose and, therefore, retain the greatest amount of moisture from occasional rainfall. These areas generally support the most substantive plant communities at the project site. The top surface of the higher areas between these drainages generally consists of a relatively dense "desert pavement" that minimizes the ability of rainfall to percolate into the soil.

Mineral Resources

In the Mesquite Mine pits, near the proposed landfill area, gold ore and minor amounts of silver ore are found disseminated in microfractures of gneiss and granitic basement rock. Condemnation borings have been drilled within the proposed landfill area to determine the extent of the ore bodies. Ore grade material that exists at the mine has not been encountered beneath the proposed landfill site (Morton, 1993b).

The subject parcels are classified by the U.S. Bureau of Land Management (BLM) as being prospectively valuable for geothermal resources (Godwin, et al. 1980). The Glamis Geothermal Resource Area is adjacent to the west boundary of the project area. The potential for development of these resources is considered low.

The only other known mineral commodities in the project area are sand and gravel (Morton, 1993b). As shown in Figure 1-3, existing federally owned gravel withdrawn areas are intersected by some portions of the proposed project. The gravel does not occur as deep deposits. Instead, the gravel resources that are substantial enough to justify extraction activities generally occur in lenses of 4 to 5 feet of surficial alluvium at discontinuous areas above an underlying conglomerate rock. These areas occur primarily to the west of the proposed project area.

A gravel survey was conducted by Quillin Enterprises for Gold Fields Mining Corporation (Gold Fields) in 1988 for that portion of the project area that would overlap onto publicly-owned gravel withdrawn lands. The identified gravel resources on publicly-owned lands are shown in Figure 3-5. The federal land in the project area has been segregated from mining claim locations to allow for mineral material disposal by the BLM. A current proposal to formally withdraw the area from the operation of the mining laws is being examined. Historically, about 500,000 to 700,000 tons of aggregates per year were produced from this region for various projects. Most of the materials were used for road maintenance by the county and State of California. The BLM currently disposes about 50,000 to 100,000 tons of aggregate by sales contract, and 200,000 to 500,000 tons of aggregate under various use permits and right-of-way authorizations from the general area each year. Some of the gravel resource areas within the proposed project site have already been disturbed by prior gravel excavation activities.

TABLE 3-1

Soil Characteristics (1)
Mesquite Regional Landfill Project Area

Proposed Mesquite Regional Landfill

Soil Type	Approximate Relative Percentage of Ground Cover (2)	Nutrients (3)	Salts (4)	General
Unidentified Sandy Loam	10	Low	Nontoxic	Thin, barren, little erosion protection.
Chuckwalla Gravely Loam	40	Low	High (5)	Desert pavement, barren, low infiltration capability.
Carrizo Very Gravely Coarse Sand	15	Low	Nontoxic	Ephemeral stream channels, high infiltration, sparse shrub and tree vegetation.
Carrizo Variant Very Gravely Loamy Sand	35	Low	Nontoxic	As above, with incipient desert pavement.
Total Area	100	N/A	N/A	N/A

Notes:
N/A = Not Applicable
(1) Soil characteristics from Borst, 1983.
(2) Ground coverage percentages are estimates based on Borst, 1983.
(3) Surface horizon concentrations of major plant nutrients: nitrogen, phosphorous and organic matter.
(4) Concentrations of major salts in soil, not necessarily confined to the surface horizon.
(5) High concentrations of salts are toxic to plants, preventing establishment or growth.

Source: Environmental Solutions, Inc., 1993.

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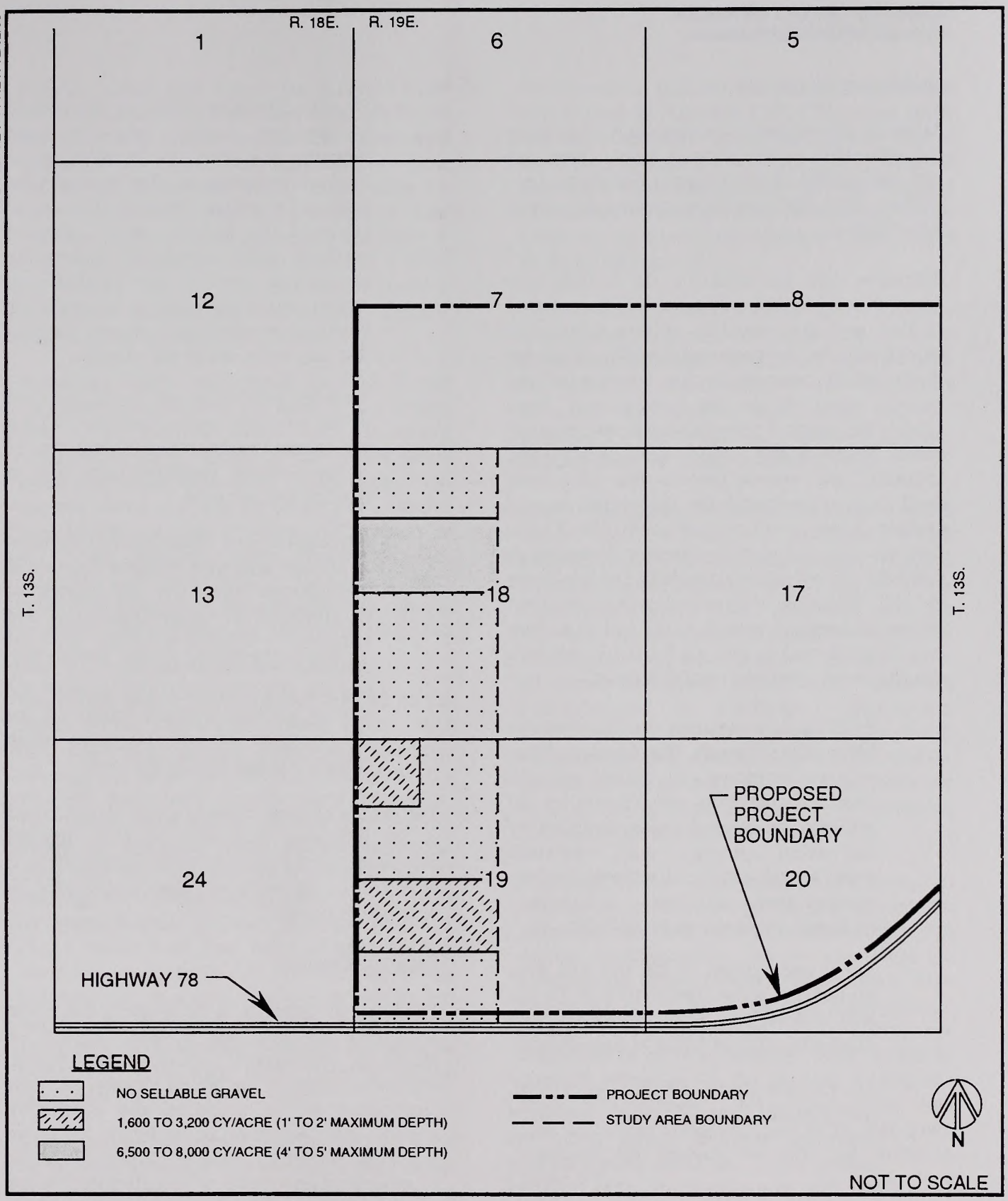

SOURCE:
Quillin Enterprises, 1988.

Proposed Mesquite Regional Landfill

Identified Gravel Resources within Gravel Withdrawn Areas

FIGURE 3-5

Faulting and Seismicity

Appendix C provides a detailed study of faulting and seismicity in the vicinity of the proposed regional landfill (Environmental Solutions, Inc., 1993a). This section presents a summary of that investigation.

Extensive data are available for faulting and seismicity in the vicinity from both regional studies and site specific studies conducted specifically for the proposed landfill. Regional studies have been numerous because of the region's proximity to the San Andreas Fault system, the regional potential for development of natural resources (e.g., water, geothermal power, minerals), and various projects that have been conducted or proposed for the region (e.g., a nuclear power plant proposed for the Yuma, Arizona area and ongoing mineral development projects). Investigation of faulting and seismicity for the Mesquite Regional Landfill included review of existing reports, maps and data from prior regional studies, plus the following activities specific to the proposed landfill project:

- Existing data obtained for the Mesquite Mine were reviewed. The Mesquite Mine data are extensive and include geologic data from the mine pits, reports on the geology and mineralization compiled by the mine geology staff, detailed geotechnical and hydrogeologic studies, geophysical surveys, subsurface exploration borings, water well logs, etc.

- Aerial photographs of the site area were studied and aerial observations of the site area and vicinity were conducted from fixed-wing aircraft flying at low-altitude.

- Mr. Edward Heath (1992), a recognized, independent expert, was consulted regarding regional faults along the eastern side of the Salton Trough because of his knowledge of the regional tectonics of the Salton Trough. Heath previously conducted geologic studies for a nuclear facility south of Yuma, Arizona.

- Dr. Roy Shlemon (1993), a recognized, independent expert, was consulted regarding the desert soil development on local alluvial surfaces. The ages of these soils are important because the lack of evidence for faulting on the alluvial surfaces and within the underlying alluvium is used in this EIS/EIR and project permit applications to bound the youngest possible age of any faulting that may occur in the site vicinity.

- Trenches were excavated at two locations in the site area where possible faulting was inferred to determine if displacement of the alluvial geologic units due to faulting has occurred.

- Intermediate and Older alluvial surfaces in the site area were mapped from aerial photographs based on the degree of development of desert pavement and varnish. Ground-truthing of this mapping was performed and 15 hand-dug test pits were excavated to verify the age of alluvial surfaces based on the development of soil horizons using criteria outlined by Dr. Shlemon.

The results of these investigations are discussed in the following sections. A more detailed explanation of the scope of these investigations is provided in the technical reports provided in Appendices B and C.

Regional Faulting

The Imperial Valley is at the southern end of the active San Andreas Fault System. Figure 3-1 shows the southernmost traces of this system, other active faults in the project vicinity, and their proximities to the proposed and alternative landfill sites. As shown in the figure, the active faults that potentially could affect facilities at the proposed and alternative project sites include the southern section of the San Andreas, East Mesa, East Highline Canal (lineament), Imperial-Brawley, Brawley Seismic Zone, Superstition Mountain/Superstition Hills, and Elsinore Faults.

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Historic surface fault rupture has occurred on all of these faults, except the East Mesa Fault and East Highline Canal Lineament. Estimated maximum probable and maximum credible earthquake (MPE and MCE) magnitudes for each of these active faults are presented in Table 3-2. The MPE is the largest earthquake likely to occur with a 100-year return period at a given probability. The MCE is the largest possible earthquake considering the known tectonic framework of an individual fault.

Numerous faults have been mapped in the Chocolate Mountains to the north of the project site. The mapped faults are dominantly northwest-trending, normal or curvilinear thrust faults associated with uplift of the range. All mapped faults are pre-Holocene (i.e., greater than 10,000 years old) (Dillon, 1975; Murry et al., 1980; Higgins, 1990; Jennings, 1992; Maulchin and Jones, 1992). No surface faults have been mapped on the piedmont fans in the project vicinity between the foot of the range and the eastern side of the Imperial Valley.

The closest known Holocene (active) fault to the site is the East Mesa Fault (Heath, 1992). This fault consists of several north-south trending, left-stepping, en echelon normal listric (down-to-the-west) faults with possible lateral movement. This faulting is related to the pull apart process within the spreading center and not movement along the San Andreas Fault (Heath, 1992). Although the closest known traces of this fault are approximately 12 miles from the proposed site, a distance of nine miles is used for the seismicity analysis in this EIS/EIR, based on conservative recommendations provided by Heath (Environmental Solutions, Inc. 1993a). There have been no notable historic earthquakes associated with this fault (United States Geological Survey (USGS), 1992).

Some geologic references for the area indicate the possible existence of a postulated fault (Sand Hills Fault) beneath the Algodones Sand Dunes, as illustrated in Figures 3-1 and 3-2. The postulated fault may represent the inactive eastern boundary of the Salton Trough spreading center (Heath, 1992). No evidence has been documented to indicate that the Sand Hills Fault has ruptured in Holocene time. The active faults currently associated with the eastern boundary of the Salton Trough are now coincident with the East Mesa Fault and possibly the East Highline Lineament. These parallel faults trend north-south and are west of the Algodones Sand Dunes as shown in Figure 3-1.

The Algodones Fault, located in the extreme southeastern corner of Imperial County (Maulchin and Jones, 1992), does not join with the postulated Sand Hills Fault. Based on extensive fault studies, this feature does not project into California, as previously mapped, and is considered inactive (Heath, 1992).

Present day transform-faulting coincides with the active southern San Andreas Fault, which continues, but steps over to the south, connecting with the Brawley Seismic Zone (Heath, 1992). Other active fault zones associated with the transform system include the northwest-trending Imperial/Brawley, San Jacinto, and Elsinore faults as shown in Figure 3-1. These faults are characterized by dominant, right-lateral movement, and collectively form the boundary between the North American and Pacific tectonic plates. All of the regional transform faults are believed to terminate or die out in spreading centers similar to the Salton Trough.

The 1992 Landers earthquake, located about 100 miles to the north of the project site, proved that more than one fault within the same system can rupture simultaneously. In the event that the southern San Andreas Fault was to rupture, other nearby associated faults with the same tectonic framework could rupture. The earthquake magnitude of such a combined event would be dictated primarily by the fault'(s) length and sense of movement. Magnitudes have been assigned to the regional active faults that could influence the project site and are listed in Table 3-2.

As shown on Table 3-3, if three segments of the San Andreas Fault were to rupture simultaneously between the southern end of the

TABLE 3-2

Earthquake Seismicity Parameters

Proposed Mesquite Regional Landfill

Fault	Distance and Direction From Site (miles, direction)	Maximum Earthquake (M)		Peak Horizontal Ground Acceleration(g)(1)		High Repeatable Accelerations(g)(2)		Duration of Strong Ground Shaking (seconds)
		Credible (3)	Probable (4)	Credible	Probable	Credible	Probable	
East Mesa	9.0, W	6.5	6.0	0.20	0.17	0.13	0.11	18
East Highline Canal Lineament	15.0, W	6.5	6.0	0.13	0.09	0.09	0.06	18
Imperial/Brawley	26.0, W	7.0	6.8	0.08	0.07	0.05	0.05	24
Brawley Seismic Zone	29.0, W	6.25	5.8	0.05	0.04	0.03	0.03	18
Superstition Mountain/ Superstition Hills (San Jacinto Fault Zone)	37.0, W	7.5	7.0	0.07	0.05	0.05	0.03	30
San Andreas	45.0, NW	8.25 (5)	7.5	0.08	0.04	0.05	0.03	36
Elsinore	52.0, SW	7.5	7.0	0.04	0.03	0.02	0.02	30

Notes:

(1) Joyner & Fumal, 1986.

(2) The highest accelerations that are generally sustained for a period of time during an earthquake and are typically 65 percent of the peak horizontal ground acceleration.

(3) Maximum Credible magnitudes shown are Moment Magnitudes (Mw) after Maulchin & Jones (1992) and Slemmons (1982). The surface wave magnitudes (Ms) used by Slemmons (1982) are assumed to approximate moment magnitude (Mw). The Mw is the appropriate magnitude scale required for estimating peak accelerations from modern attenuation relationships.

(4) Maximum Probable magnitudes shown were determined using available data relative to: type and amount of displacement, historic seismic events and empirical relationships of fault segment rupture lengths vs. magnitude after Slemmons (1982).

(5) The maximum credible event was calculated using empirical data after Slemmons (1982) for three segment fault lengths totaling 328 miles.

Source: Environmental Solutions, Inc., 1993.

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TABLE 3-3

Fault Parameters

Proposed Mesquite Regional Landfill

Fault	Length (miles) (1)	Fault Type (4)	Slip Rate (mm/year) (2)	Recurrence Interval (years) (2)
East Mesa	11	N	?	?
East Highline Canal Lineament	34	N (?)	?	?
Imperial/Brawley	41	rv	8.6	700
Brawley Seismic Zone	28	rv	?	?
Superstition Mountain/Hills San Jacinto Fault Zone	141	rl	1 to 10	150 to 468
San Andreas	328 (3)	rl	25 to 34	140 to 360
Elsinore	110	rl	W	694

Sources:

(1) Jennings, 1992.
(2) Wesnousky, 1986.
(3) San Andreas Fault length includes the following three segments:
- Salton Sea to Cajon Pass - 128 miles
- Cajon Pass to Highway 166 - 106 miles
- Highway 166 to Slack Canyon - 96 miles

Total Length - 328 miles

(4) N = Normal, rv = reverse, rl = right lateral
(?) Data not available.

Salton Sea (Bombay Beach) and Slack Canyon (near Parkfield, California in San Luis Obispo County), the total rupture length would be a maximum of 328 miles. Assuming a maximum rupture length of 328 miles, a MCE of M8.25 could occur, resulting in a maximum ground acceleration of 0.08 gravity (g) at the proposed landfill site (Slemmons, 1982).

Site Faulting

Siting of the proposed landfill must comply with Title 23, which states that a Class III landfill must not be built within 200 feet of land that has been ruptured by Holocene faults (active within the past 10,000 years). The Mesquite Mining District is known to be faulted; therefore, investigations of faulting in the area were conducted. Two sets of pre-Holocene faults exist that are important to the Mesquite Mine mineralization, but would not affect the landfill.

Based on geologic mapping in the mine pits, the basement rock is known to be faulted by northwest- and northeast-trending faults. Figure 3-3 shows faults in the mine pits (Tosdal, et al., 1991). The Miocene-Pliocene Age (3 to 11 million year old) Bear Canyon Conglomerate has been cut by a northeast-trending system that is no younger than late Pleistocene Age (about 10,000 to 60,000 years old). Faults mapped in the mine pits and postulated faults have not ruptured the 35,000- to 40,000-year old alluvial surfaces within the project vicinity.

There is no evidence of Holocene faulting within the proposed landfill site. The large surface exposure of older 35,000- to 40,000-year old alluvium (Shlemon, 1993) does not show evidence of rupture (Figure 3-3). These old surfaces were mapped with pre-mine development stereo aerial photographs (1982). Subsequent investigations, including the excavation of 15 test pits to document the age of fan surfaces, were conducted to verify the lack of surface rupture evidence. On-site trenching was also used at the two locations where the project geologist thought faults may exist based on the physical features observed. The locations of these potential faults are shown in Figure 3-6.

A 500-foot long trench was excavated to a depth of 4 to 5 feet across each of the potential faults (see Figure 3-6). Trench No. 1 was cut through an older (35,000- to 40,000-year old) alluvial surface into underlying alluvium estimated to be 60,000 to 70,000 years old. Trench No. 2 was cut through an intermediate alluvial surface estimated to be 8,000 to 17,000 years old. Figures 3-7 and 3-8 show that the strata in the trenches were continuous, with no discontinuities potentially related to fault rupture(s).

The northern potential fault was identified by Tosdal, et al. (1991) based on interpretations of buried rock topography determined from exploration drilling for the Mesquite Mine. The southern potential fault was identified by the general alignment of two widely-spaced basement rock outcrops. The potential faults are not evident from other discernible near surface geomorphic features in the area typically associated with faulting, such as aligned or offset drainages, scarps, or depressions. Based on the trenching results, these potential faults are not active.

Seismicity

Most of the large historic earthquakes in the area have occurred on the Imperial-Brawley and San Jacinto fault systems with earthquakes occurring as main shocks followed by after shocks or swarms of small events (Damiata, et al., 1986). Figure 3-9 shows the distribution and magnitude of historic earthquake epicenters within a radius of 100 km (60 miles) of the site. Within the search radius, there have been 437 earthquakes with Richter magnitudes of M4.0 or greater.

Earthquakes plotted closest to the site include two events recorded at latitude 33.000, longitude 115.000. These events are based on early earthquake records and include a M5.5 in 1872 and a M4.0 in 1943. The early earthquake records are based on limited information so there is little control over epicenter location. The 1872

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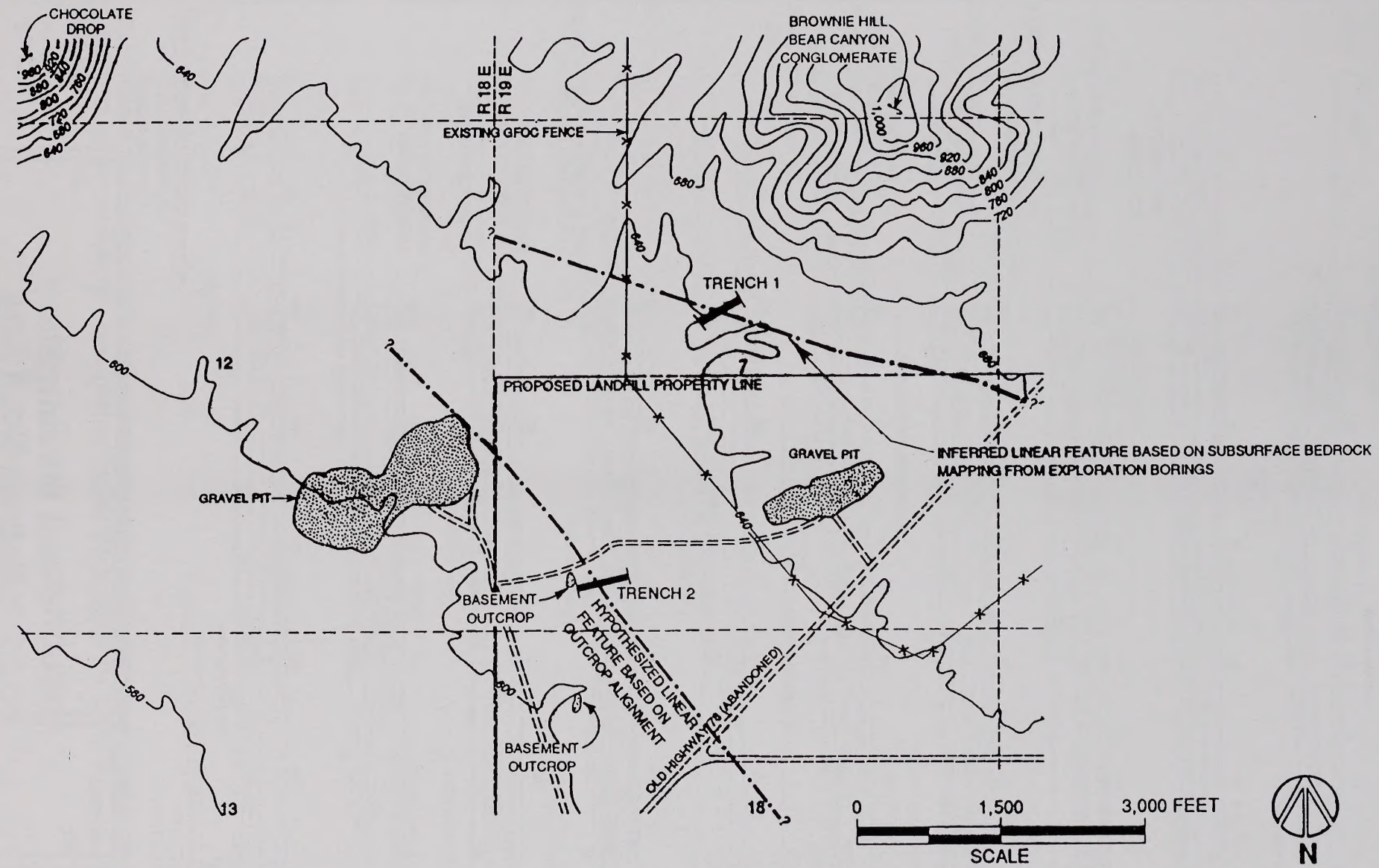
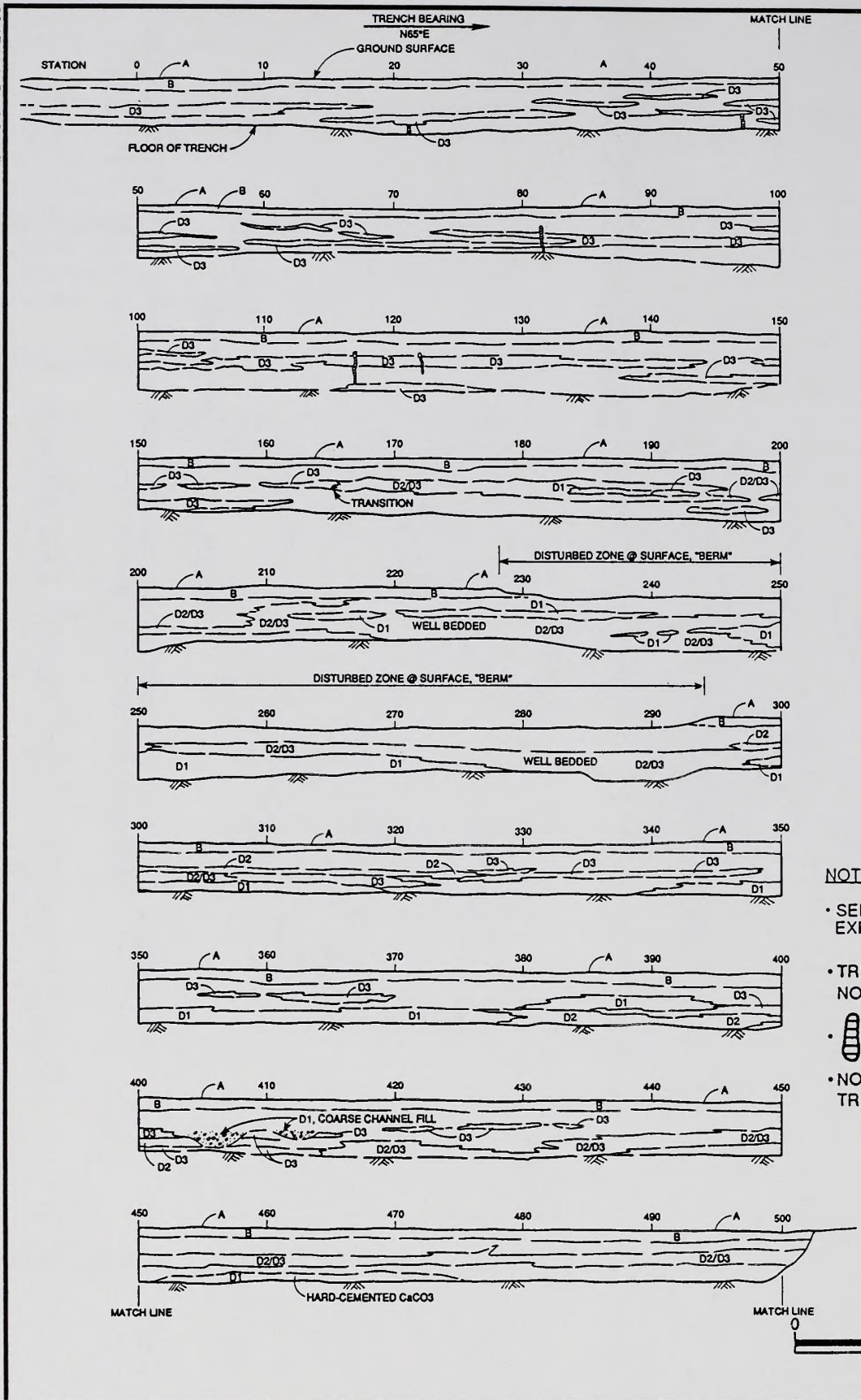


SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Fault Investigation Trench Locations

FIGURE **3-6**



EXPLANATION

SOIL UNITS

A - VESICULAR HORIZON AND PETINA

B - CALCAREOUS ARGILLIC HORIZON

C - CALCAREOUS HORIZON (NODULES) PARENT MATERIAL

D - FANGLOMERATE:
- D1 - SANDY GRAVEL
- D2 - GRAVELLY SAND
- D3 - SAND
- D4 - SILTY SAND
- D5 - SILTY SAND WITH ±25% GRAVEL

NOTES

- SEE APPENDIX C FOR DETAILED EXPLANATION OF SOIL UNITS.
- TRENCH LOGGED ON NOVEMBER 12 AND 13, 1991.
- BIOTURBATION
- NORTHWEST SIDE OF TRENCH LOGGED.

0 12 24 FEET

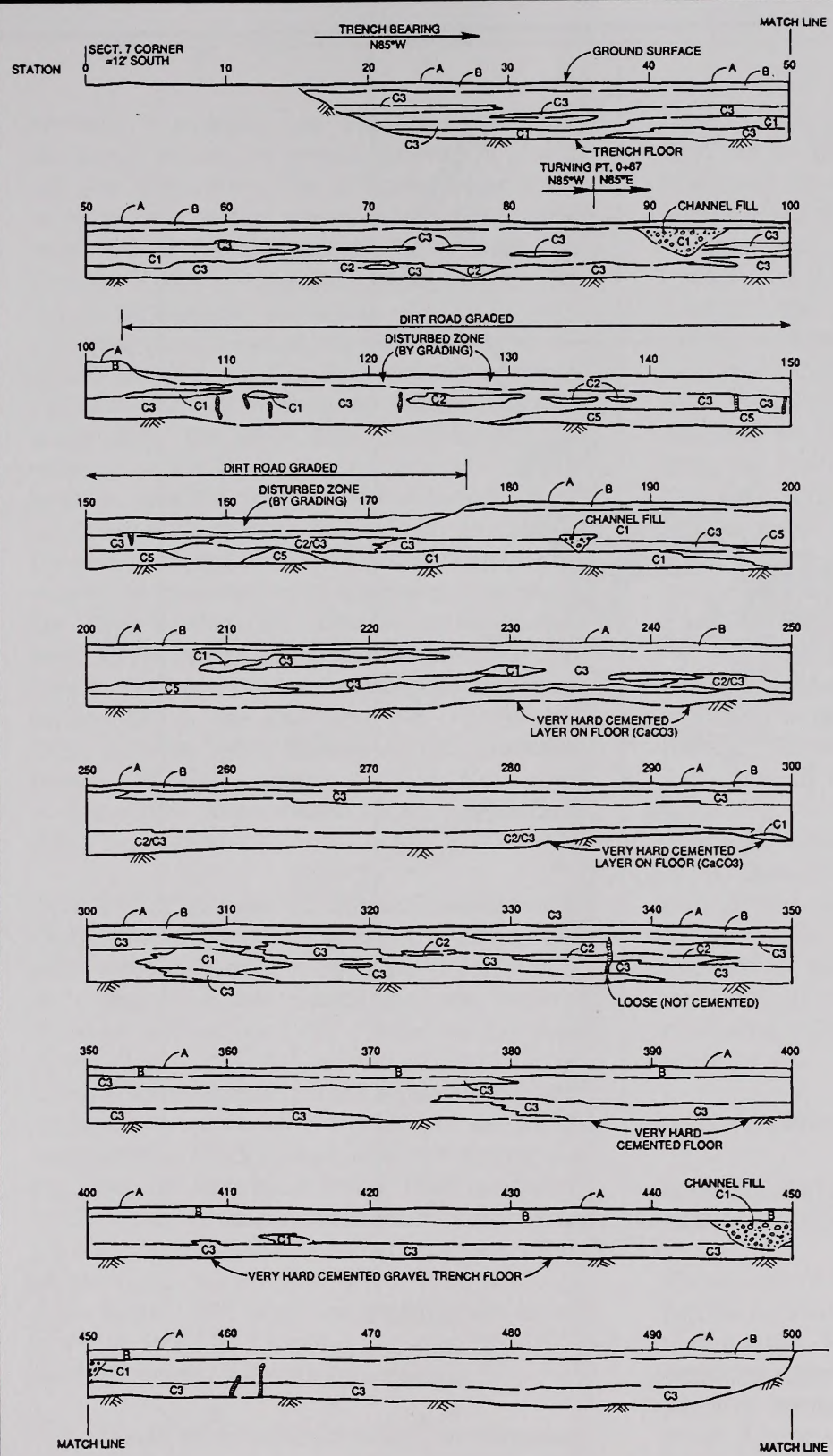
HORIZONTAL AND VERTICAL SCALES

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Fault Investigation Trench No. 1 Log

FIGURE 3-7



EXPLANATION

SOIL UNITS

A - VESICULAR HORIZON AND PETINA

B - CALCAREOUS ARGILLIC HORIZON

C - CALCAREOUS HORIZON (NODULES) PARENT MATERIAL

D - FANGLOMERATE:
- D1 - SANDY GRAVEL
- D2 - GRAVELLY SAND
- D3 - SAND
- D4 - SILTY SAND
- D5 - SILTY SAND WITH ±25% GRAVEL

NOTES

- SEE APPENDIX C FOR DETAILED EXPLANATION OF SOIL UNITS.
- TRENCH LOGGED ON NOVEMBER 12 AND 13, 1991.
- BIOTURBATION
- NORTHWEST SIDE OF TRENCH LOGGED.

0 12 24 FEET

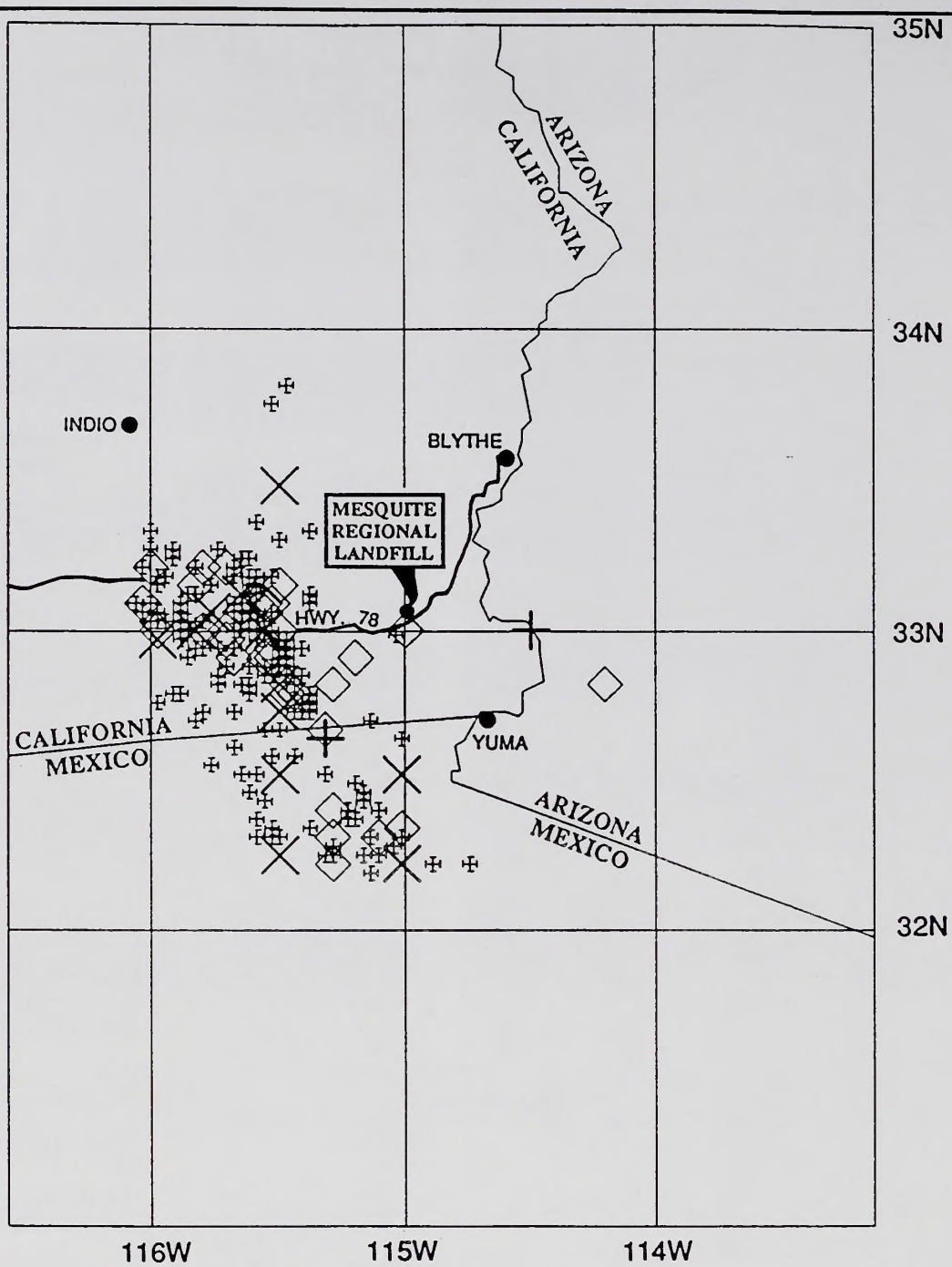
HORIZONTAL AND VERTICAL SCALES

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Fault Investigation Trench No. 2 Log

FIGURE **3-8**



NOTE:
EPICENTERS SHOWN OCCURRED BETWEEN 1800 AND 1992 WITH MAGNITUDES GREATER THAN 4.0.

REFERENCE: U.S. GEOLOGICAL SURVEY, NATIONAL EARTHQUAKE INFORMATION CENTER DATA TAKEN FROM THE EARTHQUAKE DATA BASE SYSTEM.

LEGEND

EARTHQUAKE MAGNITUDES:

4 ✢ 5 ◇ 6 ╳ 7 +

N

0 40 80 MILES
SCALE

SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Recorded Earthquake Epicenters Within 60 Miles of the Project Site

FIGURE

3-9

earthquake location was estimated based on newspaper reports of ground shaking in Yuma and San Bernardino. The epicenter was plotted between these widely spaced locales but is only estimated to have occurred "in or near the Imperial Valley" (Toppozada, et al., 1981). The M4.0 earthquake occurring in 1943 was probably plotted based on similar reports of ground shaking and data from limited Southern California regional seismograph stations available at that time. The USGS data base designates the accuracy of the 1943 epicenter as a "D" quality location, meaning that the level of confidence of the location is greater than 15 km (9 miles). Because there are no known active faults in the vicinity of these two early epicenters, it is likely that these earthquakes occurred farther to the west, in the more active seismic region of the Imperial Valley. The most recent moderate-sized earthquakes in the area were the October 15, 1979, Imperial Valley Earthquake (M6.6) on the Imperial-Brawley system, and the November 23-24, 1987, Superstition Hills Earthquakes (M6.2 and M6.6).

CCR, Title 23, Chapter 15, Article 3, requires that Class III landfills be designed to withstand the MPE without damage to the landfill foundation or to structures that control leachate, surface drainage, erosion, or LFG. Based on the data presented in Tables 3-2 and 3-3, the worst-case scenario for horizontal ground acceleration at the proposed landfill site would be an MCE earthquake of M6.5 located nine miles from the site along the East Mesa Fault. Peak horizontal accelerations for such an event would range up to 0.20 g for the MCE. MPE and associated acceleration would be M6.0 and 0.17 g, respectively. The high repeatable accelerations would be about 0.13 g and 0.11 g from the MCE and MPE events, respectively.

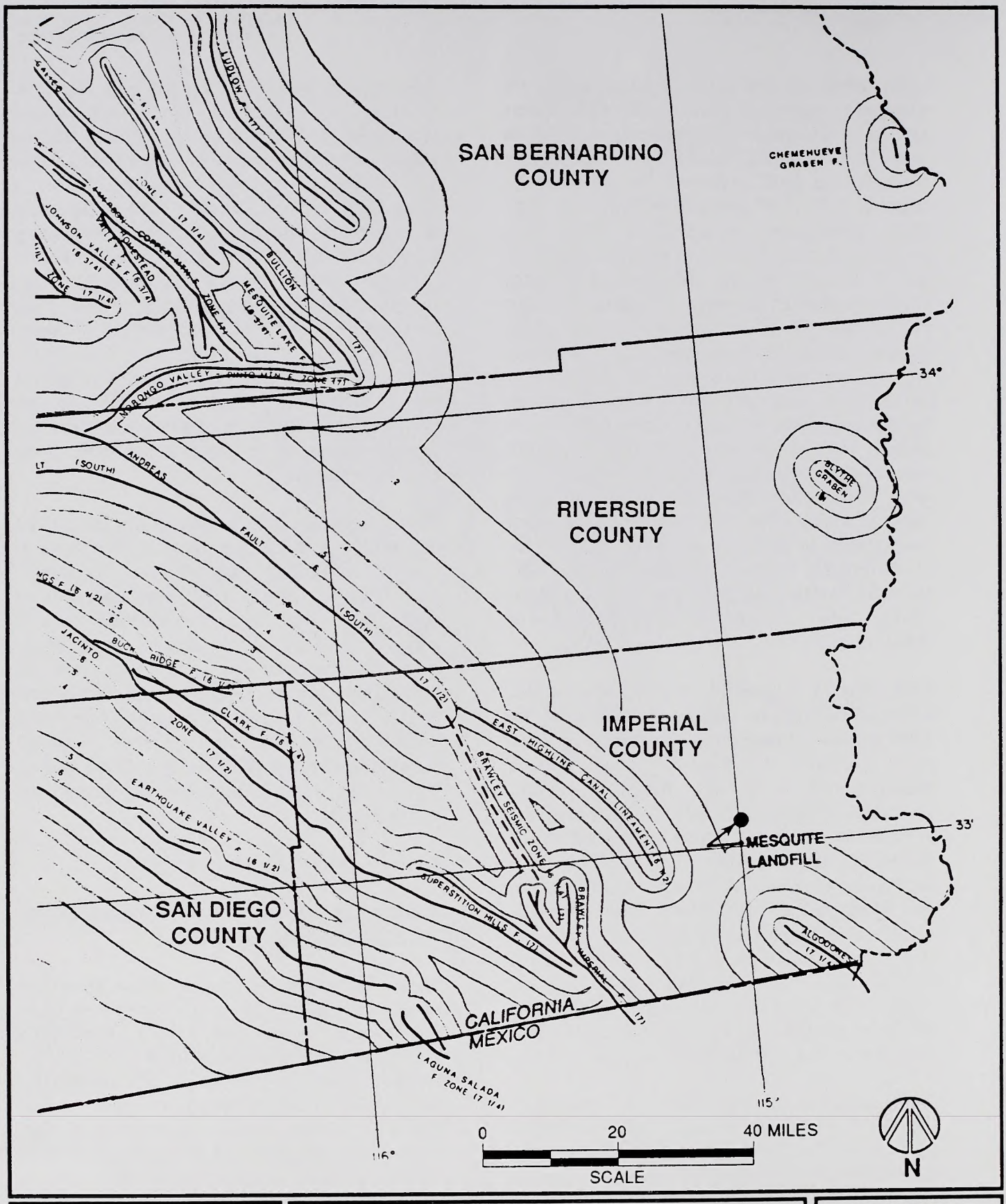
These results of the detailed seismic investigation for this project are generally confirmed by a recent report titled *Peak Acceleration from Maximum Credible Earthquakes in California,* published by the California Department of Conservation, Division of Mines and Geology (CDMG) (Maulchin and Jones, 1992). This report was prepared specifically for the California Department of Transportation (Caltrans) in determining appropriate seismic accelerations to be used for designing highways, bridges, etc. It is not considered to be a replacement for existing state fault maps, but it does provide valuable information concerning seismic conditions in Imperial County. Figure 3-10 shows the site location with respect to a map from the referenced report, which shows peak accelerations for the MCE for various distances from the regional faults that were considered. The peak acceleration at the proposed landfill site, estimated for the MCE earthquake using the CDMG Map, would be slightly less than the ground acceleration of 0.20 g for an MCE on the East Mesa Fault.

Other secondary effects sometimes associated with major earthquakes include liquefaction, induced landsliding, flooding, and subsidence. Liquefaction, flooding, and subsidence are not applicable to the site because ground water is deep (i.e., at least 140 feet) beneath the site, there is not appreciable nearby surface water, and the thin ground surface layer is supported by the dense Bear Canyon Conglomerate and underlying bedrock, respectively. Induced landsliding is not possible because of the lack of nearby high slopes capable of sliding onto the proposed site.

3.1.1.4 Offered Exchange Parcels

<u>Exchange Parcels In the Santa Rosa Mountains National Scenic Area (SRMNSA)</u>

The surface of both of the Santa Rosa Mountains parcels consists of Cretaceous age granite rocks that overlie biotite schists with interbedded limestone. Immediately south of the Section 7 parcel is the second largest known landslide in North America with a volume of approximately 240 million cubic meters. A detachment fault underlies the granitic sheared rocks of both parcels, dipping northeastward. There are no mine workings on either of these parcels. Dolomite and asbestos prospects are located 8 to 12 miles west of the Section 7 parcel, and gravel



SOURCE:
Maulchin & Jones, 1992.

Proposed Mesquite Regional Landfill

Peak Acceleration From Maximum Credible Earthquakes

FIGURE

3-10

pits exists in the valley sediments 4 miles to the north. There are no known mineral resources on the proposed SRMNSA exchange parcels (Morton, 1993a).

Exchange Parcels Near the Chuckwalla Bench Area of Critical Environmental Concern (ACEC)

The offered exchange parcels near the Chuckwalla Bench ACEC are located between the Palo Verde Mountains and the Black Hills in Northeastern Imperial County. These ranges are comprised predominantly of Tertiary age volcanic rocks that overlie and intrude Chuckwalla complex gneisses. The Tolbard Conglomerate overlies the volcanic rocks and is of similar age as the Bear Canyon Conglomerate. Overlying the conglomerate are pyroclastic rocks, basalt, nonmarine clastics, some marine limestone, siltstone, sandstone, and tufa of the Bouse Formation. Also present is a more extensive "older alluvium," surrounding the Palo Verde Mountains at the Black Hills (Morton, 1977).

These exchange parcels are adjacent to the western edge of the Palo Verde mining district, where manganese and barite are the principal minerals of value. Local manganese and barite mines (not on the exchange parcels) have been closed for at least 30 years. The proposed exchange parcels possess no known substantial mineral resources (Morton, 1993a). A geode bed is located within Section 21 and is well "picked over," but may be of some interest to rock hounds.

3.1.2 WATER RESOURCES

3.1.2.1 Scope and Regulatory Status

The description of the existing environment for water resources focuses on the proposed landfill site and immediate adjacent areas that could be potentially affected by: (1) precipitation runoff or ground water contamination originating at the site, and (2) the proposed extraction of the ground water supply from the existing Mesquite Mine well field located approximately three miles south of the proposed site. Potential effects on off-site areas (e.g., due to transport accidents) are also analyzed in Chapter 4.0. Important water resources along the rail-haul route identified during the scoping process to be of potential concern are the continuously flowing Highline and Coachella irrigation canals and endangered species habitat associated with Salt Creek, all of which would be crossed by the proposed municipal solid waste (MSW) residue trains. Potential spillage of dry MSW residue at other locations is not considered to have the potential to cause significant water resources effects. For example, the Salton Sea is not analyzed because any accident resulting in the temporary spillage of solid MSW residue (i.e., over several hours) would not result in liquid runoff into the sea unless it occurred during an infrequent thunderstorm. Even under such unlikely conditions, the runoff would not contain pollutant concentrations that could have a noticeable effect on such a large body of water.

The Colorado River RWQCB is the regulatory agency responsible for protection of surface and ground water quality at the proposed site. In order to construct and operate a landfill at the proposed site, a WDO would be required from the RWQCB. Demonstrated compliance with Chapter 15, Discharges of Waste to Land, of Title 23 of the CCR would be required for the RWQCB to issue a WDO. The RWQCB would consider the following aspects of the proposed Regional Landfill during their review of an application for a WDO:

- Landfill location with respect to ground water and potential active (Holocene) faults.
- Landfill liner and leachate control system designs.
- Precipitation runoff control, both on and around the landfill.
- Wastewater and condensate treatment system designs, and especially containment and liner system designs that would protect against the potential for ground water contamination.
- Procedures to assure that mine waste materials used as landfill cover are suitable to avoid the potential for related environmental effects.
- Monitoring systems in the unsaturated (vadose) zone and ground water to verify system performance and provide an early warning of difficulties.
- Landfill closure procedures to avoid excessive long-term infiltration of liquids into the landfill, including partial closure as portions of the landfill are completed over time.
- Site Investigations and Remediation Actions to be taken in the event monitoring indicates movement of gas or liquids below the landfill liner system.
- Financial assurances that funds are available for facility closure, long-term postclosure operation and maintenance and corrective action.

Recently enacted federal regulations for Municipal Solid Waste Facilities in Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976 are expected to be reflected in revisions to the current RWQCB Chapter 15 requirements in the near future.

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Certain provisions of the California Integrated Waste Management Board (CIWMB) regulations under CCR Title 14, Natural Resources, also are directed toward the protection of water quality. These provisions, dealing with MSW characteristics, erosion protection, drainage control, daily and intermediate cover soils, final closure requirements, monitoring, and financial assurances for corrective action, would be considered by the Local Enforcement Agency (LEA) arm of the Imperial County Department of Health during its review of a Facilities Permit.

Use of the Mesquite Mine well field would be regulated by the Imperial County Planning Department through the Conditional Use Permit (CUP) process. The current CUP for use of those wells (No. 684-84) would require amendment to provide for both mining and landfill water uses.

3.1.2.2 Proposed Landfill Site

Surface Water

Regionally, the proposed landfill project area is located within the Salton Sea Drainage Basin, a closed hydrologic system in which surface drainage flows to an internal point, or sink (the Salton Sea) and subsequently evaporates. Within this basin, the source of surface water is primarily imported irrigation water from the Colorado River, which enters the basin via the All American Canal. The Coachella Canal, approximately 15 miles southwest of the site and one mile west of the Algodones Sand Dunes, is the closest perennial surface water feature.

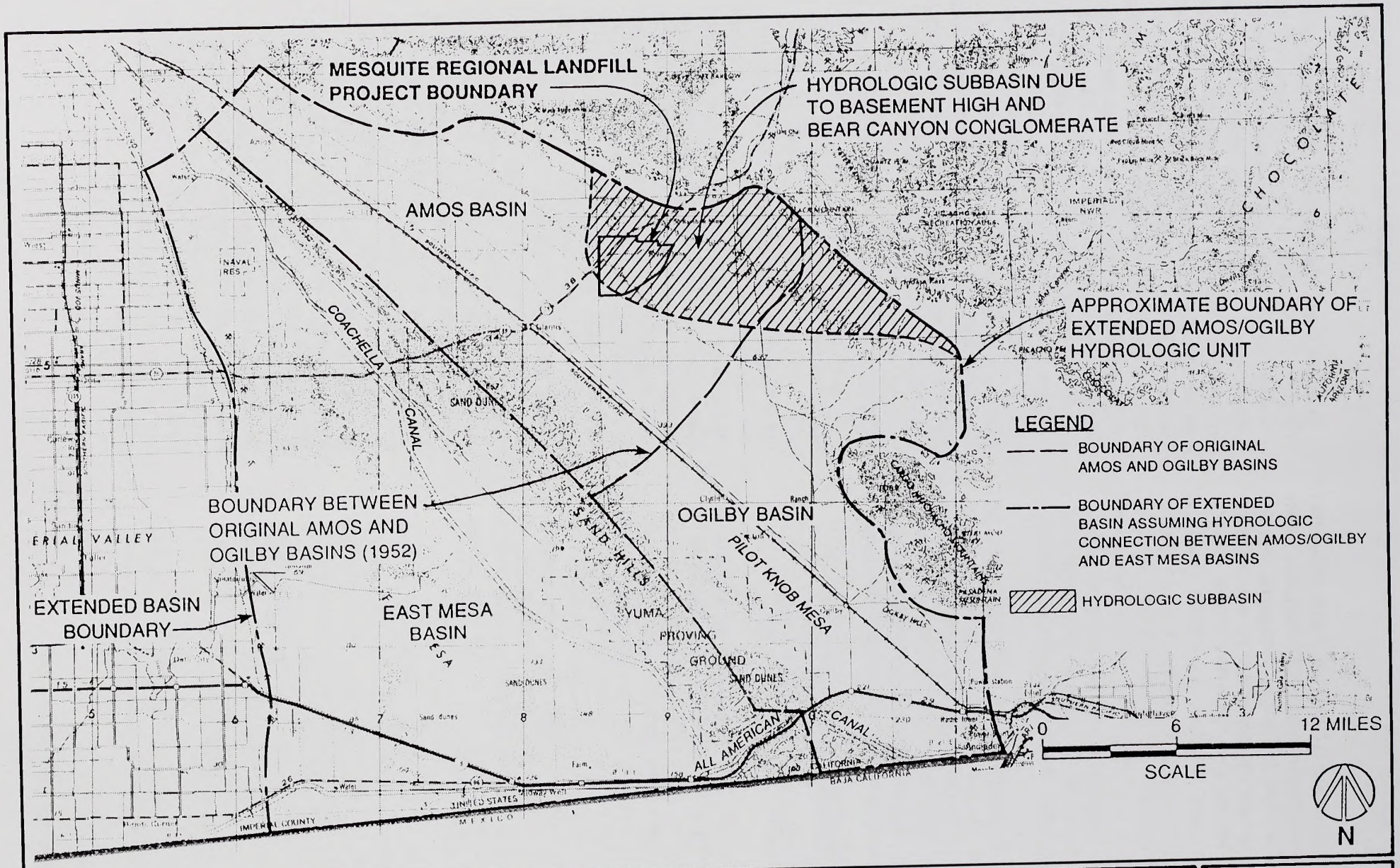
Precipitation runoff, which occasionally occurs in several relatively small, normally dry washes that traverse the site, does not drain to the Salton Sea. Instead, small flows in these washes percolate into the shallow, loose wash bottom soils and/or evaporate. Excess flow from infrequent larger flows terminates at the Algodones Sand Dunes, which form a natural topographic constraint above the adjacent desert floor.

Flows that do occur in the washes, upgradient from the dunes, usually last for periods of less than one hour, during which time the flow is highly turbid due to natural erosion of the unvegetated wash bottoms and sides. Observations at the Mesquite Mine indicate that such short duration, measurable flows have occurred only a few times between 1984 and 1992. The magnitude of runoff that can occur in the area during large storms was calculated for the design of three swales provided in an 8.5-mile realignment of State Route 78 (SR 78) around the Mesquite Mine area, completed in 1988. The combined peak flow for the 10-year storm at these three swales is about 4,000 cubic feet per second (cfs) (Environmental Solutions, Inc., 1987b). The majority of the drainage area contributing to this flow is from the Chocolate Mountains, upgradient from the mine.

Ground Water

Occurrence

Hydrologically, the project area was originally included in the Amos Basin (California Department of Public Works, Division of Water Resources, 1952), a 150-square-mile area extending south from the Chocolate Mountains (see Figure 3-11). Limits of the Amos Basin were not well defined and its separation from the adjacent Ogilby Basin to the south was based on ground water use rather than on geologic or hydrologic factors (St. Clair Research Systems, Inc., The Butler/Roach Group, Inc., 1984). A more recent designation incorporates both the Amos and Ogilby basins into one combined, approximately 300-square-mile Amos-Ogilby Hydrologic Unit (California Department of Water Resources (DWR), 1964). Studies performed by Environmental Solutions, Inc. (1992b) using data presented in DWR (1964) and USGS (1972 and 1975) reports indicate that the Amos-Ogilby Basin is probably also hydraulically connected to the East Mesa Basin to the west of the Algodones Sand Dunes, which approximately doubles the size of the alluvial aquifer. To provide a conservative analysis, two scenarios are considered in this Environmental Impact Statement/Environmental Impact Report (EIS/EIR) as follows:



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Ground Water Basin Boundaries

FIGURE **3-11**

- The most likely case that the Amos-Ogilby and East Mesa Basins are connected.
- The more conservative assumption, that the two basins are not connected, and therefore, the existing Mesquite Mine well field is supplied by water only from the Amos-Ogilby Basin.

In conjunction with environmental analyses for the original Mesquite Mine and the proposed landfill, Environmental Solutions, Inc. (1992b) has performed hydrologic investigations that are addressed in detail in Appendix B of this EIS/EIR. The investigations have included compilation and review of:

- Site-specific geologic and hydrologic reports prepared for the original Mesquite Mine EIR/EA (Crandall, 1982; Sergent, Hauskins & Beckwith (SHB), 1984b; Fox 1984a and b; and St. Clair Research Systems, Inc., 1984b).
- Published and unpublished regionally oriented literature including Dutcher, et al., 1972; Dillon, 1975; Loeltz, et al., 1975; and Morton, 1977.
- Site-specific geophysical data (Gold Fields Mining Corporation, 1987, and Albireo, 1984).
- Site-specific hydrologic and geologic data from exploratory boreholes, geotechnical borings, and production and monitoring wells.

Figure 3-12 shows the locations of wells and borings used to determine vadose zone and ground water conditions in the existing mine and proposed landfill areas. The borings shown on this figure include wells completed for subsurface monitoring, geotechnical borings, and mineral exploration borings, selected from the thousands of wells and borings completed by Gold Fields in the project area. Most of the geotechnical borings were installed for design of the original Mesquite Mine facilities. Geotechnical Borings ESI-1 and ESI-2 were continuously cored borings conducted to confirm interpretations that the vadose zone above basement rock consists of low-permeability material. The wells shown were completed for several purposes, including: early attempts to develop water supply sources near to the mine; the Mesquite Mine well field (GF-1, -2, and -3A) approximately three miles to the south of the proposed landfill site; monitoring wells for mine processing activities; and initial monitoring wells for the proposed landfill. These wells provide up to about 10 years of ground water level data, including data prior to and during the drought period in the late 1980s.

An important result of this series of hydrologic and geotechnical investigations has been the definition of a minor subbasin that underlies the general area of the proposed landfill. The subbasin is defined by a zone where low-permeability conglomerate bedrock or basement rock is present at shallow depths, and water-bearing alluvium does not exist. Only minor amounts of water are present within the subbasin.

The southern boundary of the hydrologic subbasin is defined by a buried basement high "ridge" that separates the project area from the main Amos-Ogilby alluvial basin to the south. The postulated limits of this subbasin are shown on Figure 3-11. The existing Mesquite Mine well field, which would be used to supply water for the proposed regional landfill, is located about one mile south of the subbasin boundary and, therefore, taps into the deep alluvium of the Amos-Ogilby Basin. Table 3-4 shows these wells (GF-1, -2 and -3) have estimated maximum yields of 2,500 gallons per minute (gpm) each, compared to wells completed in the subbasin that yield less than 28 gpm. Figures 3-12 and 3-13 show the approximate locations of the wells listed in Table 3-4.

The source of ground water recharge to the subbasin underlying the proposed landfill area is the small amount of precipitation infiltration that occurs in the relatively upgradient watershed bounded by the drainage divide of the Chocolate Mountains. Precipitation rates in the area are on the order of three inches per year, while

TABLE 3-4

Summary of Vicinity Wells

Proposed Mesquite Regional Landfill

	WELL IDENTIFICATION	PURPOSE	RATED YIELD (gpm)	TOTAL DEPTH (ft)	PERFORATED INTERVAL (ft)	SEALED DEPTH (ft)	DATE COMPLETED	APPROXIMATE WATER LEVEL (ft)	
								DEPTH	ELEVATION
Wells Completed in Bedrock or Basement Rock of the Subbasin	WT-2	Production/ Upgradient Monitoring	28	442	154-404	N/A	October 1982	185	550
	SM-63	Production	10	477	N/A (1)	N/A	N/A	185	575
	SM-241		10	520				200	560
	Singer Well		15	470				220	575
	GW-1	Downgradient Monitoring Well	Less than 15	430	317-416	0-291	October 1985	313	277
	GW-2		Less than 10	310	207-305	0-190		270	360
	GW-3		1-2	310	196-296	0-193		213	437
	GW-4	Upgradient Monitoring Well	2	320	209-309	0-190	October 1986	223	502
	GW-5	Downgradient Monitoring Well	2	359	259-359	0-250	October 1988	270	N/A
	GW-6		1-2	338	238-338	0-222	January 1990	250	N/A
	LGW-1	Downgradient Monitoring Well	Less than 10	450	300-450	0-285	February 1993	357	210
	LGW-2	Upgradient Monitoring Well	Less than 10	190	130-190	0-130	November 1992	141	490
	MCR-80	Intended for Large-Scale Production but Insufficient Yield	Less than 26	1,017	402-1,002	0-50	March 1983	197	523
Wells Completed in Amos-Ogilby Basin Alluvium	GF-1	Production	3,000-6,000	822	506-810	0-20	December 1983	474	79
	GF-2		2,300+	908	658-885	0-50	March 1985	462	78
	GF-3A		2,250+	940	690-930	0-50	March 1986	469	77
	MBH-1	Observation	N/A	600	510-590	0-300	November 1984	467	81
	MBH-2			640	510-630	0-400		470	80
	MBH-3			683	510-680	0-400		458	79
	Boardman Well	Production	N/A	735	N/A	N/A	1980	309	95
	Glamis Well	Production	300	520	N/A	N/A	1972	235	100
	Cahuilla Ranger Station	Produciton	50	300	210	N/A	July 1992	114	80 (2)
	Gold Rock Ranch Well	Production	N/A	521	N/A	N/A	1935	397	83
	American Girl Mine 26-1	Production	50	N/A	N/A	N/A	N/A	280	119
	American Girl Mine 26-2	Production	400	393	N/A	N/A	August 1988	280	119

91-296 (3/4/93/dh)

(1) NA = Not Available
(2) Estimated based on approximate ground surface of 195 feet above mean sea level.
Source: Environmental Solutions, Inc., 1993.

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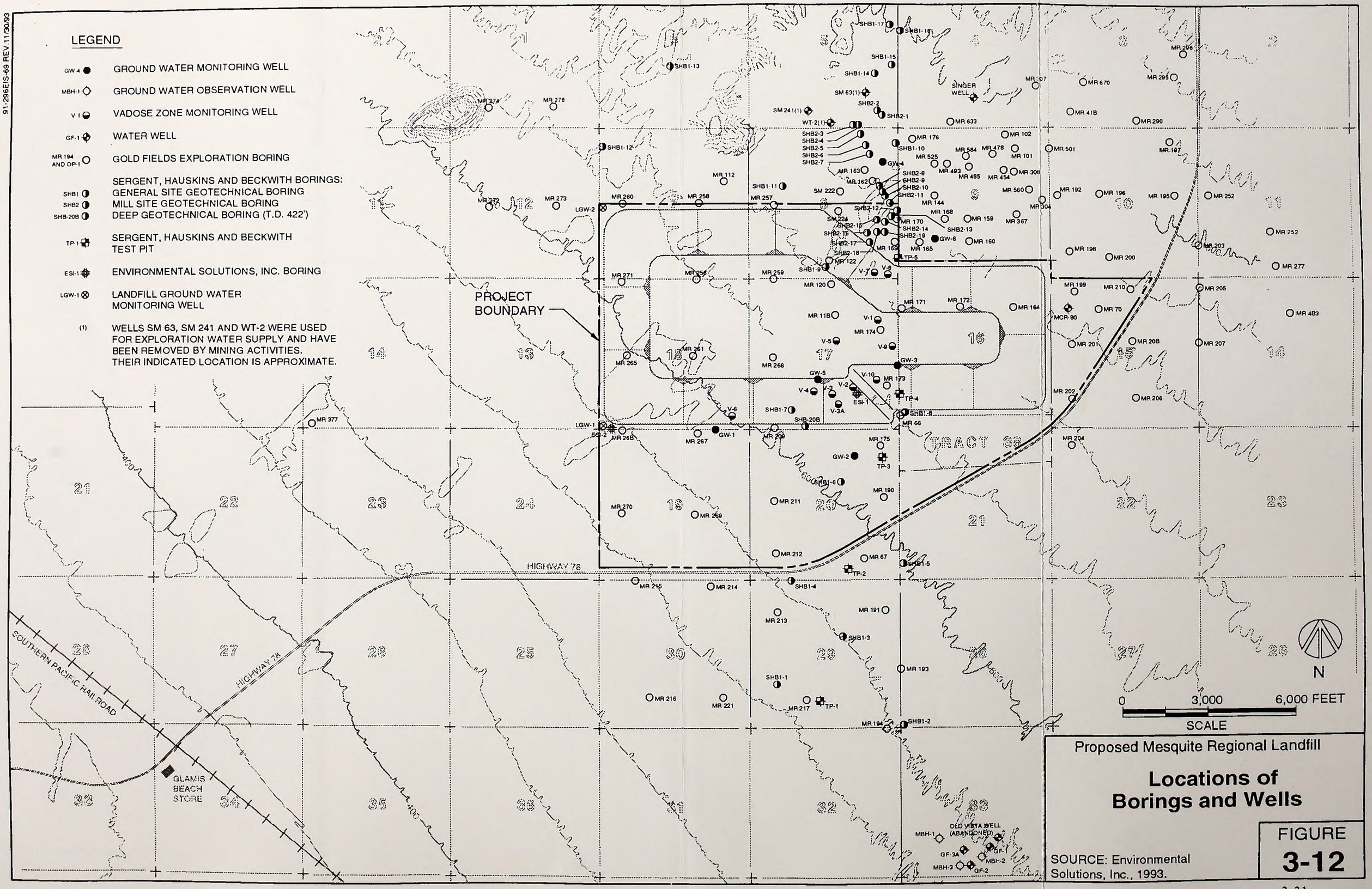
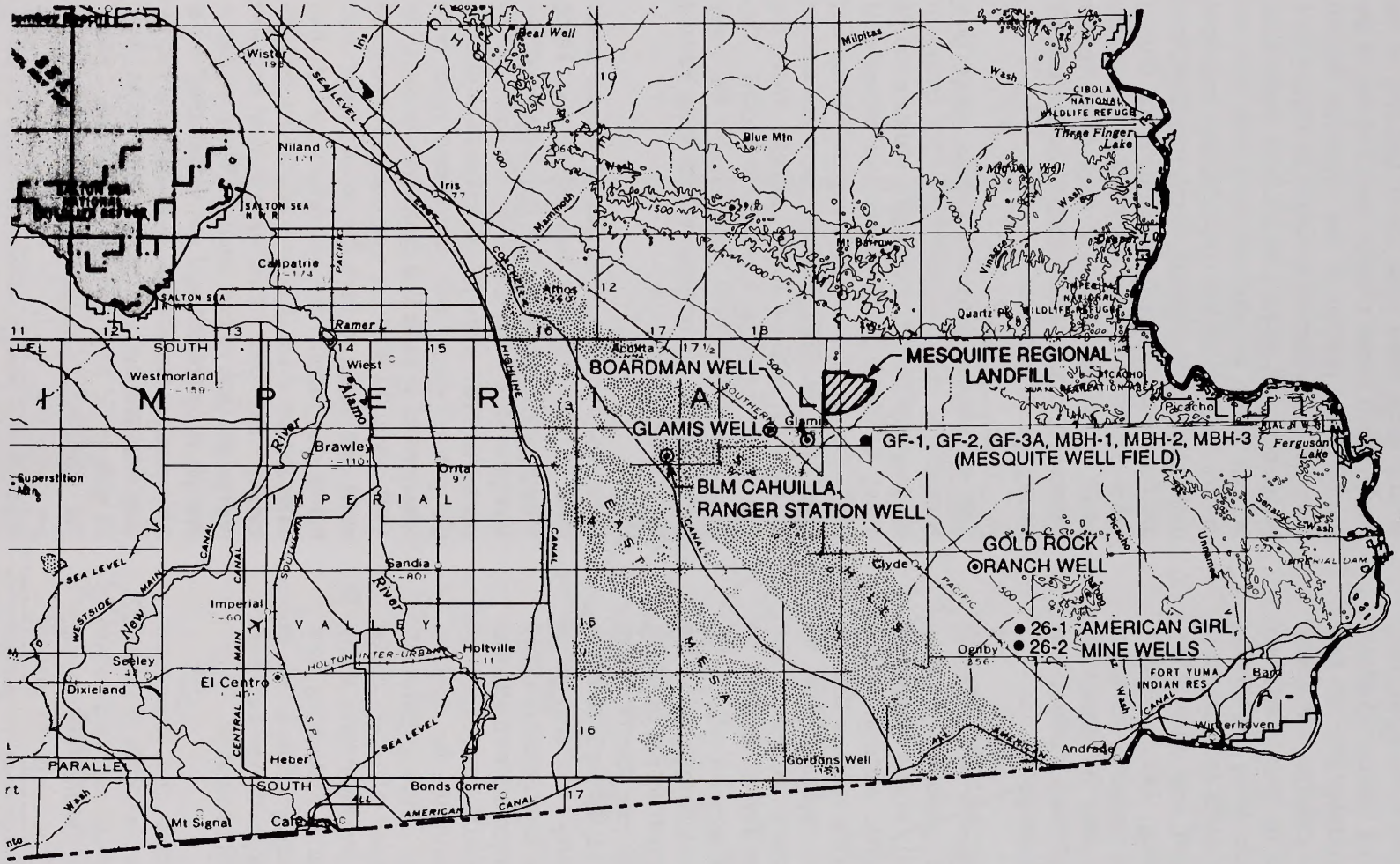


Proposed Mesquite Regional Landfill

Locations of Borings and Wells

FIGURE **3-12**

SOURCE: Environmental Solutions, Inc., 1993.



LEGEND

- ⊙ LOW CAPACITY DOMESTIC WELLS
- ● HIGH CAPACITY INDUSTRIAL WELLS

0 10 20 MILES
SCALE

N

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Location Of Area Wells

FIGURE 3-13

evaporation potential is approximately 100 inches per year (Environmental Solutions, Inc., 1992b). As a result of the limited available watershed and the low permeability of near surface soils, ground water recharge is minimal. This condition is reflected in long-term water level data for the Mesquite Mine Monitoring Wells (GW-1 to -6). These wells generally have shown level fluctuations of less than 2 feet (Environmental Solutions, Inc., 1992b), including changes that were measured during the drought of the late 1980s and the September 1991 to May 1992 period when rainfall was more than twice the yearly average.

In the project area, the majority of the vadose zone material above the basement rock is Bear Canyon Conglomerate. Large exposures of this formation at the north portion of the Mesquite Mine's Big Chief Pit indicate that the cemented conglomerate is massive, with no evidence of large fracture zones. The continuously-cored Boring ESI-1 resulted in more than 90 percent recovery for all of 42, 5-foot core runs in the conglomerate between a depth of 11 feet and the total boring depth of 250 feet. The average recovery for the entire depth of the conglomerate at Boring ESI-1 was about 97 percent. Similarly, the amount of recovery for the 60-foot continuously-cored Boring ESI-2 in the conglomerate bedrock was about 99 percent. The general competency of the core samples further indicates the massive, unfractured nature of this material. Approximately 50 percent of the cored conglomerate samples were logged to have a silty or clayey, cemented matrix, indicating low permeability characteristics. Figure 3-4 in Section 3.1.1.3 shows north-south and east-west cross sections through the subbasin area.

Figures 3-14 and 3-15 show the interpreted ground water level contours and depth to ground water, respectively, within the subbasin at the proposed site. The ground water flow in the subbasin is generally from the northeast toward the southwest in the same direction as the surface ground slope.

The depth to ground water beneath the proposed landfill area varies from about 140 feet at the northwestern corner to more than 300 feet in the southwestern portion of the proposed landfill footprint. The depths to water in Figure 3-15 designated with an asterisk are from exploration borings where no apparent water was observed during drilling of low permeability basement rock with the total boring depth indicated after the first asterisk. It is anticipated that ground water quantities in the basement rock are very small. Ground water that does occur in the basement rock appears to be controlled by widely spaced fractures.

The magnitude of natural ground water flow beneath the approximate 16,000-foot length of the proposed landfill footprint is estimated to be about 60 to 65 gpm using a unit estimate of 0.004 gpm per foot of mine length into the Big Chief Mine Pit (SHB, 1984a). This small amount of flow is derived from recharge from the Chocolate Mountains, north of the landfill. This represents a very small percentage of the water stored in, and the recharge to, the main alluvial basin to the south.

Currently, the amount of natural ground water flow in the proposed landfill area is being reduced by dewatering that is occurring at the Mesquite Mine's Big Chief Pit. Dewatering was started in 1987 when the pit excavation reached the ground water level anticipated from prior observations at wells and exploration borings. In 1991, about 70 acre-feet was pumped from in-pit wells and sumps to keep the ground water level below the depth of excavation, which had extended to about 130 feet below the original ground water level. This water is used for mine operations, such as dust control. When mining at that pit is completed and the surrounding water table reaches equilibrium, it is expected that the long-term seepage rate into the pit will be about 22 gpm or 35 acre-feet per year (SHB, 1984a). This compares with an estimate of 240 acre-feet per year that could be evaporated from the ultimate pit bottom (Mesquite Mine EIR/EA). Thus, no significant accumulation of water is expected in the pit. The evaporation of the small

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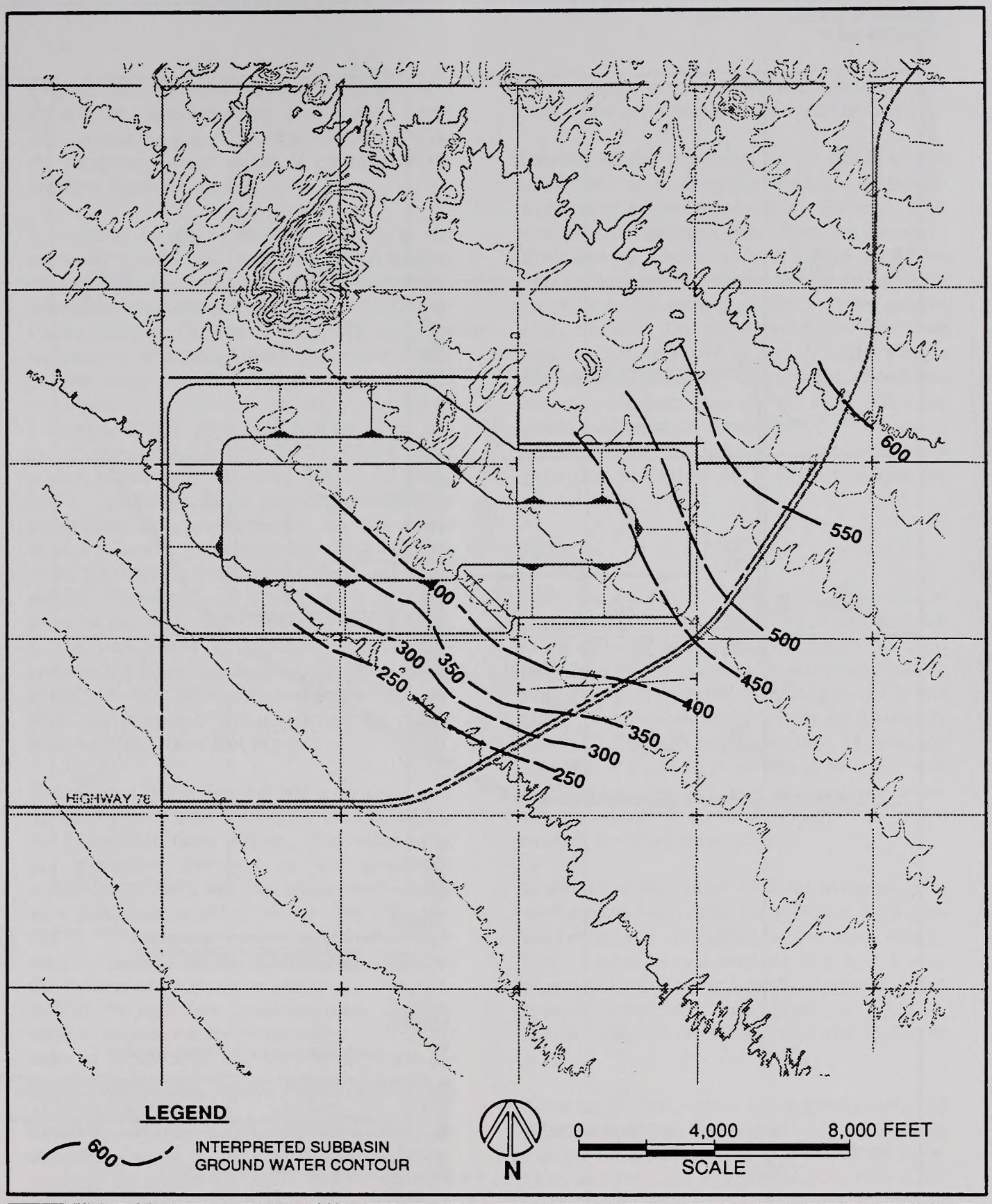


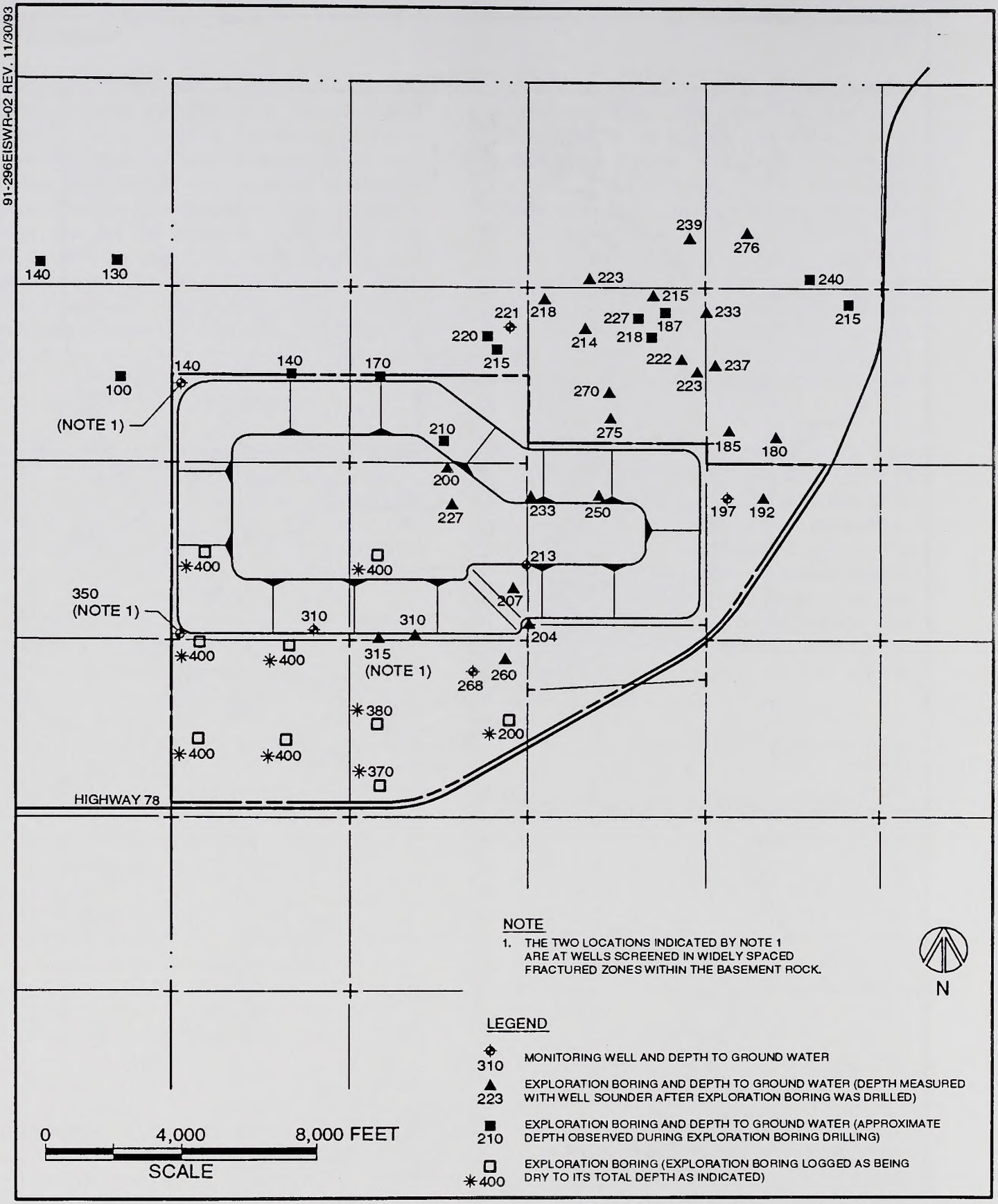
SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Subbasin Ground Water Contours

FIGURE **3-14**

91-296EISWR-02 REV. 11/30/93



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Depths to Ground Water in Subbasin

FIGURE **3-15**

seepage from the pit bottom will result in a permanent decrease in the water level surrounding the pit, which may further increase the depth to ground water at portions of the northern landfill boundary.

In contrast to the subbasin conditions at the proposed landfill site, the thick, water-bearing alluvial deposits of the Amos-Ogilby Basin store substantial amounts of ground water. The Amos-Ogilby Basin is the source of ground water for the existing Mesquite Mine wells, which would provide water for the proposed landfill. The main source of recharge to these deposits is underground flow from the Colorado River and the All American Canal in the southeasternmost portion of the Imperial Valley (USGS, 1972 and 1975). Some recharge also is derived from infiltration of precipitation at the Algodones Sand Dunes and from relatively minor amounts from infiltration from the adjacent mountain slopes. The magnitude of recharge is estimated to be on the order of 100,000 acre-feet per year, if the anticipated hydrogeologic connection between the Amos-Ogilby and East Mesa Basins exists. If this interbasin connection does not exist, the estimated recharge would be on the order of 50,000 acre-feet per year.

The Amos-Ogilby alluvial basin extends to a depth of greater than 5,000 feet, as illustrated in the Figure 3-16 cross section. The thickness of the pervious alluvium in the combined Amos/Ogilby Basin and East Mesa Basin extends to a maximum depth of 10,000 feet (Dutcher, 1972). Considering a potentially useful water depth of 3,000 feet, the USGS (1972) estimates the volume of recoverable and usable (i.e., less than 35,000 mg/l total dissolved solids) available water storage in the combined basins to be on the order of 229,000,000 acre-feet. If the basins are not connected, the storage volume estimate is 126,000,000 acre-feet. Although the USGS estimates are about 20 years old, they are considered to be reasonable because no major geologic or water extraction conditions have occurred since they were prepared. Consideration of both the connected and unconnected basin storage estimates is expected to encompass the range of conditions that may exist in the potentially impacted alluvial basin.

Previous studies conducted by the USGS (1975) show that, in general, the direction of ground water flow in the Amos-Ogilby Basin is from southeast to northwest (i.e., from the Colorado River and All American Canal toward the Salton Sea). The water elevations shown in Table 3-5 for wells in the vicinity of the proposed project (e.g., elevation 119 at the American Girl mine well, to elevation 80 at the Cahuilla Ranger Station well) generally confirm this condition. However, the data show that the level within the central portion of the Amos-Ogilby area is nearly flat, with very little gradient. This condition is generally reflective of a high permeability alluvial basin.

Usage

With the exception of Mesquite Mine-related uses, the only known historic use of ground water in the subbasin was by Richard Singer, at a well that lies within a claim block previously sold to Gold Fields. The Singer Well (Figure 3-12) was drilled into bedrock to a depth of approximately 470 feet. The well produced about 15 gpm and was used at a rate of about 100 gallons per week for showers, laundry, cooling, and some minor ore processing. Water in the Singer Well is not suitable for drinking purposes.

In addition to the Singer Well, the Mesquite Mine used ground water from the subbasin for a pilot test facility and exploration drilling from 1982 to 1986. This water was obtained from several low-capacity (10 to 28 gpm) wells completed in the bedrock or basement rock, identified as SM-63, SM-241 and WT-2 in Table 3-4 and in Figure 3-12.

Since early 1986, when full-scale operation of the Mesquite Mine began, water requirements for that project have been supplied by the Mesquite Mine well field located approximately three miles south of the proposed site in alluvial deposits of the Amos-Ogilby Basin. The well field was located distant from the Mesquite Mine area

because earlier attempts at developing large-scale production wells closer to the mine (i.e., in the subbasin area) were unsuccessful (see discussion in Section 3.1.2.2). The Mesquite Mine well field includes three large-diameter wells, large high-production pumps, three monitoring wells, a five-mile electric power line, and a four-mile aboveground pipeline.

The Mesquite Mine well field is approved for extracting up to 4,033 acre-feet of water per year (CUP No. 684-84), based on maximum estimates of potential water demands for dust control, heap leaching and evaporation. The actual water use by the Mesquite Mine between 1987 and 1991 has varied from 700 to 1,100 acre-feet per year. During that time, drawdown at the well field has been about three feet.

Aquifer Characteristics

Based on data from pumping tests conducted on wells near the Mesquite mine pit, Sergent, Hauskins & Beckwith (1984) estimated the average permeability of the basement rock within the subbasin area to be less than 5×10^{-6} centimeters per second (cm/sec). Hydraulic tests conducted in Boring ESI-2 (Figure 3-13) indicated that the permeability of the majority of the unfractured basement rock is very low, on the order of 10^{-7} cm/sec (i.e., 0.1 ft/year). The permeability of a more fractured portion of the basement rock was measured by conducting a pumping test in Monitoring Well MW-1 at the southern boundary of the proposed landfill. That test indicated that the long-term permeability was about 5×10^{-5} cm/sec (i.e., 50 ft/year).

The results of packer pressure tests conducted in the cored Borings ESI-1 and -2, summarized in Table 3-5, indicate that the permeability within the top portion of the Bear Canyon Conglomerate varies from 8×10^{-5} (i.e., 80 ft/year) at shallow depths to less than 10^{-6} cm/sec (i.e., 1 ft/year) at about 100 feet. Combined, these data indicate that migration of liquids in the vadose (unsaturated) zone materials, above ground water, would be slow.

Downward movement of moisture would also be restricted by the need to increase moisture content above the Field Moisture Capacity (i.e., the moisture content at which the capillary and gravity forces are in equilibrium). Sergent, Hauskins & Beckwith (1984a) estimated the Field Moisture Capacity in the project area to be 10 to 15 percent. In comparison, measured *in situ* moisture contents are much lower, varying from 1 to 3 percent near the ground surface to 3 to 7 percent at a depth of 40 feet (Sergent, Hauskins & Beckwith, 1984). This *in situ* moisture deficiency would inhibit downward percolation of infrequent rainfall in the near surface materials, and indicates that recharge to ground water is not presently occurring in the proposed landfill area.

Hydraulic parameters for the main, alluvial portion of the Amos-Ogilby Basin were determined by pumping tests conducted when the Mesquite Mine well field was installed in 1983, 1985, and 1986. The arrangement of three pumping and three observation wells used for those tests is shown in Figure 3-17. The estimated permeability (hydraulic conductivity) of the sand and gravel portions of the alluvium aquifer determined for these tests is on the order 10^{-2} cm/sec (i.e., 10,000 ft/year), or three to four orders of magnitude greater than hydraulic properties of the subbasin that underlies the proposed landfill site.

Water Quality

Tables 3-6 and 3-7 summarize ground water quality data for the subbasin and alluvial valley zones, respectively. The analyses presented include data from: (1) the 1982/86 period, when the Mesquite Mine was being investigated and permitted, and (2) from 1989/1991 to illustrate that water quality has consistently failed to meet certain drinking water standards during that time period.

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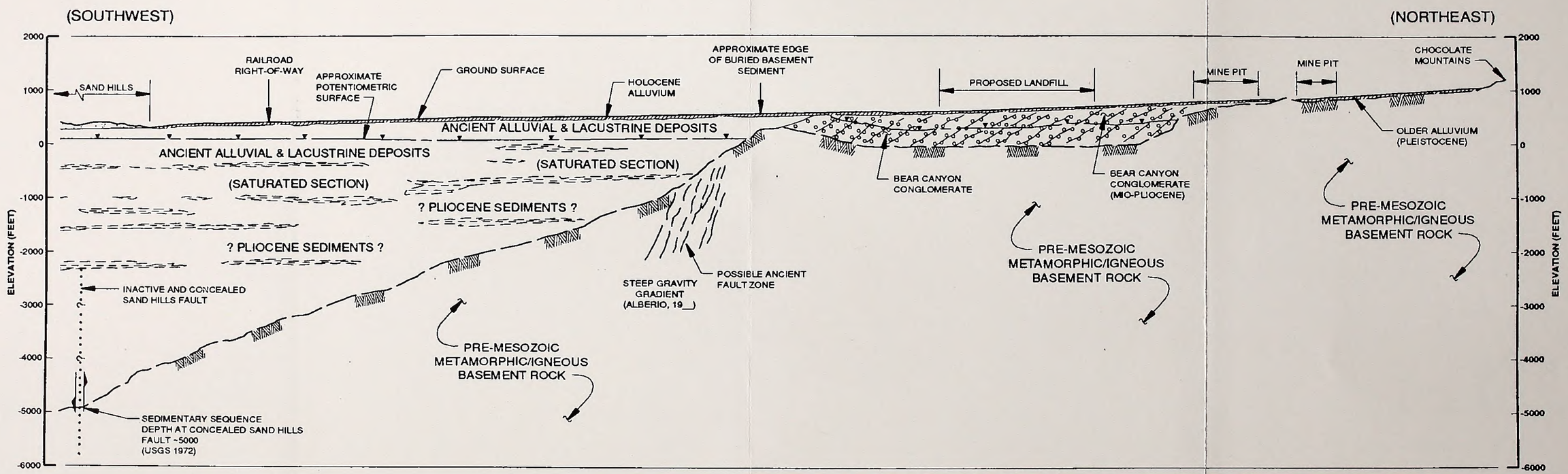
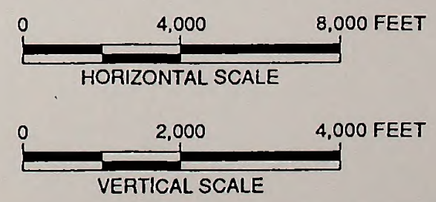




Proposed Mesquite Regional Landfill

Alluvial Basin Cross Section

SOURCE: Environmental Solutions, Inc., 1992.

FIGURE **3-16**

TABLE 3-5

Borings ESI-1 and -2 Pressure Test Data Summary

Proposed Mesquite Regional Landfill

Note: All tests are in the Bear Canyon Conglomerate except those identified by footnote 3.

Boring ESI-1		Boring ESI-2	
Depth (feet)	Permeability (cm/sec)	Depth (feet)	Permeability (cm/sec)
16 - 21 (1)	6×10^{-5}	9 - 14 (1)	2×10^{-6}
20 - 25 (1)	8×10^{-5}	14 - 19 (1)	3×10^{-6}
26 - 31 (1)	1×10^{-5}	39 - 44 (1)	7×10^{-7}
56 - 61	3×10^{-5}	69 - 74 (1)	2×10^{-7}
65 - 70 (1)	5×10^{-5}	79 - 84 (3)	$<4 \times 10^{-7}$
80 - 85	2×10^{-6}	249 - 254 (3)	$<2 \times 10^{-7}$
98.5 - 103.5	Very Small (2)	309 - 314 (3)	$<2 \times 10^{-7}$

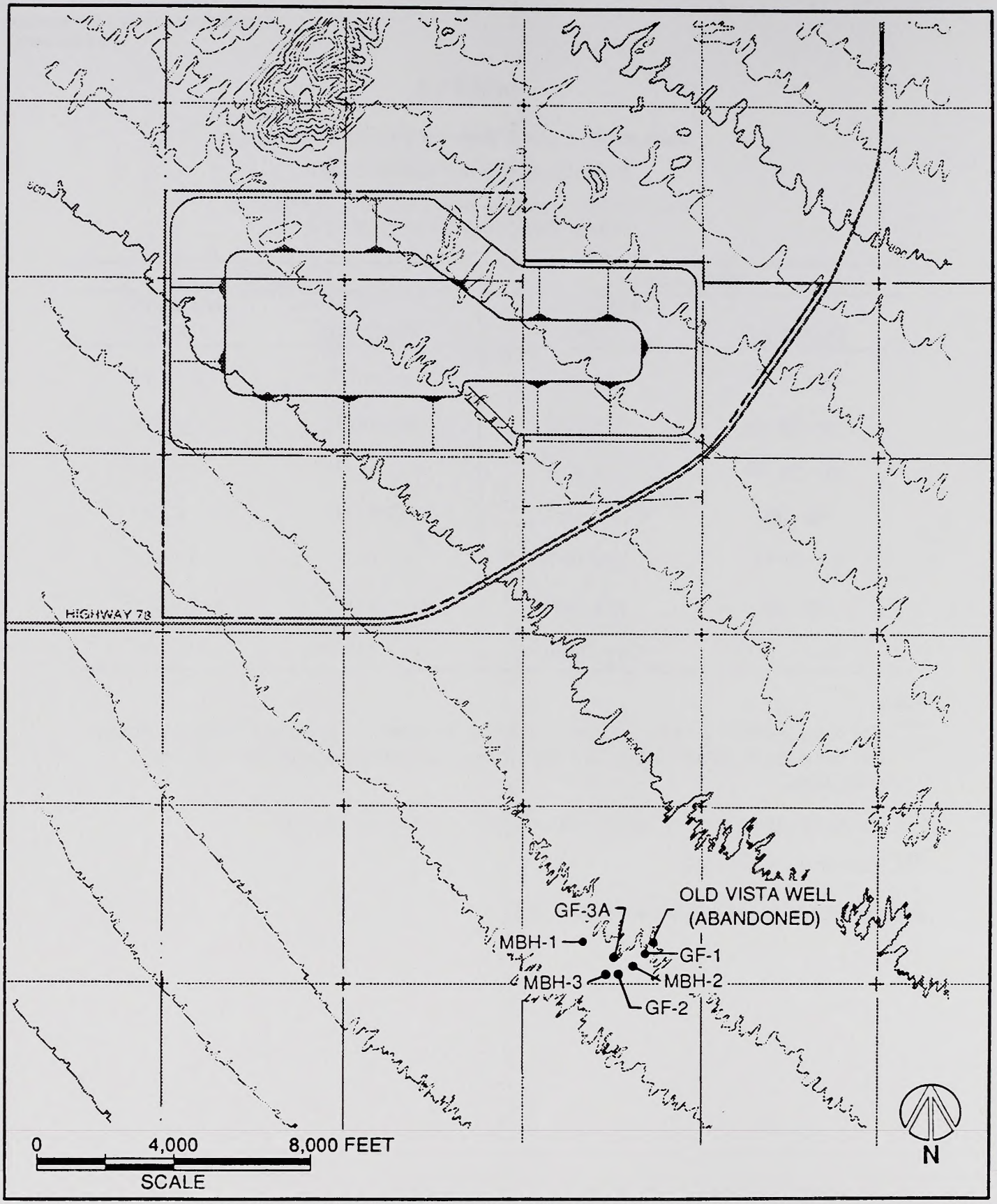
Notes:

(1) The water pressure used for these tests may have exceeded the geostatic overburden pressure, and permeability values may be overstated if hydrofracturing occurred due to the test procedures.

(2) No measurable water flow at this depth indicates very low permeability.

(3) Tests in basement rock.

Source: Environmental Solutions, Inc., 1993.



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Arrangement of Mesquite Mine Production and Observation Wells

FIGURE

3-17

TABLE 3-6

Subbasin Area Ground Water Quality Data

Proposed Mesquite Regional Landfill

DRINKING WATER STANDARDS(1)		pH (units)	SC (µmho/cm)	TDS (mg/L)	Cl^- (mg/L)	F^- (2) (mg/L)	SO_4^{2-} (mg/L)	As (3) (mg/L)	Cr (3) (mg/L)	Fe (3) (mg/L)	Mn (3) (mg/L)	Hg (mg/L)
		6.5 - 8.5	900	500*	250*	1.6	250*	0.05	0.05	0.30*	0.05*	0.002
WELL	DATE											
WT-2	11/22/82	7.88	*1,650(4)*	*1,000*	142	*2.5*	*262*	0.05	<0.01	*0.80*	*0.08*	NA
	3/21/83	7.23	*1,760*	*1,004*	137	*3.1*	*274*	0.014	<0.01	*0.56*	0.03	NA
	2/4/84	8.0	*1,660*	*996*	127	*1.6*	*256*	0.031	<0.01	0.03	<0.01	NA
	5/4/84	8.4	*1,800*	*997*	146	*1.32*	*251*	NA	NA	NA	NA	NA
	1/21/85	8.2	NA	*1,040*	136	NA	*256*	NA	NA	NA	NA	NA
	10/25/85	7.99	*1,630*	*969*	140	*1.71*	*260*	0.003	<0.01	0.07	*0.07*	NA
	12/12/85	8.36	*1,561*	*938*	110	*1.58*	*266*	0.026	<0.01	0.2	0.01	NA
SM-63	11/22/82	7.61	*1,560*	*960*	125	1.3	*280*	0.01	<0.01	0.12	0.01	NA
	3/21/83	7.14	*1,650*	*992*	104	*3.3*	*274*	0.014	<0.01	*1.00*	0.02	NA
Singer	2/4/84	7.85	*2,250*	*1,328*	*286*	*1.6*	*415*	0.005	<0.01	*0.82*	*0.06*	NA
GW-1	10/25/85	7.34	*3,320*	*2,128*	*595*	1.5	*283*	0.007	*0.08*	*33*	*14*	NA
	12/12/85	7.52	*3,105*	*2,032*	*486*	*1.09*	168	0.037	*0.14*	*22*	*1.7*	NA
	10/28/86	8.25	*3,081*	*1,819*	*660*	*2.2*	*360*	*0.075*	0.04	*3.5*	*4.1*	NA
	4/92	7.5	NA	*1,802*	NA	NA	NA	NA	NA	NA	NA	NA
GW-2	10/25/85	7.35	*3,230*	*1,960*	*876*	*1.7*	*325*	0.001	<0.01	0.19	*0.84*	NA
	12/12/85	7.75	*3,485*	*1,992*	*863*	*1.02*	*330*	0.007	<0.01	*0.77*	*0.5*	NA
	4/92	7.7	NA	*1,645*	NA	NA	NA	NA	NA	NA	NA	NA
GW-3	10/25/85	7.92	*1,221*	*869*	129	1.3	*297*	0.002	<0.01	0.04	0.04	NA
	12/12/85	7.23	*1,346*	*890*	134	*1.81*	*292*	0.017	<0.01	*0.39*	*0.11*	NA
	4/92	7.7	NA	*1,136*	NA	NA	NA	NA	NA	NA	NA	NA
GW-4	10/23/86	8.14	*2,027*	*1,270*	*309*	*2.0*	*342*	0.009	0.03	0.04	*0.14*	0.0009
	4/92	7.7	NA	*1,191*	NA	NA	NA	NA	NA	NA	NA	NA
GW-5	6/7/89	8.4	NA	*1,170*	302	*2.5*	229	*0.071*	0.20	*0.03*	*1.6*	<0.0005
	4/92	*9.2*	NA	*978*	NA	NA	NA	NA	NA	NA	NA	NA
GW-6	7/30/91	8.0	NA	*1,273*	430	*1.2*	*300*	<0.005	<0.005	*32*	*0.21*	<0.0001
MCR 80	1/18/85	7.28	*3,306*	*1,800*	609	NA	*425*	NA	NA	*6.8*	NA	NA

91-296 (9/27/92/cm)

NA = Not Available
(1) California Domestic Water Quality and Monitoring Regulations. California Health and Safety Code and the CAC Title 22.
(2) 1.6 mg/L based on annual average air temperature of 73°F.
(3) Data presented as total (mg/L). Soluble (<0.45µm) level data also available.
(4) The numbers typed in italics equal or exceed drinking water quality standards.
* Recommended secondary drinking water standards. Upper and short-term levels may be highter.

Source: Environmental Solutions, Inc., 1993.

TABLE 3-7

Alluvial Valley Ground Water Quality Data

Proposed Mesquite Regional Landfill

DRINKING WATER STANDARDS(1)		pH (units)	SC (µmho/cm)	TDS (mg/L)	Cl^- (mg/L)	F^- (mg/L)	SO_4^{2-} (mg/L)	As (mg/L)	Cr (mg/L)	Fe (mg/L)	Mn (mg/L)	Hg (mg/L)
		6.5 - 8.5	900	500*	250*	1.6	250*	0.05	0.05	0.30*	0.05*	0.002
WELL	DATE											
GF-1	8/30/82	6.89	1,940(2)	1,145	445	1.74	261	0.015	0.07	5.00	0.06	NA
	3/21/83	7.06	2,150	1,084	443	4.80	239	0.004	<0.01	0.36	0.01	NA
	12/5/83	7.28	1,900	1,216	399	4.30	252	0.005	0.02	0.13	<0.01	NA
	5/2/84	6.90	2,150	1,178	441	2.50	274	0.006	<0.01	0.01	0.01	NA
	10/25/85	7.81	1,779	1,162	425	3.50	265	0.001	0.02	0.82	0.01	NA
	12/12/85	7.81	1,954	1,137	436	2.30	266	0.014	<0.01	0.53	<0.01	NA
	5/21/86	7.80	1,950	1,309	NA	NA	NA	NA	NA	NA	NA	NA
GF-2	4/19/85	8.13	1,980	1,072	403	1.9	240	0.004	0.01	0.08	0.01	NA
	4/21/85	8.01	1,980	1,108	404	2.1	237	0.004	0.01	0.09	<0.01	NA
	10/25/85	7.68	1,699	1,088	404	1.6	252	<0.001	<0.01	0.09	0.09	NA
	5/21/86	7.60	1,886	1,217	NA	NA	NA	NA	NA	NA	NA	NA
GF-3A	4/21/86	7.94	1,643	1,069	386	1.82	237	0.006	<.01	0.10	<0.01	NA
	7/16/91	8.00	1,092	2,100	410	2.5	250	<0.001	0.01	0.17	3.3	NA
Boardman	2/4/84	7.75	5,560	3,080	1,333	2.80	155	0.032	<0.01	0.37	0.05	NA
Glamis	4/25/72	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/4/84	7.73	5,490	3,046	1,371	2.81	168	0.067	<0.01	1.1	0.12	NA
Gold Rock	1/19/49	NA	NA	1,510	667	NA	242	NA	NA	NA	NA	NA
	5/20/64	7.7	NA	1,950	897	1.8	275	NA	NA	NA	NA	NA
	9/29/68	7.5	NA	844	348	1.9	125	NA	NA	NA	NA	NA

91-296 (9/27/92/cm)

NA = Not Available
(1) California Domestic Water Quality and Monitoring Regulations. California Health and Safety Code and the CAC Title 22.
(2)The numbers typed in italics equal or exceed drinking water quality standards.

Source: Environmental Solutions, Inc., 1993.

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The quality data for the alluvium aquifer indicates that water from this source is also not suitable for drinking without prior treatment. Drinking water standards are exceeded in the alluvium aquifer for chlorine, fluorine, total dissolved solids and specific conductivity. Gold Fields Operating Company (GFOC) treats this water by a reverse osmosis process prior to its use for drinking at the Mesquite Mine. During 1994, several of the mining-related wells and two new landfill monitoring wells (LGW-1 and LGW-2 in Figure 3-12) will be monitored for a larger number of parameters than have been historically monitored. The purpose of this monitoring is to establish background conditions for the proposed MSW landfill operations. The additional parameters to be monitored will be determined by the RWQCB staff, and are expected to include at least volatile organic compounds (VOCs) and nitrates because these chemicals often are contained in landfill leachate.

3.1.2.3 Offered Exchange Parcels

Surface and ground water conditions at the proposed exchange parcels in the SRMNSA and near the Chuckwalla Bench ACEC have not been studied because no activities are planned at these locations. In general, because the areas are in the desert, surface water courses would normally be dry with only occasional flows during infrequent heavy thunderstorms. Ground water depths and quality are expected to be at natural conditions because of the lack of any development in these areas.

3.1.3 BIOLOGICAL RESOURCES

The proposed project site has been the subject of several biological inventories in association with development of the Mesquite Mine. A supplementary existing conditions biological survey of the proposed Mesquite Regional Landfill site and proposed railroad spur ROW was conducted in February, March, and April of 1992. The report from this survey, included as Appendix D-1 of this EIS/EIR, also provides a review of previous inventories and literature review for a comprehensive evaluation of the proposed site's biological resources.

Several inventories and impact evaluations have also been completed specifically for the desert tortoise (*Gopherus agassizii*). Information was taken from the biological analyses of the Mesquite Mine EIR/EA, prepared in 1983 and 1984 by Pritchett, Weir, La Pre, and Nicholson. Desert tortoise surveys were conducted at the proposed landfill site, the proposed rail spur ROW, and the offered exchange parcels, in May 1992 and July 1992. A biological survey of the exchange parcels was conducted in May 1992. A field inventory of the potential gas pipeline to Niland was conducted in October 1992.

The supplementary existing conditions biological survey of the proposed Mesquite Regional Landfill site and proposed rail spur ROW, separated the study area into two communities using elevation. The upslope community includes areas approximately 500 feet above average mean sea level (amsl) and higher, and the lower-slope community includes areas approximately 500 feet amsl and lower. The entire proposed project site is located entirely within the upslope community. The proposed rail spur alignment is located in both the upslope and lower slope communities (the largest portion in lower-slope community). For the purposes of the following discussion, vegetation and wildlife species associated with the upslope community are discussed under the heading Proposed Landfill Site. Vegetation and wildlife species associated with the lower-slope community are discussed under the heading Proposed Rail Spur Right-of-Way.

Biological technical reports for the proposed project are contained in Appendices D-1, D-2, D-3, D-4, and D-5 of the EIS/EIR. Lists of plant and animal species observed or expected to occur on-site are included in Appendices D-1 and D-6.

3.1.3.1 Scope and Regulatory Status

The Biological Resources Study area is comprised of the proposed landfill site, proposed rail spur ROW, and existing SP Main Line ROW. The potential gas pipeline to Niland would be constructed entirely within the proposed rail spur ROW and the existing SP Main Line ROW and its construction and maintenance would only impact areas that would be impacted by construction of the proposed rail spur ROW or by on-going railroad-maintenance activities along the SP Main Line. Therefore, a separate discussion of biological resources that occur within the proposed alignment of the potential gas pipeline to Niland is not provided.

Biological resources that occur along the SP Main Line ROW are already disturbed by train traffic and railroad maintenance and project-related impacts to these resources would generally not be significant. Biological resources information on the SP Main Line ROW was primarily obtained from the California Department of Fish and Game (CDFG), Natural Diversity Database (NDDB), which is described below. Species identified by the NDDB search are presented in Appendix D-6, Table 2. Of these species, only the state-threatened and federal-endangered Yuma clapper rail (*Rallus longirostris yumanensis*), state-threatened and federal-Category 1 California black rail (*Laterallus jamaicensis corturniculus*), state and federal endangered desert pupfish (*Cyprinodon macularius*), and state and federal endangered razorback sucker (*Xyranchen texannus*) would be potentially affected by the Proposed Action. In addition, the SP Main Line ROW is within the range of three sensitive reptiles; the flat-tailed horned lizard (*Phrynosoma m'calli*), the desert

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tortoise, and the Coachella Valley fringe-toed lizard (*Uma inornata*). The flat-tailed horned lizard is federally proposed threatened, and the Coachella Valley fringe-toed lizard is state endangered and federally threatened. Desert tortoises are both state and federally listed as threatened.

Federal Endangered Species Act

The federal Endangered Species Act of 1973 (ESA), as amended, extends legal protection to plants and animals listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS). The ESA authorizes the USFWS to review proposed federal actions to assess potential impacts to listed species.

Listed species are those that are threatened or endangered (in danger of extinction throughout all or a significant portion of their range) and have been the subject of final regulation and listing in the Federal Register. Also represented are those species officially proposed for listing in a Federal Register notice.

Through Section 7 of the ESA, federal agencies, in consultation with the USFWS, are required to ensure "that any action authorized, funded, or carried out by [a federal] agency... is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of [critical] habitat."

In addition to listed species, a second group of species are identified under ESA. This group, known as candidate species, have not yet been the subject of a proposed or final ruling to become listed. While not provided protection under the ESA, federal agencies are required to consider candidate species in their planning process and BLM treats these species as if they were fully protected. Two categories of candidate species and one category of non-candidate species are recognized:

- Category 1 - Candidate species for which there is adequate information to support listing as threatened or endangered, but for which USFWS has not completed listing procedure.

- Category 2 - Candidate species for which there is information that indicates that proposing to list as threatened or endangered is possibly appropriate, but substantial data on vulnerability and threat are not currently known.

- Category 3 - Species no longer under consideration for listing (Non-Candidate species).

California Endangered Species Act and Native Plant Protection Act

The California Endangered Species Act (CESA) of 1984 and the California Native Plant Protection Act (NPPA) of 1977 are administered by the CDFG. In addition to rare and endangered species, the State of California includes candidate species for plants and wildlife. Candidate species are those that have been accepted by the state for review and potential inclusion to the list of rare, threatened, or endangered species. The rare designation applies to plants only and includes those plants that are not threatened or endangered, but that could become eligible because of decreasing numbers or further restrictions to habitat.

Executive Order 11990, Protection of Wetlands, May 24, 1977

Executive Order 11990 directs that each federal agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; and (2) providing federally undertaken, financed, or assisted construction and improvement; and (3) conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

BLM Sensitive Species List

"Sensitive" plant and wildlife species are designated by BLM's California State Director if they meet one or more of the following criteria:

- Plant and wildlife species identified as candidates for listing as endangered or threatened by the USFWS in a Federal Register Notice of Review.
- Plant and wildlife species that have been officially proposed for listing as endangered or threatened by the USFWS in a Federal Register Notice.
- Plant and wildlife species that do not meet either of the above criteria, but have been designated as sensitive by the State Director, based in part on information from the NDDB and private groups, such as the California Native Plant Society (CNPS).

The purpose of the designation is to provide increased management attention to prevent population and habitat declines that might result in federal or state listing as endangered or threatened.

California Natural Diversity Data Base

The CDFG NDDB is a computerized inventory of information on the general location and condition of California's rare and threatened animals, plants, and natural communities. The species inventoried by the NDDB are officially listed (state and federal) endangered, rare, and threatened animals and plants, plus those considered by the scientific community to be deserving of such listing. Sensitive species proposed for federal listing or candidate species are also identified by NDDB. Although the inventory does not include other more common animals and plants, such as those that may be important for game, commercial, or aesthetic reasons, such species are of concern and NEPA/CEQA requires that they also be considered in an environmental assessment of any non-exempt project. The NDDB does not contain information for every project location (only reported sightings); therefore, site specific surveys have been conducted for special-interest species expected to occur in the vicinity of the proposed landfill project site and offered exchange parcels. Because the SP Main Line ROW is heavily disturbed by on-going maintenance activities, no surveys of the SP Main Line ROW were conducted.

California Native Plant Society

The California Native Plant Society (CNPS) has created four lists to categorize degrees of concern for rare, threatened, and endangered plants of California. Inclusion on the CNPS lists does not accord legal protection to any species of plant or animal. These lists may be described as follows:

- List 1A. This list includes plants that are presumed by CNPS to be extinct in California. CNPS asserts that all of the plants constituting List 1A meet the definitions of Section 1901, Chapter 10 (NPPA) of the California Department of Fish and Game Code, and these species are presumed by CNPS to be eligible for state listing.
- List 1B. This list includes plants that are considered by CNPS to be rare, threatened or endangered in California and elsewhere. CNPS asserts that all of the plants constituting List 1B meet the definitions of Section 1901, Chapter 10 (NPPA) of the California Department of Fish and Game Code, and these species are presumed by CNPS to be eligible for state listing.
- List 2. This list includes plants that are considered by CNPS to be rare, threatened, or endangered in California, but more common elsewhere. CNPS asserts that all of the plants constituting List 2 meet the definitions of Section 1901, Chapter 10 (NPPA) of the California Department of Fish and Game

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Code, and these species are presumed to be eligible for state listing by CNPS.

- List 3. This list includes plants about which more information is needed. Necessary information about these plants is currently lacking. The plants that comprise List 3 are an assemblage of taxa that have been transferred from other lists or that have been suggested by CNPS for consideration. When the necessary information is collected, these plants will be assigned by CNPS to the proper lists or rejected.

- List 4. This list includes plants that are considered by CNPS to be of limited distribution (a watch list). CNPS asserts that the plants in this category are of limited distribution in California and their vulnerability or susceptibility to threat appears low at this time. While these plants are not considered by CNPS to be rare from a statewide perspective (as in Lists 1 and 2), they are uncommon enough that their status should be monitored regularly.

3.1.3.2 Vegetation

Proposed Landfill Site

Peak blooming season for desert vegetation typically occurs during the months of February, March, and April, when the general existing conditions survey was conducted. Rainfall conditions were optimal, as the field work occurred during one of the highest rainfall periods of recent years.

Vegetation in the proposed project area reflects the arid conditions and generally poor soils of this desert location. The average annual temperature of the region is 74 degrees Fahrenheit (° F), with average highs of 105° to 110° F during the summer months, and average lows of 40° to 45° F during the winter months. Overall, temperatures range from about 30° F to about 120° F.

Annual precipitation averages 3 inches. The rainy season generally begins in July and ends in January. Runoff from occasional precipitation flows via small ephemeral drainages that traverse the area. The desert washes are normally dry, with precipitation runoff occurring only during the occasional thunderstorms that bring precipitation to the region. Drainages generally originate in the Chocolate Mountains north of the project site and drain to the southwest where they either percolate into the shallow, wash-bottom soils, or terminate at the Imperial Sand Dunes Recreation Area (ISDRA) (see Section 3.1.2.2).

An aerial photograph of the existing vegetation is shown in Figure 3-18. The site is dominated by generally open areas and widely scattered vegetation. Sparse vegetation also is observed in the drainages. Average vegetative cover is approximately 5 percent, much of it occurring in the washes and runnels. The low vegetation density reflects both the low moisture infiltration characteristics of the desert pavement and the low nutrient values and high salt levels of the generally poorly developed soils (see Section 3.1.2).

Figure 3-19 illustrates existing disturbed areas and areas planned to be disturbed in the vicinity of the proposed site.

A large portion of the proposed Mesquite Regional Landfill site (approximately 2,000 acres) would be located on the southern portion of the existing Mesquite Mine. An additional 600 acres have been previously disturbed as a result of other activities outside of the mine area, especially surface excavations associated with gravel withdrawal activities. Despite these prior disturbances, approximately 3,579 acres of land within the project site support two native plant communities: desert microphyll woodland (in the dry washes) and creosote bush scrub (in dry washes and desert pavement areas).

The proposed landfill site lies between about 500 and 800 feet amsl. Plant species vary depending upon their location in washes or upland areas.

Elevation also plays a local role in species distribution.

Above approximately 500 feet elevation, the dry washes with desert ironwood (*Olneya tesota*) and blue palo verde (*Cercidium floridum*) as the dominant perennial species are separated by desert pavement with little or no vegetation. These desert washes comprise the majority of the microphyll woodland plant community on the project site. Box-thorn (*Lycium* spp.) and desert lavender (*Hyptis emoryi*) are the subdominant perennial woody shrubs found along wash banks, with scattered jojoba (*Simmondsia chinensis*). Creosote bush (*Larrea tridentata*) with scattered ocotillo (*Fouquieria splendens*) form the visually dominant woody perennial cover between washes, and are the main components of the creosote bush scrub community. Scattered white bursage (*Ambrosia dumosa*) and occasional ratany (*Krameria parvifolia*) also occur with brittle bush (*Encelia farinosa*) on the desert pavement between washes.

Proposed Rail Spur Right-of-Way

The proposed rail spur ROW lies between approximately 300 and 550 feet amsl. At slightly lower elevations in the area of the proposed rail spur, blue palo verde is scarce, and desert ironwood is the visually dominant species associated with drainages courses. Creosote is the overall visually dominant woody perennial found along wash banks. White bursage, cheese bush (*Hymenoclea salsola*), sweet bush (*Bebbia juncea*) and brittle bush are the subdominant species found along wash banks. Approximately 78 acres of native vegetation exist in the proposed ROW.

Offered Exchange Parcels

Offered Exchange Parcels in the Santa Rosa Mountains National Scenic Area

The offered exchange parcels in the SRMNSA contain vegetation classified as Sonoran mixed woody and succulent scrub. This community includes plant species found in both Sonoran creosote bush scrub and dry desert wash communities, with no clear dominant species based on visual estimates. Most stands include desert agave (*Agave deserti*), brittle bush, ocotillo, and creosote bush. A detailed account of the biological study completed for the offered SRMNSA exchange parcels is contained in Appendix D-2.

Offered Exchange Parcels Near the Chuckwalla Bench ACEC

The offered exchange parcels near the Chuckwalla Bench ACEC support dry desert wash scrub and Sonoran creosote bush scrub communities similar to those at the proposed project site. The dominant plant species of dry desert wash scrub generally include catclaw acacia (*Acacia greggii*), and palo verde, with an understory of perennial galeta grass (*Hilaria rigida*). The Sonoran creosote bush scrub generally includes burro bush, brittle bush, ocotillo and creosote. A detailed account of the biological study completed for the offered exchange parcels near the Chuckwalla Bench ACEC is contained in Appendix D-2.

3.1.3.3 Wildlife

Proposed Landfill Site

High average temperatures, sparse precipitation and limited vegetation cover impose constraints on the productivity of the area as wildlife habitat. The wildlife present consists primarily of common and widespread desert species adapted to severe desert conditions of heat, drought, and wind. With annual plants comprising a significant portion of the flora, a distinct seasonal element is correlated with animal activity. Birds tend to use the area for nesting in early spring, but most species tend to disperse to more favorable habitats during the summer and fall. Reptiles become most active at night during the spring and summer months. Mammals are present year round, with the exception of migratory bats, which occur only seasonally. The proposed site is not identified as part of a known or probable wildlife corridor (Imperial

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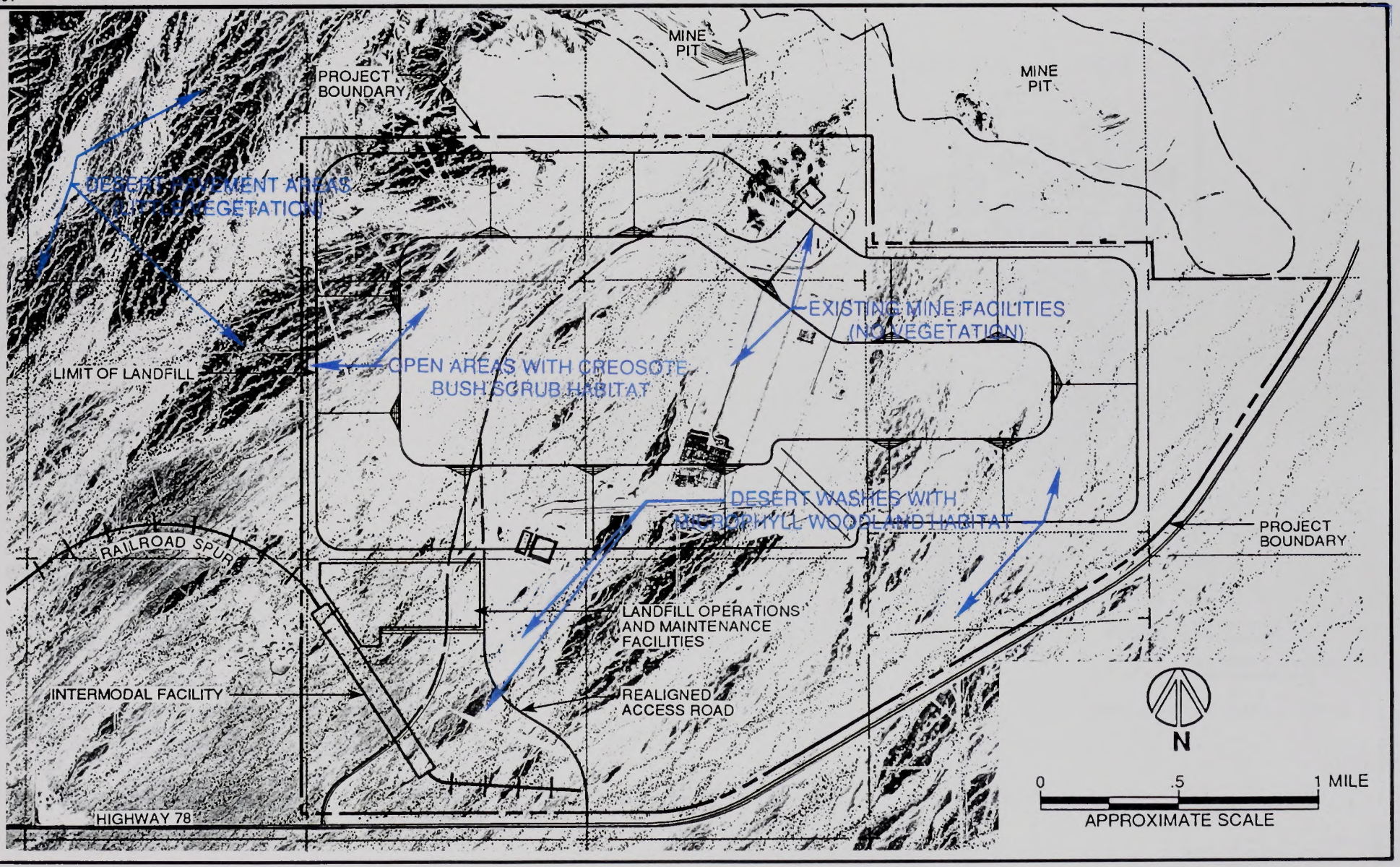

SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Aerial Photograph Showing Vegetation and Wildlife Habitat Areas

FIGURE **3-18**

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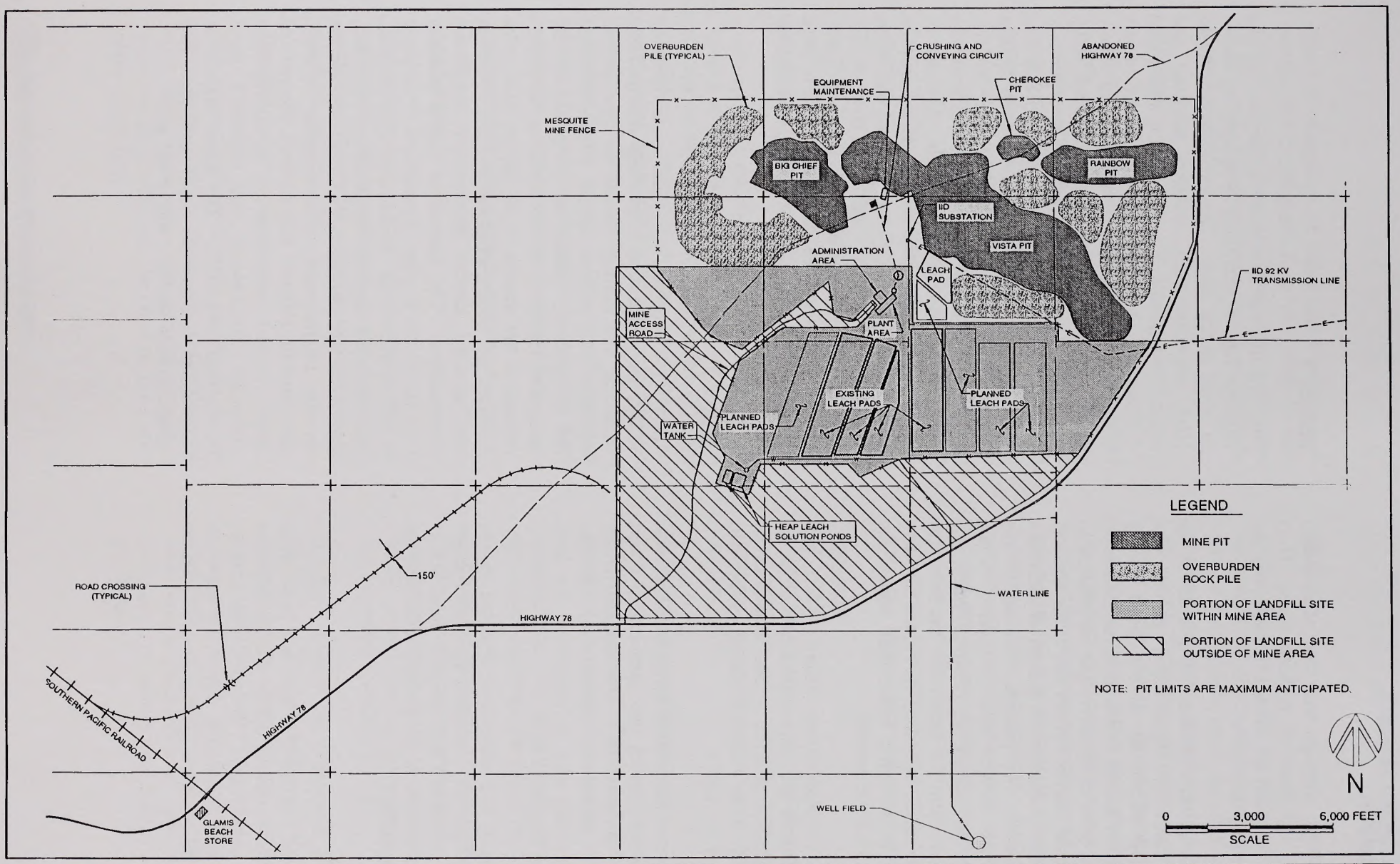

SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Proposed Action Habitat Disturbance

FIGURE
3-19

County, 1993b), although mule deer (*Odocoileus hemionus*) and Nelson's bighorn sheep (*Ovis canadensis nelsoni*) are known to seasonally use or cross the project site.

No permanent water sources are present in the vicinity, although ephemeral ponds can occasionally occur as a result of heavy precipitation or runoff where there are undrained depressions, such as in gravel pits or adjacent to road or railroad berms. Water use at the adjacent Mesquite Mine attracts some species of birds on a seasonal basis. At present, outside of the Mesquite Mine fenced area (Chapter 1.0), the project site and vicinity are relatively open, and animal movement is generally unrestricted. Existing land uses, including SR 78, the SP Main Line, and the Mesquite Mine, may impact the movements of some species.

The Lower Colorado River Valley (LCRV) and Colorado Desert are important habitat features for the migration of birds to and from Mexico, Central, and South America (Small, 1974; and Rosenberg et al., 1991).

Habitat loss and disturbance along the LCRV has dispersed avian species into surrounding desert microphyll woodlands. Consequently, the microphyll woodland community at the proposed project site is important for both resident and migratory birds.

Animal species encountered or expected on-site are, for the most part, common species of desert microphyll woodland and creosote bush scrub. Species encountered in the biological surveys are listed in Appendix D-6.

Amphibians

The proposed landfill site does not have areas where sufficient ponding occurs that is conducive habitat to amphibians. However, the Couch's spadefoot toad (*Scaphiopus couchi*) is known to occur downslope of the project area, adjacent to the ISDRA.

Reptiles

Nine reptile species were observed on the proposed landfill site; some 24 species are known to occur in the area. The side-blotched lizard (*Uta stansburiana*), western whiptail and zebra-tailed lizards (*Cnemidophorus tigris* and *Callisaurus draconoides*), and desert iguana (*Dipsosaurus dorsalis*) are common and widely distributed throughout the area. The desert spiny lizard (*Sceloporus magister*) is especially dependent upon the presence of large ironwoods with shedding bark, crevices between broken branches and trunk, and abundant litter beneath. Lizards, including the western Chuckwalla (*Sauromalus obesus*), utilize the diversity of habitat and food resources offered by upslope stream channels. The western whiptail and desert iguana were commonly observed in field studies. The desert tortoise has been observed throughout the site. The desert tortoise is addressed in more detail under Threatened and Endangered Species (Section 3.1.3.5).

Birds

Thirty-three species of birds were observed within the project area. The study area provides wintering and nesting habitat for this diverse avifauna. The greatest number of species (19 of the 33 observed) utilize the dense and diverse structured canopies of the northern (upstream) reaches of the washes in the project area. The transient and visiting avifauna are most diverse in the upslope desert microphyll woodland communities. The permanent bird population consists of black-tailed gnatcatcher (*Polioptila melanura*), verdin (*Auriparus flaviceps*), black-throated sparrow (*Amphispiza bilineata*), and raven (*Corvus corax*). Other bird species include phainopepla (*Phainopepla nitens*), mockingbird (*Mimus polyglottos*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), and Gambel's quail (*Callipepla gambelii*). The lesser nighthawk (*Chordeiles acutipennis*) could possibly remain on-site through winter if winters are mild.

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Nests or fledglings of black-tailed gnatcatcher, verdin, and phainopepla have been seen on-site. Costa's hummingbird (*Calypte costae*) may nest in the area, based on observations of a female Costa's behavior.

Mammals

Twenty-one mammal species were observed within the study area. Recent kit fox (*Vulpes macrotis*) scat, tracks, and dens were found. The most frequently trapped mammal was the desert pocket mouse (*Perognathus penicillatus*), while the most frequently observed mammals were the black-tailed jackrabbit (*Lepus californicus*) and mule deer. The presence of at least one Nelson's bighorn sheep was reported on-site by scat identification. The project site is considered to be an occasional Nelson's bighorn sheep use area, as the Chocolate Mountains are known to be a habitat area for the species. Coyotes (*Canis latrans*) are also known to occur in the area.

Appendix D-1 concludes that wildlife habitat and species at the proposed landfill site are typical of the region for similar elevations and drainage conditions. Mammal species encountered or expected to occur are, for the most part, common species of desert microphyll woodland and creosote bush scrub. This conclusion was derived partly from the transects and partly from results of a small mammal trapping effort.

Proposed Rail Spur Right-of-Way

Amphibians

The proposed rail spur ROW alignment does not have areas where sufficient ponding and soils combine to create conducive habitat for amphibians.

Reptiles

The western whiptail and desert iguana are characteristic reptile species of the proposed rail spur ROW alignment. The western whiptail is generally associated with the creosote bush scrub plant community.

Birds

Avian diversity in the vicinity of the proposed rail spur ROW alignment is lower than that of the proposed site due to lower densities of vegetation at lower elevations. Insectivourous species found among the ironwoods include the verdin, black-tailed gnatcatcher, black-throated sparrow, occasional phainopepla, and mockingbird. Of the warblers, only the yellow-rumped (*Dendroica coronata*) warbler was observed utilizing the cresote bush scrub and the larger creosotes near washes. The loggerhead shrike was also occasionally found in the sparse wash areas. The horned lark (*Eremophila alpestris*) were observed in open interfluvial spaces, while the killdeer (*Charadrius vociferus*) used areas where standing water had formed near shallow gravel pits.

Mammals

Merriam's kangaroo rat (*Dipodomys merriami*) was typically sited beneath creosote bush. No additional mammals were located in the proposed rail spur ROW.

Offered Exchange Parcels

Offered Exchange Parcels in the Santa Rosa Mountains National Scenic Area

Amphibians. No amphibians were observed at the offered exchange parcels in the SRMNSA.

Reptiles. Commonly observed reptiles in the SRMNSA offered exchange parcels were the long-tailed brush lizard (*Urosaurus graciosus*), desert horned lizard (*Phrynosoma platyrhinos*), and the western whiptail lizard.

Birds. Commonly observed birds in the SRMNSA offered exchange parcels included the mourning dove (*Zenaida macroura*) and Anna's hummingbird (*Calypte anna*). Other birds observed included the ash-throated flycatcher (*Myiarchus cinerascens*), rock wren (*Salpinctes obsoletus*), black-chinned sparrow (*Spizella atrogularis*), and house finch (*Carpodacus mexicanus*).

Mammals. Common mammals observed in the SRMNSA offered exchange parcels were the pocket mouse (*Perognathus longimembris*), kangaroo rat, and coyote.

Offered Exchange Parcels Near the Chuckwalla Bench ACEC

Amphibians. No amphibians were observed at the offered exchange parcels near the Chuckwalla Bench ACEC.

Reptiles. Eight species of reptile were identified at the offered exchange parcels near the Chuckwalla Bench ACEC. These reptiles included the desert tortoise, desert iguana, common chuckwalla, zebra-tailed lizard (*Callisaurus draconoides*), long-nosed leopard lizard (*Gambelia wislizenii*), long-tailed brush lizard, desert horned lizard, and western whiptail.

Birds. Eighteen species of bird were identified at the offered exchange parcels near Chuckwalla Bench ACEC. These birds included the turkey vulture, Gambel's quail, mourning dove, common poorwill (*Phalaenoptilus nuttallii*), Anna's hummingbird, Costa's hummingbird, ash-throated flycatcher, western kingbird (*Tyrannus verticalis*), verdin, rock wren, black-tailed gnatcatcher, northern mockingbird (*Mimus polyglottus*), Crissal thrasher (*Toxostoma dorsale*), phainopepla, loggerhead shrike, Grace's warbler (*Dendroica graciae*), black-chinned sparrow, and house finch.

Mammals. Nine species of mammal were identified at the offered exchange parcels near Chuckwalla Bench ACEC. These mammals included the Audubon's cottontail rabbit (*Sylvilagus audubonii*), black-tailed jackrabbit, pocket mouse (*Perognathus* sp.), Merriam's kangaroo rat, desert kangaroo rat (*Dipodomys deserti*), woodrat (*Neotoma* sp.), kit fox, coyote, and mule deer.

3.1.3.4 Threatened and Endangered Species

State and federally listed threatened and endangered species, federally proposed for listing, and candidate species are discussed in this section. A complete list of all threatened, endangered, and category species is contained in Appendix D-6.

Proposed Landfill Site

Vegetation

No threatened, endangered, proposed, or federal candidate species of plants were observed on the proposed landfill site.

Wildlife

Amphibians. The project site does not have areas where sufficient ponding could occur that would be conducive habitat to amphibians. Therefore, no threatened, endangered, or category amphibians are known or expected to occur on the proposed landfill site.

Reptiles. The desert tortoise is known to occur on the site and is listed as threatened by both state and federal agencies. No other threatened, endangered, or federal candidate species of reptile are known or expected to occur on the site.

BLM habitat categories for desert tortoise, ranging in decreasing importance from Category I to Category III, were designed as management tools to assure future protection and management of these areas and their associated desert tortoise populations (U.S. Department of the Interior (U.S. DOI), 1988). Category I habitat areas are considered essential to maintenance of large viable populations, have primarily medium- to high-density populations, and have resolvable conflicts. Category II habitat "may be essential to the maintenance of viable populations." Category III habitat areas are defined as those not essential to maintenance of viable populations, with low- to medium-density populations isolated from higher-density populations, and unresolvable conflicts. The proposed landfill site is located at the margin of the overall tortoise population (see Appendix D-3) and it is outside designated critical habitat

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for the desert tortoise. Because desert tortoises are known to exist on-site but in low population densities, BLM considers the site to be Category III desert tortoise habitat (U.S. DOI, 1989) - U.S. DOI Desert tortoise habitat, Interim map).

Birds. No threatened or endangered avian species were observed on-site, although the ferruginous hawk (*Buteo regalis*) and loggerhead shrike were sighted. The ferruginous hawk and loggerhead shrike are both federal Category 2 candidates for listing.

Mammals. No threatened, endangered, or federal candidate species of mammals are known or expected to occur within the proposed landfill site.

Proposed Rail Spur Right-of-Way

Vegetation

No threatened, endangered, proposed, or federal candidate species of plants are known or are expected to be within the proposed rail spur ROW.

Wildlife

Amphibians. No threatened, endangered, proposed, or federal candidate species of amphibians are known or are expected to be within the proposed rail spur ROW.

Reptiles. The desert tortoise is known to occur within the proposed rail spur ROW and is listed as threatened by both state and federal agencies. No other threatened, endangered, or federal candidate species of reptile are known or are expected to occur within the alignment. The proposed rail spur alignment is also designated as Category III desert tortoise habitat on U.S. DOI maps.

Birds. No threatened or endangered avian species are known or are expected to occur within the rail spur ROW. However, the ferruginous hawk and loggerhead shrike, both federal Category 2 candidates for listing, were sighted.

Mammals. No threatened, endangered, proposed, or federal candidate species of mammals are known or are expected to occur within the proposed rail spur ROW.

Rail-Haul Route

In the event of a MSW residue train derailment in the vicinity of Salt Creek or an Imperial Irrigation District (IID) canal up to four threatened and endangered species could be affected, two bird species and two fish species.

Birds. The Yuma clapper rail (state-threatened and federal-endangered species) occurs in the Salt Creek ACEC on the northeast shore of the Salton Sea, where the SP Main Line ROW crosses Salt Creek at the confluence with the Salton Sea. The California black rail (state threatened and federal Category 1) also is thought to inhabit this area.

Fish. Two fish that potentially occur along the rail-haul route are listed as state and federal endangered species. These two species are the desert pupfish and razorback sucker. The desert pupfish occurs in the Salt Creek ACEC, and the razorback sucker has been known to occur in IID irrigation canals.

Offered Exchange Parcels

This section identifies threatened, endangered, and proposed species for listing, and Category 1 species known to occur or potentially occurring on the offered exchange parcels.

Offered Exchange Parcels in the Santa Rosa Mountains National Scenic Area

Habitat on the SRMNSA offered exchange parcels supports threatened and endangered species.

Vegetation. The federal-Category 1 candidate, and California-threatened Munz's onion (*Allium*

fimbriatum var. *munzii*), is expected to occur in the SRMNSA. No other threatened or endangered plant species are known or expected to occur on the offered parcels. Eight additional federal Category 2 species and four federal Category C3c species are expected to occur on these parcels.

Wildlife

Amphibians. No threatened, endangered, proposed, or federal candidate species are known or expected to occur on these offered parcels.

Reptiles. No threatened or endangered reptilian species are known or expected to occur on the site. Two federal Category 2 candidate species are expected to occur on these offered parcels.

Birds. No threatened, endangered, proposed, or Category 1 candidate avian species are known or expected to occur on these offered parcels. One federal Category 2 candidate species is expected to occur on these offered parcels.

Mammals. The federally proposed endangered, and California threatened peninsular bighorn sheep (*Ovis canadensis cremnobates*) is known to occur in the SRMNSA. No other threatened, endangered, or federal Category 1 candidate species are known or expected to occur on these offered parcels. Three federal Category 2 candidate species are also expected to occur on these offered parcels.

Offered Exchange Parcels Near the Chuckwalla Bench ACEC

The dry desert wash scrub and Sonoran creosote bush scrub communities on the offered exchange parcels near the Chuckwalla Bench ACEC also support some threatened and endangered species.

Vegetation. No threatened or endangered species, have been found on the offered exchange parcels near the Chuckwalla Bench ACEC. Six federal Category 2 species, and three federal Category C3c species are expected to occur on these offered parcels.

Wildlife. One reptile species that is state and federally threatened and one state endangered bird species are known to occur on these offered parcels.

Amphibians. No threatened, endangered, proposed, or federal candidate amphibian species are known or are expected to occur on these offered parcels.

Reptiles. The desert tortoise, a state and federal threatened species, was observed on these offered parcels. These exchange parcels are located within BLM Category I desert tortoise habitat that has been designated as critical habitat by the USFWS. One Category 2 candidate species is also expected to occur in the vicinity of these offered parcels.

Birds. The Gila woodpecker (*Melanerpes uropygialis*), listed as a state endangered species, is expected to occur on these offered parcels. Two additional federal Category 2 candidates are also expected to occur on these offered parcels.

Mammals. No threatened or endangered mammalian species are known or expected to occur on these offered parcels. However, four federal Category 2 candidates are expected to occur on these offered parcels.

3.1.3.5 Other Special-Interest Species

Other special-interest species include CDFG Species of Special Concern (CSC). Animals designated CSC in California by CDFG and listed on the NDDB are species that experts feel are declining through all or portions of their ranges (Remsen, 1978: Welliams, 1986: CNDDB, 1991). Other special-interest species include those listed by the CNPS and game species. Complete lists of all special-interest species that are known or expected to occur at the proposed landfill site, and along the proposed rail spur ROW, and existing SP Main Line ROW are contained in Appendix D-6.

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Proposed Landfill Site

Vegetation

The fairy duster (*Calliandra eriophylla*) is a CNPS List 2 species. The fairy duster is known to have an extensive population on adjoining areas. The ribbed cryptantha (*Cryptantha costata*), a CNPS List 4 species, is also found on-site in sandy wash deposits.

Wildlife

Amphibians. The Couch's spadefoot toad has been observed in Purgatory Wash at the Mesquite Mine. It was not observed in the 1992 survey of the study area. Ponding in areas resulting from human impacts to overland or wash flow can create breeding sites for the Couch's spadefoot toad. This species is listed on the CDFG NDDB list of animals with a CSC status.

Reptiles. No reptile species of special-interest are known or expected to occur on the proposed landfill site.

Birds. The following avian species are listed on the CDFG NDDB list of animals with a CSC status and are expected to occur on-site. These species include the Sonoran yellow warbler (*Dendroica petechia sonorana*), dark-eyed junco (*Junco hyemalis canicaps*), osprey (*Pandion haliaetus*), black-tailed gnatcatcher, Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*Toxostoma lecontei*), and Virginia 's warbler (*Vermivora virginiae*).

Mammals. The American badger (*Taxidea taxus*) is listed on the CDFG NDDB list of animals with a CSC status and is expected to occur on-site.

Nelson's bighorn sheep was observed on-site and is listed on the CDFG NDDB list of special animals because of concern about population setbacks due to disease, diminished survival, and habitat loss.

The mule deer is a game species that is found on-site.

Proposed Rail Spur Right-of-Way

Vegetation

The ribbed cryptantha, a CNPS List 4 species, may be found within the proposed rail spur ROW in the sandy wash deposits.

Wildlife

Amphibians. No special-interest amphibian species are known or expected to occur within the proposed rail spur ROW.

Reptiles. No reptilian special-interest species are known or expected to occur within the proposed rail spur ROW.

Birds. Special-interest avian species that are expected to occur within the proposed rail spur ROW are the same as those discussed for the proposed landfill site.

Mammals. Special-interest mammalian species expected to occur within the proposed rail spur ROW are the same as those discussed for the proposed landfill site.

Offered Exchange Parcels

Offered Exchange Parcels in the SRMNSA

Vegetation. According to the NDDB, thirteen special-interest plant species could potentially occur in the vicinity of the SRMNSA exchange parcels. However, no members of these species were observed during surveys. In order to determine the presence of these species, surveys conducted during their bloom periods would be necessary.

Wildlife. Six special-status animal species could potentially occur on the exchange parcels in the SRMNSA. No special-status animals were observed during the surveys.

Amphibians. No special-interest amphibian species are known or expected to occur on these offered parcels.

Reptiles. No special-interest reptilian species are known or expected to occur on these offered parcels.

Birds. Three special-interest avian species are known or expected to occur on these offered parcels

Mammals. Three special-interest mammalian species are known or expected to occur on these offered parcels.

Offered Exchange Parcels Near the Chuckwalla Bench ACEC

Vegetation. According to the NDDB, eighteen special-interest plant species could potentially occur in the vicinity of the Chuckwalla Bench ACEC offered parcels. However, no members of these species were observed during surveys. In order to determine the presence of these species, surveys conducted during their bloom periods would be necessary.

Wildlife. Nine special-status animals species could potentially occur on the offered parcels near the Chuckwalla Bench ACEC. No special-status animals were observed during the surveys.

Amphibians. No special-interest amphibian species are known or expected to occur on these offered parcels.

Reptiles. No special-interest reptilian species are known or expected to occur on these offered parcels.

Birds. Three special-interest avian species are known or expected to occur on these offered parcels.

Mammals. Six special-interest mammalian species are known or expected to occur on these offered parcels.

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3.1.4 CULTURAL RESOURCES

Historic properties (cultural resources) are places or objects that are important for scientific, historic, or religious reasons to cultures, communities, groups, or individuals. 36 CFR Part 800 defines historic properties as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register [of Historic Places]." Cultural resources within the proposed Mesquite Regional Landfill site and offered exchange parcels are limited to prehistoric and historic archaeological properties, including isolated resources.

3.1.4.1 Scope

A cultural resource investigation including an archival records search, field survey, and cultural resource inventory was completed for the proposed project area of potential effect (APE), including the proposed landfill site, the proposed rail spur ROW, potential gas pipeline alignment, and offered exchange parcels.

The following sections provide brief summaries of the cultural history of the proposed landfill and exchange parcels, previous research in the study areas, and a discussion of the cultural resources within the proposed landfill, the proposed rail spur ROW, and offered exchange parcels (Schaefer and Pallette, 1993a, 1993b). Since no cultural resources were found within the existing SP Main Line ROW (Schaefer, 1993a), no discussion is provided for this area. Full discussions of these topics can be found in Appendices E-1 and E-2 of this EIS/EIR.

3.1.4.2 Cultural History

Six successive cultural patterns may be defined for the Colorado Desert, extending back in time over a period of at least 12,000 years. They are: 1) Malpais (Early Man), 2) San Dieguito, 3) Archaic Pattern or Pinto and Amargosa, 4) Patayan (prehistoric Yuman), 5) Ethnohistoric Yuman, and 6) Historic Euroamerican. Four of these patterns are represented by the cultural resources under consideration in the project area. These are the San Dieguito, Patayan, possibly the Ethnohistoric Yuman, and the Historic Euroamerican. Appendices E-1 and E-2 of this EIS/EIR provide a detailed discussion of the cultural history of the project area.

Previous Research

Proposed Landfill Site Area and Rail Spur Right-of-Way

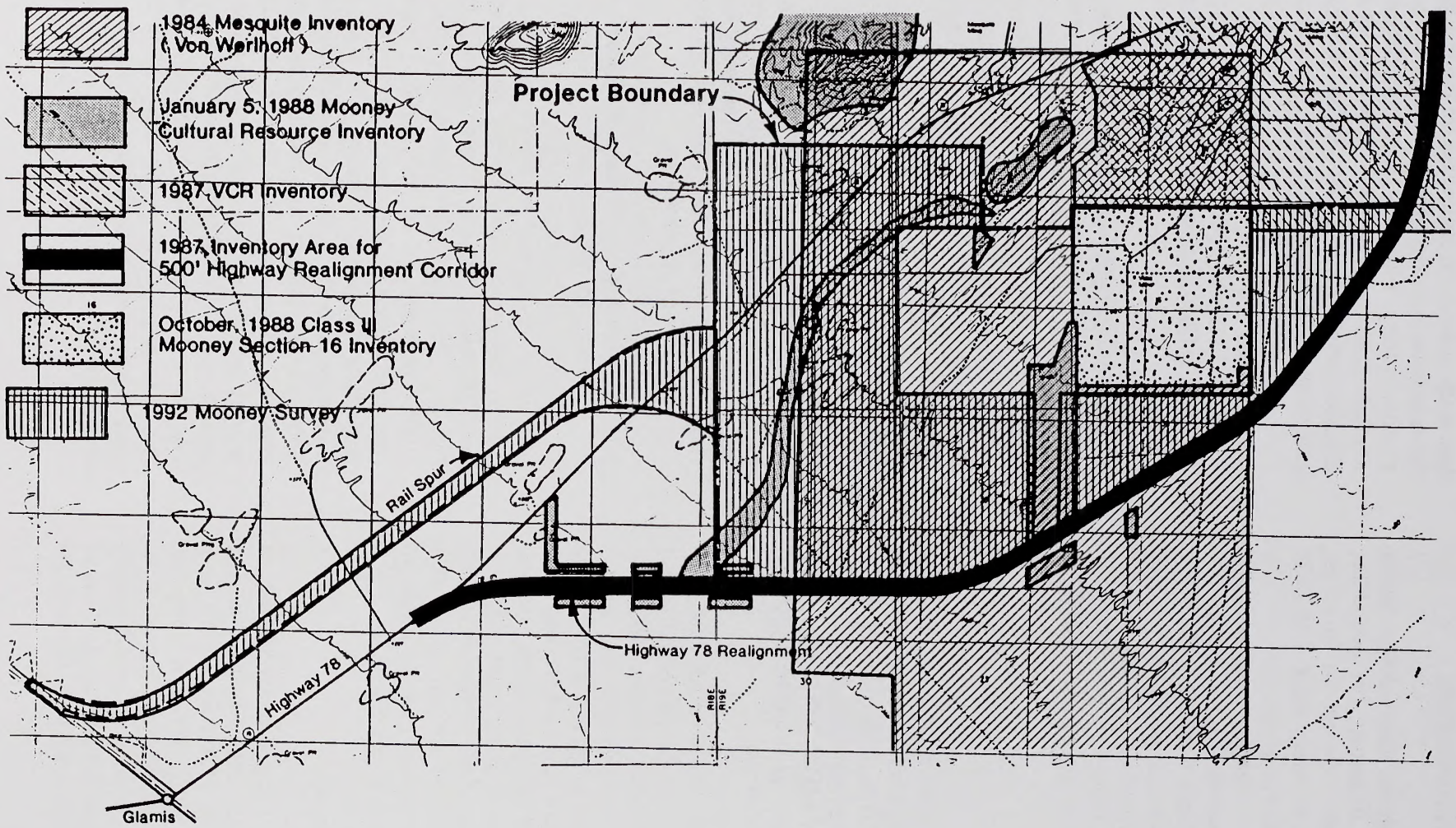
To date, over fifteen archaeological reports and studies have been completed for the proposed project area. Most have been survey and inventory studies, with a few investigations devoted to various data recovery projects. The study areas for previous and current surveys in the project vicinity are shown on Figure 3-20.

Offered Exchange Parcels

The archival records search indicated that the offered exchange parcels were not previously surveyed, and no recorded cultural resources were known to occur within their boundaries. The Santa Rosa Mountains exchange properties have no record of prior surveys.

3.1.4.3 Proposed Landfill and Rail Spur Right-of-Way

A total of 72 cultural resources including 14 isolates have been recorded for the Mesquite Landfill project area (Schaefer and Pallette, 1993b). The cultural resources recorded are listed in Appendix E-1 of this EIS/EIR. Resource types represented at the proposed landfill site and proposed rail spur ROW include trail segments; rock ring, cleared circle, and/or rock alignment sites; chipping stations and small to large lithic scatters; pottery loci; World War II training activity areas; and two segments of the same historic wagon road (Glamis/Blythe Road), which overlies a prehistoric trail. Three trail markers are also present; however, they have been reassessed as modern features (Schaefer and Pallette, 1993b).



SOURCE: Scaeffer and Pallette, 1993b.

Basemap: U.S.G.S. 7.5' Quads (East of Acolita and Ninemile Wash).

Proposed Mesquite Regional Landfill

Location of Previous and Current Cultural Resource Surveys in the Project Vicinity

FIGURE **3-20**

Some of the 11 trail segments recorded (one of which no longer exists -- CA-IMP-5970) have rock rings, lithics, pottery, or other artifacts in association. Some represent segments of the same trail, and one is also an historic wagon road. Thirteen cultural resources consist of the rock ring/cleared circle/rock alignment resources. These features occur both isolated and with associated lithic debris or chipping station features. Nineteen cultural resources are limited to lithic debris alone, and these range from chipping station features to large lithic scatters of variable artifact densities. The World War II training activity areas include small to large bivouac areas, the remains of training exercise facilities, and trash dumps or scatter locales. Only one cultural resource is represented by a pottery scatter with no associated data classes or features. The 14 isolates include pottery sherds, lithic flakes, and cores. One isolate, CA-IMP-4977, was re-recorded as a World War II training area (Schaefer and Pallette, 1993b).

A small portion of the Singer Geoglyphs ACEC is located north of SR 78, within the proposed landfill boundaries. No geoglyphs or other important cultural resources occur within the portion of the Singer Geoglyphs ACEC that is north of SR 78.

Preliminary evaluations of resource significance are listed in Appendix E-1 in relation to the resource's potential to meet the criteria for eligibility to the NRHP. Properties that satisfy the eligibility criteria, as determined by consultation between the State Historic Preservation Officer (SHPO) and the authorized representative of the agency responsible for the federal undertaking (in this case, BLM), are considered significant and the proposed action's potential to affect such resources requires further consideration and formal consultation. Potential effects to nonsignificant resources do not require further consideration in the Section 106 compliance process. The criteria for determining National Register eligibility pursuant to the National Historic Preservation Act of 1966 (NHPA) are discussed in Chapter 4.0, Section 4.1.4, of this EIS/EIR.

Only the historic Glamis/Blythe Wagon Road (CA-IMP-4983H) has been previously determined eligible for National Register listing, but ten additional site numbers, representing seven prehistoric trails, have been recommended for consideration as potentially eligible. These additional resources include trail segments with associated artifacts and/or features. BLM is the lead agency for initiating NRHP eligibility review, and determinations of eligibility are made in consultation with the California SHPO consistent with the requirements of the Section 106 compliance process. The World War II bivouac areas in the APE are not considered to be eligible for NRHP inclusion.

3.1.4.4 Offered Exchange Parcels

A complete listing of all recorded cultural resources within the offered exchange parcels is provided in Appendix E-2 of this EIS/EIR.

<u>Offered Exchange Parcels Located Within the Santa Rosa Mountains National Scenic Area</u>

Two of the offered parcels are located in the eastern flanks of the Santa Rosa Mountains in south-central Riverside County. These lands include the northern one-half of the northern one-half of Section 7 and the northern one-half of the southern one-half of Section 23, Township 7 South, Range 7 East. No cultural resources were inventoried on these parcels. Adjacent areas are known to contain important cultural resources.

<u>Offered Exchange Parcels Located Near the Chuckwalla Bench ACEC</u>

Three parcels of land are located in the Chuckwalla Bench area of northeastern Imperial County and include Sections 1, 11, and 21 of Township 9 South, Range 19 East.

A total of 74 cultural resources including three isolates were recorded on these parcels. The recorded properties encompass the San Dieguito through late prehistoric and ethnohistoric cultural patterns. Represented among these

74 resources are 95 chipping stations, eight rock rings, eight trail segments, six pottery loci, five quarries, four cleared circles, one bedrock milling feature, and a possible historic wall enclosure.

Site types were found to be associated with specific topographic and natural resources. Trails were found to link major washes or were directed toward tanks. One trail with late prehistoric pottery appears to represent a major east-west transportation corridor. Quarries and chipping stations were found on alluvial terraces where cryptocrystalline silicates are available. Rock rings and cleared circles occur near trails or lithic reduction areas.

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3.1.5 PALEONTOLOGICAL RESOURCES

3.1.5.1 Proposed Landfill Site and Rail Spur

The geology of the site is described in detail in Section 3.1.1. The nature and origin of the geologic formations on-site is such that no significant paleontological resources would be expected to exist. The various rock units present at the site show no evidence that they contain fossils. The alluvial material on the site is too young to contain significant fossils and was deposited in such a high energy manner that it would not be expected to retain fossils. The Bear Canyon Conglomerate was also deposited in a high-energy manner and would not be expected to retain fossils. There are some lacustrine clay deposits in the Bear Canyon Conglomerate, but they have been exposed in the Mesquite Mine pits and there has been no evidence to indicate they contain fossils. Basement rock consists of metamorphic and igneous rocks. As they are nonsedimentary in nature, they do not contain fossils.

3.1.5.2 Offered Exchange Parcels

No investigation of paleontological resources at the offered exchange parcels was conducted because these properties would not be disturbed as a result of the proposed land exchange.

3.1.6 TRANSPORTATION

3.1.6.1 General

Scope

Figure 3-21 shows the primary transportation network in the Imperial County area. This network consists of rural highways that provide access through the sparsely populated desert, and the SP Main Line, which connects SP's west coast rail system with its operations in southern and midwestern states. The SP Main Line passes approximately four miles west of the proposed Mesquite Regional Landfill site. The region immediately surrounding the proposed site does not include a civilian airport, though the existing Mesquite Mine does have a Federal Aviation Administration (FAA) approved heliport for emergency purposes.

With the possible exception of relatively small amounts of agricultural plant material that would be diverted from burning to provide emission offsets and locally derived MSW residue that may be transported to the proposed landfill for disposal, the MSW residue that would be disposed in the proposed landfill would be transported to the proposed site along the SP Main Line (Figure 3-22). All, or the vast majority, of rail-haul MSW residue would be loaded onto trains at an intermodal facility in Los Angeles County after being transported to that location from outlying transfer stations/material recovery facilities (MRFs). Initial operations would begin at SP's City of Industry intermodal. This intermodal has sufficient existing capacity to handle the entire daily MSW residue volume that is planned by the Applicant for delivery to the Mesquite Regional Landfill (i.e., 20,000 tons per day (tpd)). All or portions of future intermodal operations could shift to SPs existing Los Angeles Transportation Center (LATC) rail yard. SP has indicated that the decision of whether to move operations to the LATC intermodal would depend upon variations in future railroad business. As shown in Figure 3-22 the City of Industry intermodal is located on the rail-haul route, about 20 miles east of LATC. The SP Main Line route from LATC to the proposed project spur is part of the definable affected environment because it can be reasonably predicted that rail operations could shift to the LATC in the future.

At some time in the future, smaller rail intermodal facilities may also be used by other Southern California counties that may choose to use the proposed Mesquite Regional Landfill. Rail transportation from such facilities would be along existing tracks to an appropriate junction with the SP Main Line. Such additional facilities would not increase the total volume of MSW residue shipped to the proposed landfill beyond the planned 20,000 tpd average. Because the location and operational characteristics of smaller intermodals cannot be reasonably predicted at this time, studies of local effects of these future intermodal operations are not considered in this EIS/EIR analysis. Effects of these facilities would be addressed at the time those facilities are proposed.

Prior to rail shipment, MSW would be sorted and the residue would be compacted into containers at transfer stations and MRFs in counties that choose to use the proposed landfill. Approximately 20,000 tpd of aggregate permitted capacity already exists at currently operating transfer stations throughout Los Angeles County. Additionally, many more facilities are in the planning stage to assist various cities to satisfy Assembly Bill 939 (AB 939) recycling requirements. As a result, the construction of new transfer stations/MRFs specifically for this landfill would not be required. For these reasons, analysis of transfer stations/MRFs in the areas of MSW origin is not included in this document. Studies of localized transportation impacts at any future transfer stations and MRFs would be addressed as those facilities are proposed.

The proposed landfill would also accept MSW residue delivered by train or transfer truck if Imperial County desires to have locally derived wastes deposited at the landfill. If train delivery

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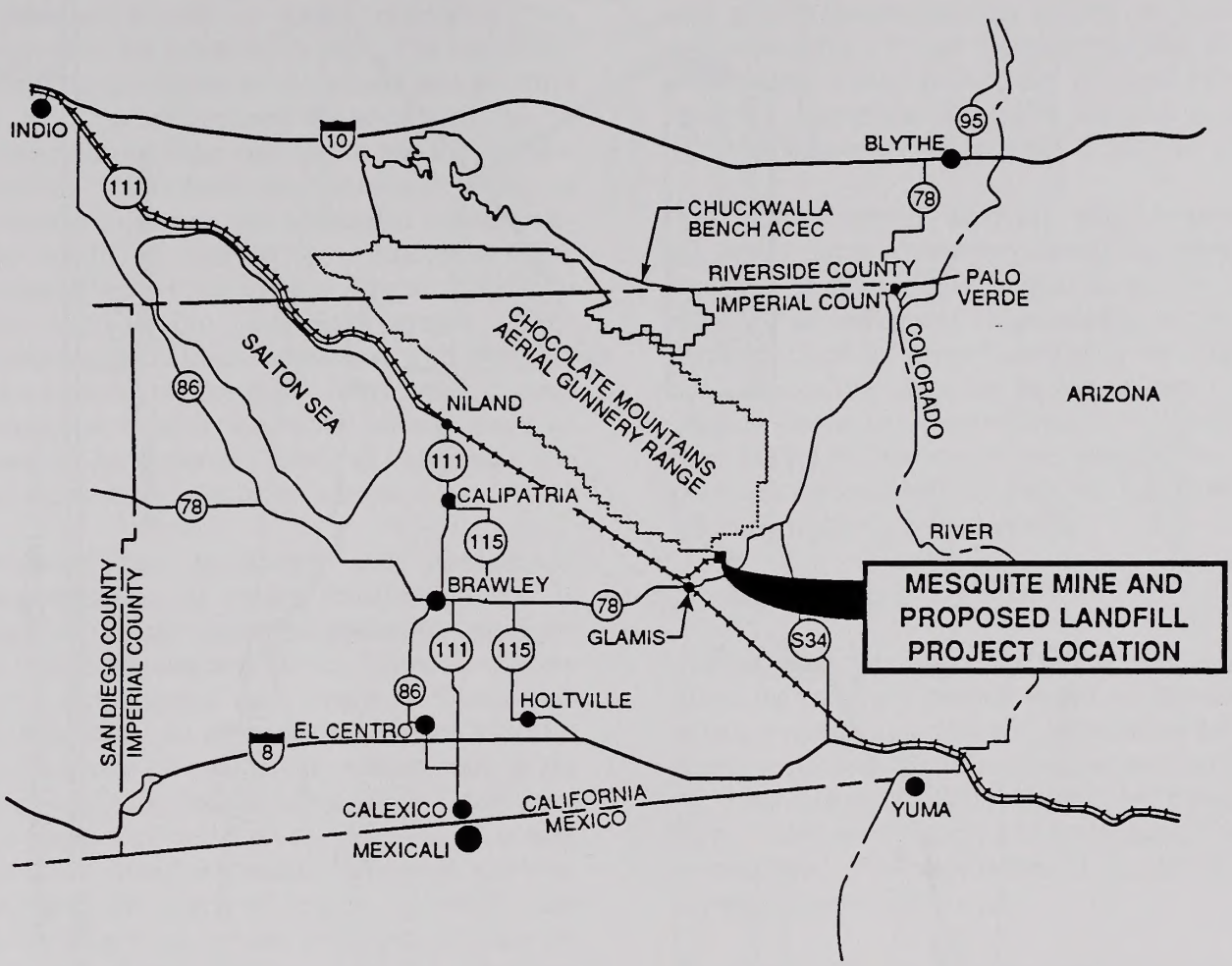


0 20 40 MILES

SCALE

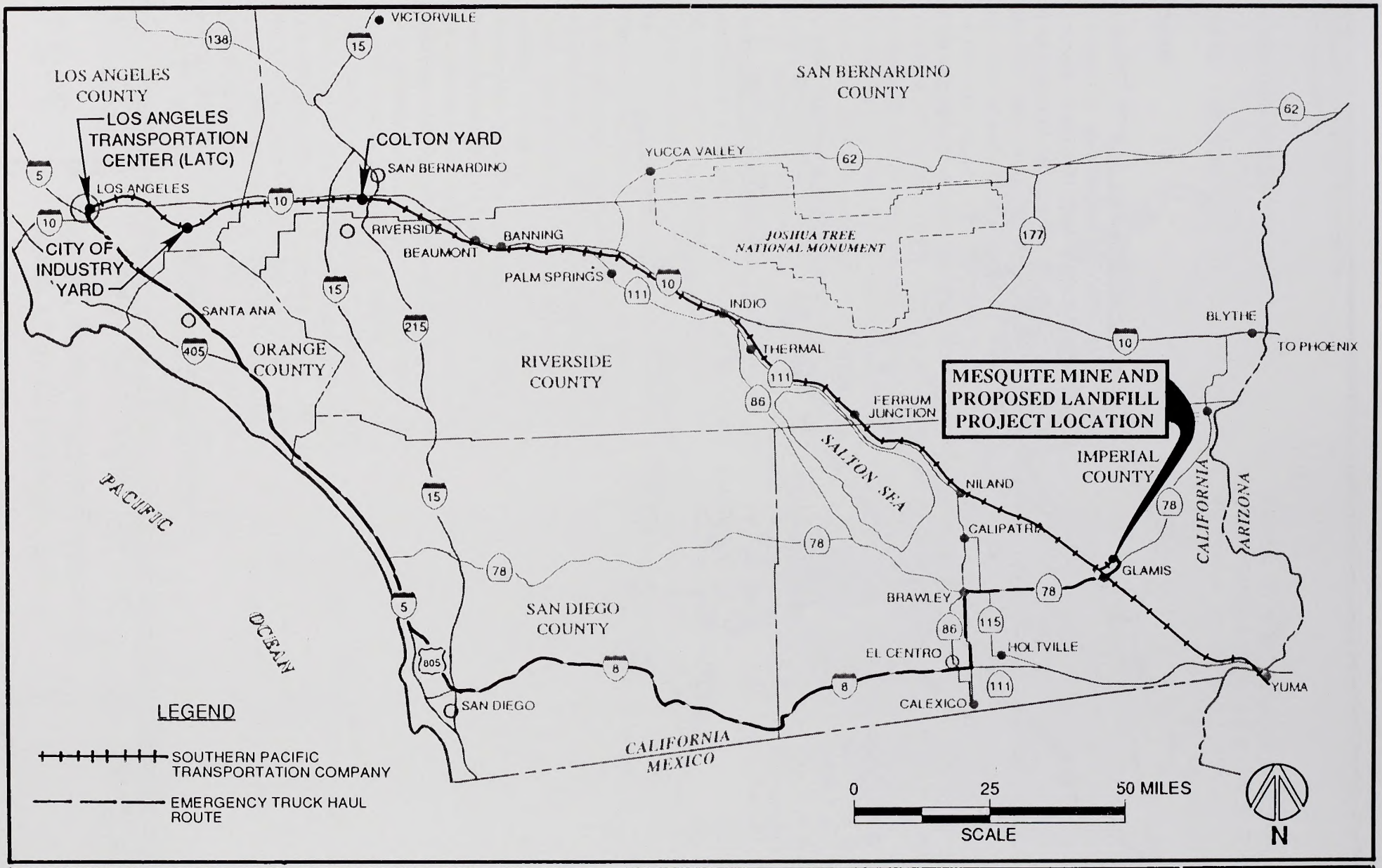
N

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Primary Transportation Routes in the Imperial County Area

FIGURE 3-21



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Proposed Rail Haul Route

FIGURE **3-22**

was desired, it would involve up to approximately 600 tpd packed into MSW residue transport containers at one or more transfer stations located in the Imperial Valley. The containers would be transferred to the Niland area by truck or train, as determined by local officials in connection with the decision to use the regional landfill. At Niland, the containers would be loaded onto one or two articulated railroad cars and would be coupled to a scheduled MSW transport train from the Los Angeles Basin for rail haul to the proposed landfill. The transportation impacts associated with truck- or train-transfer of Imperial County MSW residue from local transfer stations to Niland would be analyzed by Imperial County in connection with the future siting of transfer stations.

Because the locations and operational characteristics of future transfer stations in Imperial County cannot be reasonably predicted at this time, impacts to the Imperial County Branch Line and/or local streets to Niland from such facilities are not considered in this EIS/EIR. The addition of one or two railroad cars to the proposed MSW residue trains would not increase the number of trains on the rail-haul route and, therefore, would not require additional analyses. However, the effects of stopping the MSW train in the Niland area to add additional rail cars are analyzed. If truck delivery of MSW residue from Imperial County transfer stations to the proposed Mesquite Regional Landfill is desired, it would involve approximately 30 transfer trucks making 60 one-way trips on SR 78 per day.

In addition, up to four trucks per day (four one-way trips per day) of agricultural plant material from the Imperial Valley would be diverted from burning to provide emission offsets. It is anticipated that these trucks could come from various agricultural areas in the valley to the proposed landfill throughout each of the first three years of landfill operations and once offsets from the Mesquite Mine expire. Also, miscellaneous truck deliveries and pickups as well as employee trips would be a daily occurrence associated with the proposed landfill. It is not possible to reasonably predict all of the roads that would be impacted by Imperial County MSW residue, agricultural plant material, and miscellaneous delivery trucks, as well as employee trips. It can be predicted that all of these trips would impact SR 78 west of the ISDRA. Therefore, the traffic analysis in this EIS/EIR focuses on that segment of SR 78.

The transportation analysis also evaluates potential effects of interruptions to the rail-haul system. It is anticipated that all or the vast majority of infrequent interruptions would be accommodated by surge capacity in the system and alternative disposal arrangements. In unusual emergency circumstances, it is possible that MSW residue could be shipped to the proposed regional landfill from the Los Angeles Basin by truck for a short period.

Regulatory Status

The primary highway regulation that would affect the proposed project would be associated with the construction of a new intersection for the access road from SR 78 to the proposed landfill. An Encroachment Permit would be obtained from Caltrans District 11 to construct this intersection. The encroachment permit would stipulate design requirements.

Basic rail traffic activities are primarily regulated at the federal level because they are considered interstate commerce. The federal agencies involved are the Interstate Commerce Commission (ICC) and the Federal Railroad Administration arm of the U.S. Department of Transportation (U.S. DOT). Regulations established by these agencies do not generally restrict types of cargo shipped by rail except to establish design specifications for railroad cars that carry hazardous materials and control operating procedures in relation to these materials. Regulation of certain operational aspects of the railroad industry that are important to the analysis in this EIS/EIR are delegated to the state. In California, these types of regulations are administered through the Public Utilities Commission (PUC).

3.1.6.2 Highways

Imperial County is served by a system of interstates, state routes, and county highways shown in Figure 3-21. The two major east-west routes include Interstate 8 (I-8) and SR 78 across the southern and central portions of the county. SR 78 is a two-lane road that connects the populated portion of Imperial County to Blythe in Riverside County.

The primary north-south routes are SR 86, SR 111, SR 115, and County Road S34 (Ogilby Road). SR 86, SR 111, and SR 115 are, for the most part, two-lane roads that provide access between I-8 and SR 78 in the Brawley, El Centro, and Holtville portions of central Imperial County. Ogilby Road is also a two-lane road that provides access between I-8 and SR 78 in the eastern portion of the county. SR 86 and SR 111 continue northwest past SR 78 along opposite sides of the Salton Sea until they eventually join just south of the city of Indio, near I-10 in Riverside County.

Access to the project area is via SR 78, which extends along the southern border of the proposed project boundary. A new mine/landfill access road would be constructed to accommodate the new rail unloading intermodal for the Proposed Action as shown in Figure 2-2. The access road would provide access for visitors, employees, and deliveries to both the mine and the landfill.

Several unpaved roads exist through the area of the proposed rail spur. These roads are infrequently traveled and are used primarily for access by gravel operators and as an alternative access route into the Chocolate Mountains Aerial Gunnery Range (CMAGR), north of the project area. The unpaved roads are also occasionally used for off-highway vehicle (OHV) recreation activities.

Traffic volumes on SR 78 are approximately 1,250 trips per day in the project area (Caltrans, 1992). A "trip" is the passage of one vehicle in either direction across a particular location. Typical peak hourly traffic volumes are associated with the peak Mesquite Mine employee trips. During these periods, the flow rate on SR 78 in the project area is estimated to be approximately 150 vehicles per hour, resulting in a level of service of A (free flowing traffic with little delay). During the afternoons before and mornings after winter holiday weekends from October 1st through May 31st, level of service on SR 78 in the project area may reach F (forced flow with frequent delay); however, specific data to confirm or refute this was not identified. The vast majority of the increased weekend traffic occurs from the west, as campers arrive from the more heavily populated areas of Southern California. The design capacity of the stretch of SR 78 that extends past the project site is 2,800 trips per hour, or more than 60,000 trips per day (Caltrans, 1992).

3.1.6.3 Rail-Haul Route

General

The affected environment description of the rail-haul route that would be used to transport MSW residue to the proposed regional landfill is provided in the following sections. The SP Main Line is discussed first, followed by a discussion of the reliability record of the SP Main Line and estimates of the frequency, length of time, and emergency procedures that are currently used in the event use of the main line is temporarily halted. These sections are directed primarily toward responding to questions raised during the scoping meeting process concerning train reliability (see Appendix A-1).

Main SP Haul Route Description

The portion of the SP Main Line analyzed for this EIS/EIR begins at SP's LATC intermodal near downtown Los Angeles and ends at the proposed project rail spur intersection just north of Glamis (Figure 3-22). This stretch is referred to as the "rail-haul route." The rail-haul route is a small part (approximately 200 miles) of an extensive system of track extending into the

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southern and midwestern regions of the United States and operated by SP railroad. The portion of SP's rail system that includes the rail-haul route has existed for over 100 years (Coachella Valley Historical Society, 1992) and has seen varied levels of traffic volumes depending upon regional population growth, war time activities, changing areas of manufacturing, and competing common carriers.

Freight is scheduled by dispatchers and special signaling systems to maintain safety and to assure that trains traveling in opposite directions can use the single track configuration with minimal interference with one another. Centralized accident response is managed by these dispatchers who coordinate the activities of SP's cleanup crews, located in Yuma and Colton.

The rail-haul route analysis in this EIS/EIR describes SP railroad's operations, including its track capacity and volume. The transportation analysis in this EIS/EIR focuses on the related effects of increased rail volume caused by additional traffic generated by the proposed landfill within the current operational capacity of the SP Main Line. These related effects include the amount of additional delays expected for railroad crossings, and whether MSW residue would create unusual railroad management conditions in the event of an accident involving a MSW residue train. The related issues of biology, noise, and safety to members of the public along the rail-haul route are analyzed in Sections 4.1.3 (Biology), 4.1.7 (Noise), and 4.1.12 (Environmental Health and Public Safety), respectively.

The approximately 200-mile rail-haul route is primarily single track, except for 8-, 25- and 10-mile segments between LATC and Alhambra, West Colton and Beaumont, and Indio and Thermal, respectively. "Passing" tracks are provided at regular intervals (approximately every 5 to 10 miles) in the single track segments to allow passage of oncoming traffic. Longer-term diversion of trains typically occurs in rail yards located at LATC, City of Industry, and West Colton.

Rail traffic volume along the rail-haul route varies according to the following information provided by SP (SP, 1992a). Volume at any location is based on "trips," which is the passage of a train in either direction across a particular location.

Through traffic volume on the rail-haul route from LATC to Glamis and on to Yuma varies between about 24 trips per day to about 35 trips per day, depending upon market conditions. The average rail traffic volume on the rail-haul route is approximately 28 trips per day (as of July 1992). Approximately three percent of this traffic is passenger trains. Traffic fluctuations are caused mainly by seasonal variations in the demand for shipped commodities as well as overall economic conditions. The majority of railroad traffic along the rail haul route occurs at night to suit loading and unloading at local railyards and to avoid at-grade railroad crossing delays during the heaviest vehicle traffic periods.

Local train traffic can cause the trip total in certain areas to be higher. This is caused mainly by switching activity and train movements into and out of rail yards. For instance, the rail yards at LATC, City of Industry, and West Colton produce localized movement as trains are assembled and freight loads are organized. Daily trip totals along stretches of track in these areas can reach 40 to 50 trips, including regular traffic. Switching activities near Beaumont and Indio can also increase daily trip totals along short stretches of track, but to a lesser extent because there is less operational activity in these yards.

Potential maximum rail traffic volume on the SP Main Line is limited by operating considerations, and not track design. Appropriately maintained track can theoretically handle as many trains as SP can provide. No regulatory restrictions exist on the volume of trains that can be operated on any section of track.

Operating considerations that limit potential traffic volume are based on signaling procedures and track capacity in rail yards and sidings along the route. The traffic is controlled by dispatchers

and a centralized traffic signaling system. Based on safety considerations, SP's centralized signaling system and the dispatchers maintain a minimum 10-minute separation between trains. Another operating consideration affecting train volume on a particular stretch of track is the availability of passing tracks so that trains can be temporarily diverted from the Main Line to allow oncoming traffic to pass. Based on these considerations, SP railroad has indicated that the maximum practical capacity for through traffic for the present single-track arrangement is on the order of 65 trips, or 230 percent of the existing average traffic (SP, 1992).

At present, the rail haul route encounters between 160 and 170 public and private roads between LATC and the proposed project rail spur, including 39 overpasses, 15 underpasses, and 90 public and 23 private at-grade railroad crossings. Table 3-8 contains a listing of the approximate 90 public at-grade railroad crossings along the proposed rail-haul route. The at-grade railroad crossings are organized according to street location. This table also presents the following information for each at-grade railroad crossing:

- The number of tracks at the crossing. (PUC, 1992a)
- The estimated road traffic volume. (PUC, 1992a)
- The type of warning devices that presently exist. (PUC, 1992a)
- The estimated maximum authorized Main Line speeds for each location, based on the September 1990 SP Western Region Time Table (SP, 1992a).

Delays to vehicular traffic at these at-grade railroad crossings vary in length and frequency, depending on train movement and traffic conditions at each location.

Studies by the PUC, (PUC, 1992a), SP (SP, 1992), Southern California Association of Governments (SCAG) (SCAG, 1988), and DKS Associates (DKS, 1990), were used to evaluate delays at the crossings along the rail haul route. To be conservative, the average length of each train passing through a particular at-grade railroad crossing was assumed to be 5,000 feet, although many trains would not be this long.

Data from these sources show that at-grade railroad crossing delays can be divided into two general categories, depending on location with respect to rail and switching yards. In areas near rail yards (e.g., LATC, City of Industry, West Colton) or where substantial switching activities occur (e.g., Indio, Beaumont), at-grade railroad crossing delays tend to be longest. This is because slower train speeds (20 to 30 mph) are required for switching activities and localized train movements. Slow train speeds make the average at-grade railroad crossing delays in these areas typically between 2 to 3 minutes. The delays can be longer in unusual circumstances where extensive switching activities occur or where slower train speeds are encountered. Aggregate at-grade railroad crossing delays for these types of conditions typically total between 60 to 90 minutes over a 24-hour period. Daytime train traffic normally occurs at an average rate of less than one trip per hour because more train trips occur at night.

In areas away from rail yards and switching activities, at-grade railroad crossing delays tend to be shorter. In these areas, train speeds are typically higher (40 to 65 mph), resulting in delays of about one to two minutes. Delays at these locations can be longer when slower train speeds are encountered. Aggregate at-grade railroad crossing delays normally total only 30 to 60 minutes over a 24-hour period.

Longer delays than described above can also occur at very busy times or at railroad crossings that include both the SP Main Line and a passing track. The length of delays are limited by PUC General Order 135, which prohibits stopped trains from blocking an intersection for more than 10 minutes; however, delays can exceed 10 minutes at certain railroad crossings.

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TABLE 3-8

At-Grade Railroad Crossings on Proposed Rail-Haul Route

Milepost	County	Street Name	Tracks		Estimated Road Traffic Volume(2)	Existing Protection							Maximum Allowable Train Speeds
			ML	P		C	S	WW	FL	FL/C	AG	AG/C	
683.30	Imperial	Flowing Well Rd.(1)	1		100								65 mph
667.80	Imperial	Beal Rd. - Niland	1	1	1,000		1				1		65 mph
665.30	Imperial	English Rd.	1		300		1				1		65 mph
656.20	Imperial	Frink Rd.	1		100		1				1		65 mph
652.90	Imperial	Hot Mineral Spa Rd.	1		150		1				1		65 mph
634.70	Riverside	Parkside Dr.	1		270		1		1				65 mph
632.80	Riverside	Bay Dr.	1		550		1				1		65 mph
630.90	Riverside	Cleveland St.	1		60		1				1		65 mph
626.90	Riverside	Hammond Rd.	1		320		1				1		65 mph
623.90	Riverside	66th Ave.	1	1	3,130		1				1		65 mph
621.60	Riverside	62nd Ave.	1		490		1				1		65 mph
619.20	Riverside	58th Ave.	1		630		1		1				65 mph
617.90	Riverside	Airport Blvd.	1	1	4,590		1				1		50 mph
616.72	Riverside	Avenue 54(1)	1										50 mph
615.50	Riverside	52nd Ave.	1		990			1			1		50 mph
614.60	Riverside	5th St.	1	1	205		1		1				50 mph
614.20	Riverside	50th Ave.	1	1	1,137		1		1				50 mph
613.00	Riverside	Dillon Rd.	1	1	5,800			1			1		50 mph
609.70	Riverside	Monroe St.	1	1	7,422			1			1		30/50 mph
582.60	Riverside	Tipton Rd.	1	1	90		1				1		40 mph
574.00	Riverside	Broadway Rd.	1	1	1,490		1				1		40 mph
572.60	Riverside	Apache Trail Rd.	1		3,020		1				1		40 mph
568.80	Riverside	Hargreave St.	1	1	3,010		1				1		40 mph
568.20	Riverside	San Gorgonio Ave.	1	1	2,950		1					1	40 mph
568.00	Riverside	4th St.(1)											40 mph
567.70	Riverside	8th St.(1)											40 mph
566.90	Riverside	22nd St.	1		5,669		1				1		40 mph
566.20	Riverside	North Sunset Ave.	1	1	530		1					1	40 mph
564.20	Riverside	Highland Springs Ave.	1		230		1				1		40 mph
563.10	Riverside	Pennsylvania Ave.	1	1	500		1				1		40 mph
562.20	Riverside	California Ave.	1	1	1,150		1				1		50 mph
561.80	Riverside	Veile Ave.	1	1	400		1		1				50 mph
546.70	Riverside	San Timoteo Cyn. Rd.	1	1	360		1				1		50 mph
549.50	Riverside	Live Oak Cyn. Rd.	1	1	770		1				1		40 mph
548.20	San Bernardino	Allesandro Rd.	1	1	658		1				1		40 mph
548.10	San Bernardino	7th Street(1)											40/50 mph
546.20	San Bernardino	San Timoteo Cyn. Rd.(1)	1				1				1		50 mph
545.40	San Bernardino	Beaumont Ave.	1		257		1				1		50 mph
544.50	San Bernardino	Whittier Ave.	1	1	150		1				1		60 mph
542.60	San Bernardino	Andersen Ave.(1)											60 mph
541.00	San Bernardino	Hunts Ln.	1	1	1,680		1				1		60 mph
525.40	San Bernardino	Milliken Ave.	1		10,400			1			1		65 mph
523.90	San Bernardino	Turner Rd.	1		800		1				1		65 mph
523.90	San Bernardino	Archibald Ave.	1		3,400		1				1		60/65 mph
522.40	San Bernardino	Vineyard Ave.	1		9,000		1				1		50 mph
520.90	San Bernardino	Bon View Ave.	1		7,100		1				1		50 mph
520.70	San Bernardino	Campus Ave.	1	1	5,300		1					1	50 mph
520.40	San Bernardino	Sultana Ave.	1	1	3,500		1				1		50 mph
520.20	San Bernardino	Plum Ave.(1)	1	1	600		1						50 mph
520.10	San Bernardino	State Route 192(1)	1										50 mph
520.10	San Bernardino	Euclid Ave. State 83	1	1	22,000		1				1		50 mph
519.80	San Bernardino	Vine Ave.	1	1	4,600		1				1		50 mph
519.60	San Bernardino	San Antonio Ave.	1		4,300		1				1		50 mph

See page 2 of 2 for legend.

(1) Complete data not available for these crossings.
(2) Traffic volume data is from the PUC and is from 1988. Though current levels may be higher, the relative traffic levels are useful.

TABLE 3-8
(Continued)

Milepost	County	Street Name	Tracks		Estimated Road Traffic Volume(2)	Existing Protection							Maximum Allowable Train Speeds
			ML	P		C	S	WW	FL	FL/C	AG	AG/C	
517.40	San Bernardino	Monte Vista Ave.	1	1	5,200		1				1		50 mph
516.90	San Bernardino	Co. Rd. Ramona Ave.	1		8,100	1					1		50 mph
515.90	Los Angeles	East End Ave.	1		6,950	1					1		60 mph
515.40	Los Angeles	Reservoir Ave.	1		6,439		1				1		60 mph
515.20	Los Angeles	San Antonio Ave.	1	1	6,798	1					1		60 mph
514.70	Los Angeles	Palamores St.	1	1	5,690	1					1		60 mph
514.30	Los Angeles	Main St.	1	1	3,188		1				1		60 mph
514.10	Los Angeles	Park Ave.	1	1	6,249		1				1		60 mph
513.60	Los Angeles	Hamilton Blvd.	1	1	10,061	1					1		60 mph
510.50	Los Angeles	Temple Ave.	1	1	50			1			1		60 mph
510.20	Los Angeles	Pomona Blvd.	1		3,644		1				1		60 mph
	Los Angeles	Grand Ave.(1)											60 mph
508.00	Los Angeles	Brea Canyon Rd.	1		3,967		1					1	60 mph
506.70	Los Angeles	Lemon Rd.	1	1	2,084			1			1		60 mph
505.75	Los Angeles	Fairview Dr.(1)	1					1			1		60 mph
503.90	Los Angeles	Fullerton Rd.(1)	1										60 mph
504.80	Los Angeles	Nogales Ave.	1		2,336			1			1		60 mph
499.60	Los Angeles	California Ave.	1		5,482		1				1		60 mph
499.20	Los Angeles	Sunset Ave.	1		7,299			1			1		60 mph
498.80	Los Angeles	Orange Ave.	1		3,636		1				1		60 mph
498.20	Los Angeles	Puente Ave.	1		15,100			1			1		60 mph
497.80	Los Angeles	Vineland Ave.	1	1	5,440		1				1		60 mph
497.10	Los Angeles	Rivergrade Rd.	1		16,000		1				1		60 mph
496.00	Los Angeles	Cogswell Rd.	1		1,272		1				1		60 mph
495.30	Los Angeles	Peck Rd.	1		30,870			1			1		60 mph
495.30	Los Angeles	Temple Blvd. (Detour)(1)	1		30,870		1					1	60 mph
495.10	Los Angeles	Ramona Ave.	1		31,000		1				1		60 mph
495.00	Los Angeles	Cypress Ave.	1		2,667		1				1		60 mph
494.80	Los Angeles	Tyler St.	1	1	12,970		1				1		60 mph
494.00	Los Angeles	Arden Dr.	1	1	7,103		1				1		60 mph
493.60	Los Angeles	Baldwin Ave.	1		12,869		1				1		60 mph
493.30	Los Angeles	Temple City Blvd.	1		10,235		1				1		60 mph
492.70	Los Angeles	Lower Azusa Rd.	1		11,000		1				1		60 mph
492.60	Los Angeles	Encinita Ave.	1		3,300		1				1		60 mph
491.60	Los Angeles	Walnut Grove Ave.	1		4,505		1				1		60 mph
491.20	Los Angeles	San Gabriel Blvd.	1		23,000		1					1	30 mph
490.70	Los Angeles	Del Mar Ave.	1		10,000		1				1		30 mph
490.30	Los Angeles	Mission Dr.	1		12,500		1				1		30 mph
490.20	Los Angeles	Ramona Blvd.	1		13,000		1				1		30 mph
485.80	Los Angeles	Valley Blvd.	1		14,122		1				1		50 mph
485.00	Los Angeles	Worth Boca Rd.	1		5,400		1				1		20/30 mph
484.75	Los Angeles	Vineburn Ave.	1		2,018		1				1		20/30 mph
484.00	Los Angeles	San Pablo St.	1		2,398		1				1		20/30 mph

91-296 (3/1/93/cm)

Legend
ML = Main Line
P = Passing Track
C = Crossbuck Sign
S = Traffic Signal
WW = Wigwag Signal
FL = Flashing Lights on Sign
FL/C = Flashing Lights on Cantilever Arm
AG = Automatic Gate
AG/C = Automatic Gate with Extra Lights on Cantilever Arm

(1) Complete data not available for these crossings.
(2) Traffic volume data is from the PUC and is from 1988. Though current levels may be higher, the relative traffic levels are useful.

Source: Environmental Solutions, Inc., 1993.

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At-grade railroad crossings along the rail-haul route each have controls that have been developed to suit site-specific (e.g., vehicle traffic and road width) conditions. At-grade railroad crossing conditions are monitored by local communities and the PUC, with input from SP, to evaluate if improvements are appropriate. The U.S. DOT and PUC have programs to periodically evaluate each crossing and to provide funding assistance to local communities for improvements determined to be appropriate. The U.S. DOT Section 130 program (PUC, 1992c) provides federal funding to assist local communities to improve at-grade railroad crossing control devices in their jurisdictions, when appropriate. The program is administered by the PUC, in coordination with Caltrans. Local communities must first apply for the funding. The PUC then visits the crossing to evaluate whether it qualifies for funding. Factors considered by the PUC include safety, delays, and potential obstruction of surrounding land uses by waiting traffic. If the PUC determines a crossing is eligible for funding assistance, the crossing is included on a recommended list for at-grade railroad crossing improvements that is published each year. The PUC's 1992 recommended list for at-grade railroad crossing improvements in California includes 965 at-grade railroad crossings (PUC, 1992c). The crossings on the list that are located along the rail-haul route are summarized in Table 3-9.

On-going discussions between local authorities and the PUC ultimately determine the specific improvements that are provided. Funding, once the specific improvement is agreed upon, occurs according to the split of 90 percent federal (U.S. DOT) and 10 percent from the local community. The federal money is dispensed by Caltrans. The construction is performed by the railroad. This process of providing federal money to supplement local funding was established with the recognition that at-grade railroad crossing safety and delay conditions are the result of many factors, including population growth, and vehicular and train traffic increases. The number of at-grade railroad crossing improvements made in California as a result of this program was approximately 185 from 1989 to 1991.

The PUC also administers a separate, state-funded program (established by California Streets and Highways Code Section 2425) for changing at-grade railroad crossings to grade separations (overpasses and underpasses), when appropriate. That program distributes $15 million per year, $5 million each to three local communities that have applied for funding and rank highest for grade separation improvements, based on a priority study performed by the PUC. Communities seeking the funding assistance must first submit an application to the PUC. The applications are evaluated and prioritized by the PUC, based on traffic and train volumes, estimated construction costs, accident histories, railroad speeds, existing delay conditions, and special factors identified on a case-by-case basis. A prioritized list is published once every two years showing the results of the PUC evaluations. The top three communities on the list each year are offered $5 million toward the cost of the proposed grade separation, which can be accepted if the communities can provide funding for the balance of the total cost of construction. Table 3-10 summarizes the grade crossings along the rail-haul route that are included on the PUC's 1992 grade separation program priority list.

TABLE 3-9

**1992 PUC Recommended List
For At-Grade Railroad Crossing Improvements
Along the Proposed Rail-Haul Route**

City	Street	Recommended Improvements
Coachella	50th Avenue	New Gates
Thermal	58th Avenue	New Gates and Cantilever
Mecca	Parkside Drive	Replace Gates
Coachella	5th Street	New Gates
Banning	22nd Street	Replace Gates
Flowing Wells	Flowing Wells Road	Replace Gates

Source: Environmental Solutions, Inc., 1993.

TABLE 3-10

**Proposed Rail-Haul Route At-Grade Railroad Crossings
Included on the 1992 PUC Grade Separation Priority List**

City/Local Agency	Street	Priority Ranking
Los Angeles	Valley Boulevard	22
El Monte	Arden Drive	44
San Gabriel	Mission Drive	63
El Monte	Baldwin Avenue	66
Ontario	Archibald Avenue	74
Banning	Sunset Avenue	77

Source: Environmental Solutions, Inc., 1993.

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3.1.7 NOISE

3.1.7.1 Introduction

Scope

The proposed project site is located in an area that has no permanent residents and very few activities that generate substantial noise events. The Mesquite Mine is the primary source of noise in the immediate vicinity of the proposed landfill. Other scattered noise generating activities that exist in the vicinity include:

- The passage of traffic on SR 78.
- Infrequent military aircraft performing maneuvers associated with the CMAGR located immediately to the north.
- Small-scale gravel withdrawal activities in the area to the west of the project site where the proposed project rail spur would be located.
- The passage of trains on the SP Main Line located to the west of the Glamis Beach Store.
- OHV activities, primarily at the ISDRA near the Glamis Beach Store during weekend periods.

Project-related noise generating activities would occur on the proposed project site and along the project rail spur (Figure 2-2). Potential receptors include Mesquite Mine employees and visitors, gravel withdrawal operators, campers who use the public lands west of the proposed project area, people in vehicles traveling along SR 78, and wildlife in the area. The nearest permanent residents number approximately 10 in the Boardman and Glamis Store areas, about 3 and 3.5 miles away, respectively. Due to their distance from the proposed landfill site, project-related noise events would not be heard in those areas. As a result, the residents of these areas are not part of the definable group of potential receptors for noise from the proposed project site or along the proposed rail spur.

As described in the preceding transportation section, all or the majority of the MSW residue would be transported to the proposed landfill along the SP Main Line. Increased landfill-related train traffic would cause a gradual increase in the number of noise events along this route. As a result, the rail-haul route from SPs existing LATC rail yard to the proposed project rail spur is also considered a part of the affected environment for the proposed landfill.

If Imperial County communities determine that locally derived waste would be deposited in the proposed regional landfill, MSW residue could be delivered by rail or by truck. As described in the transportation section, if rail haul is chosen for transport of local wastes, the proposed regularly scheduled MSW residue trains from the Los Angeles Basin would pick up local MSW residue near Niland and continue along the rail-haul route to the landfill. Noise events associated with the delivery of local MSW residue to the Niland area from Imperial County transfer stations/MRFs cannot be reasonably predicted at this time but would be evaluated as part of the planning and environmental review of these facilities. Therefore, the delivery of local MSW residue to the Niland area is not analyzed in the EIS/EIR. Noise events in Niland associated with the pickup of a railcar carrying Imperial County MSW residue are analyzed in the EIS/EIR.

If truck transport of MSW is desired by local communities, all or most of these deliveries would be expected to come from the western portion of the County along SR 78 since this is where the majority of county population exists. Other project-related traffic would be expected through this area, such as daily service deliveries, employee traffic and potential delivery of agricultural plant material from the Imperial Valley (for more detail about each of these see Section 4.1.6, Transportation). Therefore, the section of SR 78 west of the project site extending through the ISDRA is also part of the affected environment for noise.

Regulatory Status

Depending upon the noise source, regulation of noise levels can occur at the federal, state or local level. Train noise is regulated by the U.S. Environmental Protection Agency (U.S. EPA). Except for normal vehicle noise restrictions (e.g., for delivery and passenger vehicles), the only noise ordinances that would apply to the proposed landfill area result from the Occupational Safety and Health Administration (OSHA). County noise management occurs through the Imperial County General Plan. The following laws and regulations would apply to noise generated by the proposed rail-haul portions of the project:

- Noise Control Act of 1972 (42 U.S.C. 4901 et seq.).
- Railroad Noise Emission Standards (40 Code of Federal Regulations (CFR) Part 201).
- Railroad Noise Emission Compliance Regulations (49 CFR Part 210).
- Imperial County General Plan and Draft Imperial County General Plan Update

The California Department of Health Services, Office of Noise Control, provides guidelines to communities to control and abate noise. Noise measurement procedures recommended by this agency are also used to evaluate the effects of train noise.

3.1.7.2 Proposed Landfill Site Noise Sources

Mesquite Mine

The Mesquite Mine (Figure 1-2) is located immediately to the east of the proposed project site, and is the primary source of noise currently generated in the proposed project area. Predominant noise events at the Mesquite Mine are the result of:

- Removal and handling of ore and overburden.
  - Drilling
  - Blasting
  - Ore and overburden loading, hauling, and dumping
  - Ore crushing
- Construction of haul roads and structures.
  - Earthmoving activities
  - Construction activities

Receptors for these noises are mostly the mine workers, wildlife, and occasionally SR 78 travelers for a few seconds as they pass through the area. These operations are conducted using equipment and procedures that satisfy all Mining Safety and Health Administration (MSHA) noise requirements. The Mesquite Mine is anticipated to remain in operation for approximately 10 to 15 years.

Chocolate Mountain Aerial Gunnery Range

The CMAGR is used for live munitions delivery practice by different branches of the U.S. Armed Forces. The CMAGR boundary begins approximately one mile to the north of the proposed landfill project boundary. Intermittent aircraft noise can be heard throughout the area as military aircraft fly in and out of the region. Occasionally, the faint sound of exploding munitions can be heard in the distance.

State Route 78

SR 78 extends through the Glamis Beach Store area and then northeastward for approximately 3.5 miles before it passes along the southern edge of the proposed project boundary (Figure 2-2). Traffic along this section of SR 78 is light (1,250 trips per day; Caltrans, 1992) and, except for the Glamis Beach Store, the vicinity is deserted with the only noise events associated with occasional passing traffic.

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During the period of October 1st to May 31st, the Glamis Beach Store area attracts many visitors, especially on weekends, for off-highway recreation in the ISDRA. During these periods, traffic increases significantly and noise events associated with OHV recreation and related traffic increase.

3.1.7.3 Proposed Rail Spur Area Noise Sources

The proposed rail spur would be located 2,500 feet north of SR 78 to maintain separation from camping and OHV activities in the Glamis Beach Store area. A small number of gravel withdrawal operators conduct surficial gravel withdrawal operations in the region to the west of the project area where the rail spur would be located. Noise from these infrequent activities is generated by surficial excavation activities and transfer trucks that arrive, are loaded, and then carry mined materials out of the area. These activities occur in deserted areas and noise events are seldom heard beyond the immediate area of a particular mining operation. The gravel excavation activities are conducted under a permit from the BLM.

3.1.7.4 Existing SP Main Line Noise Sources

The proposed rail-haul route is shown in Figure 3-22 and is described in the preceding transportation section (Section 3.1.6). Noise events from trains on this route presently range from as few as 24 to as many as 50 events daily. Federal standards for maximum allowable train noise are summarized in Table 3-11. The standards are based on noise levels at a distance of 30 meters (100 feet) from the tracks.

Inspections of trains, including a measurement of sound emissions, are performed regularly by SP in accordance with federal regulations and using measuring procedures prescribed therein to assure that these standards are met.

A study was recently conducted of existing noise in the Coachella Valley portion of the rail-haul route (Mestre-Greve Associates, 1990). The study measured noise levels at a series of distances from the proposed rail-haul route. Based on SP traffic levels at the time of the study, the results are also reported in terms of Community Noise Equivalent Level (CNEL), which is recommended for use by the California Department of Health Services Office of Noise Control for land use compatibility testing. CNEL represents a time-weighted, 24-hour average noise level based on the A-weighted decibel. Time-weighted means noise that occurs during certain sensitive time periods is penalized by adding set decibel amounts to noise events measured during these times. The CNEL scale penalizes noise that occurs in the evening time period (7 p.m. to 10 p.m.) by 5 dBA, while noise that occurs at nighttime (10 p.m. to 7 a.m.) are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. The A-weighted decibel is used because it reflects the ability of the human ear to hear sounds. A noise attenuation model developed by Wyle Laboratories was used by Mestre-Greve to predict CNELs for up to 5,000 feet from the rail-haul route.

The results of the measurements and modeling are shown in Table 3-12.

For comparison, typical noise levels in terms of the Day-Night Level (L_{dn}) scale within different types of communities are presented in Figure 3-23. The L_{dn} is similar to CNEL except that the evening time period is not penalized. These scales are commonly used to assess traffic noise impacts.

3.1.7.5 Offered Exchange Properties

<u>Santa Rosa Mountains National Scenic Area Parcels</u>

Figure 2-5 shows the approximate location of the offered exchange parcels in the SRMNSA. These parcels are in an isolated area of the SRMNSA that has no roads or residents. Noise events of any significance in this area are rare.

TABLE 3-11

Summary of Maximum Noise Standards, for 30 m (100 ft.) from Track

Noise Source	Sound Level in dB
All Locomotives Manufactured on or Before December 31, 1979	
• Stationary, Idle Throttle Setting	73
• Stationary, All Other Throttle Settings	93
• Moving	96
All Locomotives Manufactured After December 31, 1979	
• Stationary, Idle Throttle Setting	70
• Stationary, All Other Throttle Settings	87
• Moving	90
Rail Cars	
• Moving at Speeds of 45 mph or Less	88
• Moving at Speeds Greater than 45 mph	93

Source: 40 CFR Part 201

TABLE 3-12

Existing Railroad Noise Levels (CNEL)

Distance (feet)	100	200	300	400	500	700	1,000	2,000	5,000
CNEL (dBA)	74*	70**	67**	64**	62**	60**	57**	51**	44**

Notes: * = computed noise level ** = predicted noise level.

Source: Mestre-Greve Associates, 1990.

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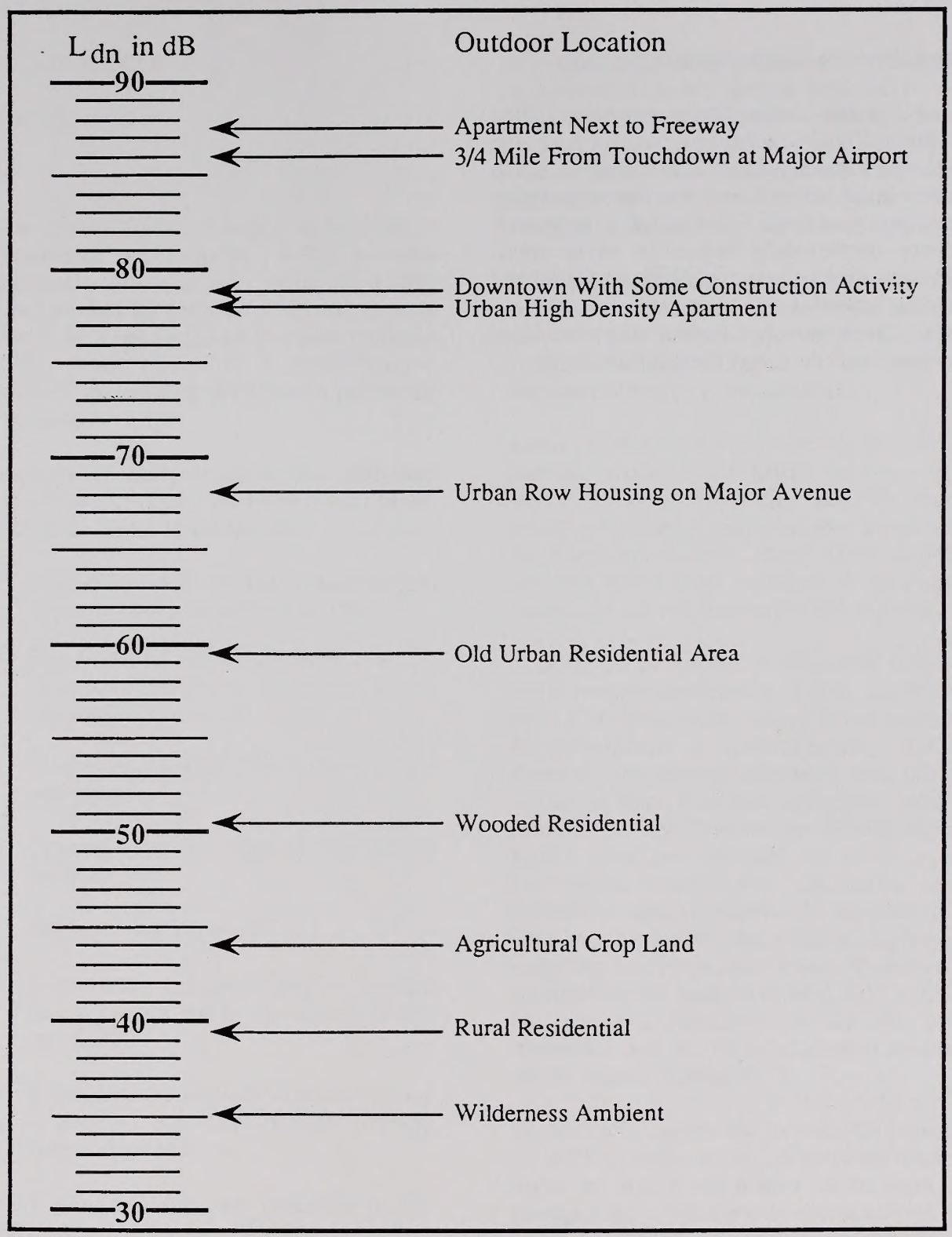

NOTE: FROM PROTECTIVE NOISE LEVEL STUDY, U.S. ENVIRONMENTAL PROTECTION AGENCY, NOVEMBER, 1978.

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Examples Of Outdoor Day-Night Average Sound Levels In dB

FIGURE **3-23**

Parcels Near the Chuckwalla Bench ACEC

Figure 2-6 also shows the approximate location of the offered exchange parcels near the Chuckwalla Bench ACEC. These parcels are also located in an isolated area that has no roads or permanent residents. Some OHV recreation activity occasionally occurs in these areas. Infrequent noise events associated with OHV and camping activities can be encountered in these areas. These parcels are also subject to noise associated with the use of the CMAGR.

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3.1.8 AIR QUALITY

3.1.8.1 General

Scope

The Air Quality Technical Report in Appendix F (Environmental Solutions, Inc., 1992c) provides a detailed description of the existing air quality environment and an analysis of related impacts associated with the proposed Mesquite Regional Landfill. This section is a comprehensive summary of the existing environment portion of that appendix.

The primary air quality issues directly associated with the Proposed Action are those related to on-site activities. These would include:

- Unloading MSW residue containers from trains at the site intermodal facility.
- Truck-hauling sealed containers from the intermodal facility to the active face of the landfill.
- Emptying containers by a tipper at the active face.
- Placing and compacting the MSW residue.
- Placing cover materials.
- Controlling and destroying or reusing (e.g., through energy recovery) landfill gas (LFG).
- Expanding the disposal area and closing completed portions through ongoing construction activities.

Each of these activities are evaluated in this EIS/EIR.

Off-site air quality considerations related to the Proposed Action are associated with trains that would be used to deliver MSW residue to the regional landfill. The rail haul route would be along the SP Main Line as shown in Figure 3-24. An intermodal facility in downtown Los Angeles is assumed to be the starting point for all or the majority of rail traffic on this existing main line to the proposed Mesquite Regional Landfill spur. The air quality aspects of this rail transportation and associated increases in at-grade railroad crossing vehicular delays are also analyzed.

Employee commutes, potential Imperial County MSW residue delivery truck trips, and other delivery and pickup truck trips would also contribute off-site emissions. These emissions are also considered in this analysis.

Local curbside-packer-truck traffic to new transfer stations and MRFs in Los Angeles County or other Southern California counties would not result in emissions that are related to the Proposed Action. These MSW collection activities would occur regardless of the Proposed Action and are not analyzed in this EIS/EIR.

Transfer trucks hauling containers of compacted MSW residue from transfer stations and MRFs to the LATC intermodal facility could potentially be considered a project-related activity. However, the mileage associated with this haul would be less than that associated with the transport of MSW residue by transfer trucks to future landfills located in more remote Los Angeles County areas and similar to that required to haul containers for shipment to any other regional landfill that could be implemented under the No Action Alternative. Therefore, the air emissions for transfer to the LATC would not be increased compared to the No Action Alternative and this is considered in evaluating the No Action Alternative.

At the LATC intermodal facility, the containers of MSW residue would be unloaded from the trucks by cranes and loaded on the train. An average train would have 16 articulated rail cars. Each articulated car would consist of five sections. Eash section would carry two MSW residue containers. Thus, each train would carry 160 MSW residue containers. Each container would hold 25 tons of MSW residue. The 16 rail cars would be kept together during the haul to

and from the landfill. At the LATC, the train would be delivered to the unloading/loading area by SP's line-haul locomotives. Switching engines would not normally be used for these MSW residue trains.

For analysis of on-site and off-site air quality, the affected environment is described in terms of: (1) the project site; and (2) the following geographic areas (Figure 3-24):

- South Coast Air Basin (SOCAB), including:
  - The Los Angeles Basin from the ocean to the Banning and Cajon passes, including most of Los Angeles County, Orange County, the southwestern corner of San Bernardino County and the western third of Riverside County.
- The Salton Trough part of the Southeast Desert Air Basin (SEDAB), including:
  - The Coachella Valley, extending from Banning Pass to the Salton Sea, primarily in Riverside County.
  - Imperial Valley and the rest of Imperial County, extending southeast from the Salton Sea to the border with Arizona and Federal Republic of Mexico.

Although the Salton Trough is a single, long, linear geologic feature or "valley" that channels air flow, it is divided into the Coachella Valley and Imperial County because of political and air quality control jurisdictions discussed in the following section.

An important introductory scoping consideration is related to ozone (O_3), which is the key pollutant in smog. O_3 itself is not emitted directly from cars, factories, and other sources, but instead is formed in the presence of sunlight from two "precursor" pollutants that are emitted from these sources: oxides of nitrogen (NO_x) and reactive organic gases (ROG). Exceedances of state and federal ambient air quality standards for O_3 in the SOCAB are considered to be the worst in the country. Exceedances of these O_3 standards occur less frequently in the Coachella Valley, and only a few times a year in Imperial County, where only the state O_3 standards are exceeded. The causes of O_3 exceedances in Imperial County are not clear, but appear to be pollutant transport from Mexicali; Mexico; SOCAB; and possibly San Diego County (CARB, 1989a). Local emissions also contribute to O_3 exceedances in Imperial County (Sonoma Technology, Inc., 1992). The importance of transport requires that both the SOCAB and the Salton Trough be evaluated with respect to O_3.

Transport is also important to particulate exceedances in Imperial County. A study by the Desert Research Institute, underway since 1992, is attempting to determine what sources account for the particulates measured at Calexico, El Centro, and Brawley. Results are not yet available. Finally, in addition to air pollutant emissions, odor is considered in this analysis as an air quality issue.

Regulatory Status

General

Primary air quality regulatory jurisdiction for the proposed Mesquite Regional Landfill resides locally through the Imperial County Air Pollution Control District (ICAPCD). The ICAPCD rules, which would be used for project air quality control permitting, have been developed as a result of federal and state laws and regulations. The following paragraphs summarize general federal and state requirements, site-specific ICAPCD permitting requirements, and the indirect interest of the South Coast Air Quality Management District (SCAQMD), which has local jurisdiction in SOCAB and the Riverside County portion of SEDAB.

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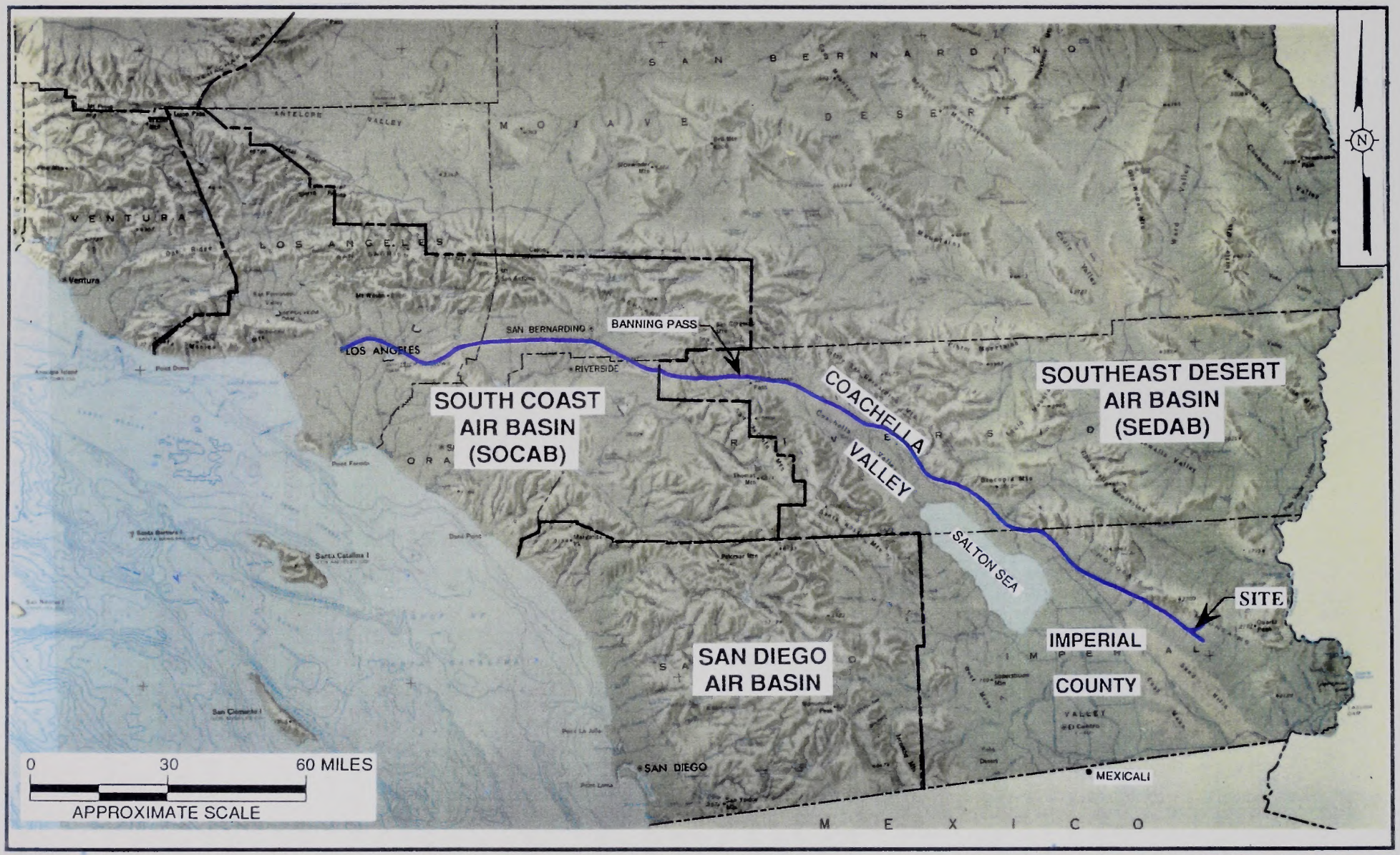

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Project Location Map with Rail Route

FIGURE

3-24

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Portions of the following federal air quality regulations, administered by Region 9 of the U.S. EPA, apply to the proposed project:

- The Clean Air Act of 1970 (CAA) established National Ambient Air Quality Standards (NAAQS) that set maximum allowable ambient concentrations, given in Table 3-13, for the following "criteria" air pollutants: O_3, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter with aerodynamic diameter less than 10 micrometers (PM_{10}), and lead (Pb). Areas violating the primary, or health-related, standard of a criteria pollutant are termed "nonattainment areas" for that pollutant. The Clean Air Act Amendments of 1990 (CAAA) defined five classes of increasing nonattainment: marginal, moderate, serious, severe, and extreme. (Note that SOCAB is the only area in the United States that is classified as "extreme," with respect to a particular air pollutant; in this case O_3.) Emissions of criteria air pollutants or any important precursors (e.g., NO_x or ROG) in nonattainment areas generally cannot be permitted without elimination of an equal or greater amount of the same pollutant or its precursors through "offsets." Areas that do not attain the NAAQS are required by the CAA to prepare Air Quality Attainment Plans (AQAPs) to control existing and proposed sources of air pollutant emissions, such that the NAAQS may be attained by a certain target date. Regulations must be developed by state and local air pollution control agencies to review new and modified stationary sources for their emissions. These regulations must require appropriate offsets. SCAQMD published a Final Air Quality Management Plan (AQMP) in July 1991, which includes 134 measures to reduce criteria pollutant concentrations below federal and state standards, including waste-by-rail disposal of MSW at remote sites outside of the Los Angeles Basin.

- New and modified stationary sources must be reviewed to bring federal nonattainment areas into attainment. This review requires that new emissions proposed for a criteria pollutant or its precursors from a stationary source in a nonattainment area cannot be permitted without elimination of an equal or greater amount of the same pollutant or its precursors through offsets. The offset required usually increases with the distance between the proposed and eliminated source. The offset amount is never less than 1.0 to assure that no net increase occurs.

- Title II of the CAAA contains provisions relating to mobile sources. Heavy-duty trucks are subject to NO_x engine emission limitations, beginning with the 1988 model year. Light-duty trucks will be subject to stricter emissions limitations on NO_x, nonmethane hydrocarbons, and CO, beginning with the 1994 model year. Diesel fuel for highway vehicles is required to have a sulfur content less than 0.05 percent. Title II does not contain provisions relating to locomotives. It is assumed that low-sulfur diesel fuel will also be used for trains after 1993.

- The Prevention of Significant Deterioration (PSD) program is aimed at maintaining air quality better than the NAAQS by controlling emissions from stationary sources in areas that presently do not have exceedances ("attainment" areas). A PSD review for the Proposed Action by the U.S. EPA is not required if emissions of each attainment pollutant from stationary sources would be less than the threshold rate of 250 tons per year (U.S. EPA, 1994).

- Currently proposed federal New Source Performance Standards for MSW landfills, if promulgated, will specify that landfill gas control systems must use Best Demonstrated Technology (BDT), destroy 98 percent of nonmethane

TABLE 3-13

Ambient Air Quality Standards
Proposed Mesquite Regional Landfill

Pollutant	Averaging Time	California Standards (CAAQS)(1)		National Standards (NAAQS)(2)		
		Concentration (3)	Method(4)	Primary(3,5)	Secondary (3,4,6)	Method(7)
O_3	1 Hour	90 ppbv (180 µg/m^3)	Ultraviolet Photometry	120 ppbv (235 µg/m^3)	Same as Primary Standards	Ethylene Chemiluminescence
CO	8 Hour	9ppm (10 mg/m^3)	Nondispersive Infrared Spectroscopy (NDIR)	9ppm (10 mg/m^3)	–	NDIR
	1 Hour	20 ppmv (23 mg/m^3)		35 ppmv (40 mg/m^3)		
NO_2	Annual Average	–	Gas Phase Chemiluminescence	53 ppbv (100 µg/m^3)	Same as Primary Standards	Gas Phase Chemiluminescence
	1 Hour	250 ppbv (470 µg/m^3)		–		
SO_2	Annual Average	–	Ultraviolet Fluorescence	30 ppbv (80 µg/m^3)	–	Pararosoaniline
	24 Hour	50 ppbv (131 µg/m^3)(8)		140 ppbv (365 µg/m^3)	–	
	3 Hour	–		–	500 ppbv (1,300 µg/m^3)	
	1 Hour	250 ppbv (655 µg/m^3)		–	–	
PM_{10}	Annual Geometric Mean	30 µg/m^3	Size Selective Inlet High Volume Sampler and Gravimetric Analysis	–	–	Inertial Separation and Gravimetric Analysis
	24 Hour	50 µg/m^3		150 µg/m^3	Same as Primary Standards	
	Annual Arithmetic Mean	–		50 µg/m^3		
SO_4	24 Hour	25 µg/m^3	Turbidimetric Barium Sulfate	–	–	–
Pb	30 Day Average	1.5 µg/m^3	Atomic Absorption	–	–	Atomic Absorption
	Calendar Quarter	–		1.5 µg/m^3	Same as Primary Standards	
H_2S	1 Hour	30 ppbv (42 µg/m^3)	Cadmium Hydroxide	–	–	–
Vinyl Chloride (chloroethene)	24 Hour	10 ppbv (26 µg/m^3)	Tedlar Bag Collection, Gas Chromatography	–	–	–
Visibility Reducing Particles(9)	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with CARB Method V.		–	–	–

Notes:

(1) California standards for O_3, CO, SO_2 (1 hour), NO_2, PM_{10}, and visibility reducing particles are values that are not to be equaled or exceeded.
(2) National standards, other than O_3 and those based on annual averages or arithmetic means, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.
(3) Equivalent units given in parentheses are based upon a reference temperature of 25° C and a reference pressure of 760 mm mercury. Measurements of air quality are corrected to a reference temperature of 25° C and a reference pressure of 760 mm mercury (1,013.2 millibar); ppmv and ppbv in this table refers to ppm and ppb by volume, respectively, or micromoles of pollutant per mole of gas.
(4) Equivalent procedure, which can be shown to satisfy CARB by providing equivalent results at or near the level of the air quality standard, may be used.
(5) National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by EPA.
(6) National Secondary Standards: The levels of air quality necessary to protect public welfare from any known or anticipated adverse effect of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the state implementation plan is approved by EPA.
(7) Reference method as described by EPA. An "equivalent method" of measurement may be used, but must have a "consistent relationship to the reference method" and must be approved by EPA.
(8) At locations where state standards for oxidant and/or PM_{10} are violated. National standards apply elsewhere.
(9) This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

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organic compounds, and abide by certain monitoring requirements.

The California Clean Air Act (CCAA) of 1988 established state ambient air quality standards (CAAQS) as summarized in Table 3-13. The state standards are stricter than the NAAQS, and also cover sulfate, hydrogen sulfide (H_2S), vinyl chloride, and visibility. California Air Resources Board (CARB) is responsible for enforcing state air pollution regulations, but delegates the actual rule-making, permitting and enforcement activities for stationary sources to 41 local districts including ICAPCD and SCAQMD. The CCAA recognized that transported emissions and atmospheric chemical reactions affect, and may even dominate, the air quality in downwind air basins. CARB (1989a) identified SOCAB and the San Joaquin Valley Unified Air Basin as areas of origin for the transport of O_3 and its precursors into Coachella Valley and Imperial County, and listed San Diego County and Mexicali as potential source areas for transport impacts. Additional responsibilities of CARB that have applicability to the analysis performed for the Proposed Action include:

- Requiring local districts to develop plans to attain CAAQS .

- Establishing state emission standards for on-highway, gasoline-powered mobile sources, and the sulfur content of diesel fuel.

- Requiring retrofit technology on locomotives over the period 1992-1997, according to Measure ARB-16 in the SCAQMD AQMP.

Imperial County Air Pollution Control District

Imperial County does not have exceedances of federal O_3 standards (120 parts per billion by volume [ppbv]), but is classified as nonattainment for the stricter CAAQS O_3 standard (90 ppbv) because of a few, slight exceedances each year. The county is also nonattainment for PM_{10}, according to both federal and state standards. PM_{10}, is emitted directly by sources and is created indirectly in the atmosphere from chemical reactions that convert gaseous precursors into small particles. Sources of PM_{10} are both natural and related to man. PM_{10} sources related to man include point (smoke stack), area (empty agricultural land), and fugitive (dust from the wheels of a truck) types. PM_{10} precursors include NO_x, ROG, and SO_x emissions. Hence, certain criteria pollutants must be evaluated as both attainment and nonattainment pollutants as shown in Table 3-14.

The ICAPCD issued its Final AQAP on April 14, 1992, and requires that offsets be obtained for emissions of the nonattainment pollutants and their precursors from stationary sources.

Some of the O_3 in Imperial County is transported from other areas and this O_3 causes some of the exceedances of the state standard. A portion of the O_3 in SEDAB is transported from SOCAB, according to CARB (1989a and 1993b). Back trajectories track SOCAB emissions all the way to Imperial County. CARB (1993a) states that Mexico is also a source of the O_3 and precursors transported into Imperial County, which are monitored at Calexico-Grant and El Centro. Such transport means that control of O_3 in Imperial County should be coordinated with the control of O_3 in the SOCAB and Mexico, especially Mexicali, (just across the international border from Calexico). A possible result of such coordination is that attainment of the CAAQS for O_3 may have to be delayed from 1994 to beyond 2010, when SCAQMD will reduce emissions in SOCAB enough to attain the federal O_3 standard. Even then, the O_3 CAAQS may not be attained in Imperial County if Mexicali sources of O_3 precursors are not sufficiently controlled by that time.

Air quality control permits required from the ICAPCD would include:

- An Authority to Construct (ATC) permit. Under Rule 207, this permit would require that:

TABLE 3-14

Attainment Status

Proposed Mesquite Regional Landfill

Criteria Pollutant	Attainment Classification		Precursor Emission
	Imperial County	SCAQMD	
O_3	Nonattainment for CAAQS	Nonattainment for CAAQS and NAAQS	NO_x, ROG
NO_2	Attainment	Mostly attainment, except downtown Los Angeles	NO_x
PM_{10}	Nonattainment for CAAQS and NAAQS	Nonattainment for CAAQS and NAAQS	PM_{10}, NO_x, ROG, SO_x
SO_2	Attainment	Attainment	SO_x
Sulfate	Attainment	Attainment	SO_x
CO	Attainment	Mostly attainment, except downtown Los Angeles	CO

Source: Environmental Solutions, Inc., 1993.

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- CAAQS be met at points of potential public exposure (beyond the fence line).

- Best Available Control Technology (BACT) be used to control site emissions.

- Nonattainment pollutant emissions above 137 pounds per day be offset with an offset ratio that increases with upwind distance between the site and the offset credit location.

- A health risk assessment of toxic emissions from the landfill site (requested by the ICAPCD for the ATC permit).

- Permits to operate each stationary source (e.g., flare).

South Coast Air Quality Management District

The SCAQMD has an interest in the proposed project because of rail haul emissions and reductions in SOCAB emissions that would occur by eliminating future landfills in SOCAB. SCAQMD would not have any direct permitting authority for the project.

In 1991, the SCAQMD adopted a Final AQMP that provides for the attainment of all federal, but not state, standards by the year 2010. The following year (2011) is used as one analytical year for evaluating air quality effects associated with the Proposed Action in Chapter 4.0 of this EIS/EIR because by 2011 the effects of O_3 transport from SOCAB to the Coachella Valley and Imperial County would be substantially reduced from present conditions.

The AQMP contains 134 measures designed to reduce emissions of O_3 precursors in order to attain the NAAQS for O_3. Measure No. A-D-1 is titled Out-of-Basin Transport of Biodegradable Solid Waste, and would remove landfill emissions from SOCAB. The Proposed Action would start implementing the measure once it begins receiving MSW residue.

3.1.8.2 Existing Air Resource Environment

General

This discussion is divided into two parts. The first part describes the potentially affected environment in the vicinity of the proposed project. This information is important, both for evaluating the air quality impacts of the project site activities and for air quality permitting through the ICAPCD.

The second part describes conditions in the air basins along the proposed rail haul route. This information is necessary to: (1) evaluate effects of rail haul activities related to the Proposed Action ; and (2) provide comparisons of effects with the No Action Alternative, which would result in the disposal of the MSW residue at existing and new landfills in SOCAB or at other regional landfills.

Proposed Project Site Area

Regional Characteristics

Existing air quality characteristics in the proposed site vicinity are described in this section, based upon previous environmental analyses of the area (St. Clair Research Systems, Inc., 1984; Environmental Solutions, Inc., 1987a) and more recent monitoring conducted by the ICAPCD and the Mesquite Mine. The following section describes the climatic conditions in the project general area:

- The desert environment is very hot in summer and mild in winter. Humidity is generally low except in July and August when the monsoon wind blows from the Gulf of California (southeast). Precipitation is low (about 3 inches per year), and a limited amount of cloudiness occurs during the winter rainy season.

- Wind directions follow two patterns, as follows:

- From October through May, prevailing winds are from the west and northwest. The humidity is lowest under these conditions. Some of these winds originate in SOCAB, enter the Coachella Valley at the Banning Pass (Figure 3-24) and travel southeasterly through the Salton Sea Trough.

- July and August weather patterns are often dominated by a heating-induced low-pressure area that forms over the hot interior deserts, drawing air from the Gulf of California (southeast of the site) and northern portion of Mexico. The humidity is highest during these conditions. June and September are transition months between the two seasonal patterns.

- Wind speeds in the region are above levels necessary to promote good mixing so that air mass stagnation does not occur. Winds at night average 5 to 8 mph (weakest in late spring and strongest in winter), while daytime winds average 9 to 13 mph (strongest in winter and early spring, and weakest in fall). Such moderate winds (by both day and night) generally carry away locally generated emissions.

- Vertical mixing and dilution in the area is very good, with afternoon mixing heights reaching 16,000 feet above ground level in summer. Strong daytime thermal mixing generally disperses nighttime ground-based thermal inversions.

Air quality characteristics are:

- The area is state nonattainment for O_3 and PM_{10}, and federal nonattainment for PM_{10}. Both of these pollutants are measured at El Centro, and PM_{10} is measured at Brawley. Exceedances are shown in Table 3-15.

- The O_3 nonattainment status is based on a few exceedances of state standards (CAAQS), but not of federal (NAAQS) standards.

- The area is attainment for NO_x, SO_2, CO, and sulfates; monitored levels of these pollutants are generally well below standards.

The source of the O_3 exceedances at El Centro for a few days each year are not the result of emissions of the NO_x and ROG precursors from El Centro. Instead, the exceedances are the result of the transport of O_3, NO_x, and ROG from outside of the area. The primary source during the summer appears to be the large city of Mexicali with a population of 800,000 (in comparison with about 120,000 for all of Imperial County), located just south of the United States of America/Federal Republic of Mexico International Border. For example, Figure 3-25 shows the daily O_3 concentration cycle for El Centro on October 9, 1992, when a light wind was blowing from the southeast. This plot shows a "background" concentration well below standards, but a midday peak when the state standard was exceeded from 1:00 p.m. until 4:00 p.m. The most plausible explanation for this peak is transport of emissions from traffic and industrial activities in Mexicali. Figure 3-25 also shows the same peak when it passed Calexico three hours earlier. The three-hour delay agrees with the two to three mile-per-hour wind speeds measured at El Centro and Calexico that day and the 10-mile distance between these cities.

The SOCAB is also a source of O_3 exceedances and background O_3 concentrations in Imperial County. On days when northwesterly winds prevail, O_3 precursors are transported from the SOCAB, through the Banning Pass, and into the Salton Trough. That same transport often continues into Imperial County, but the peak condition decreases with distance from SOCAB.

The sources of PM_{10} exceedances are local, primarily from a combination of wind-blown dust from activities on disturbed land areas,

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TABLE 3-15

O_3 and PM_{10} Exceedances in Imperial County

O_3 EXCEEDANCES[1] AT EL CENTRO

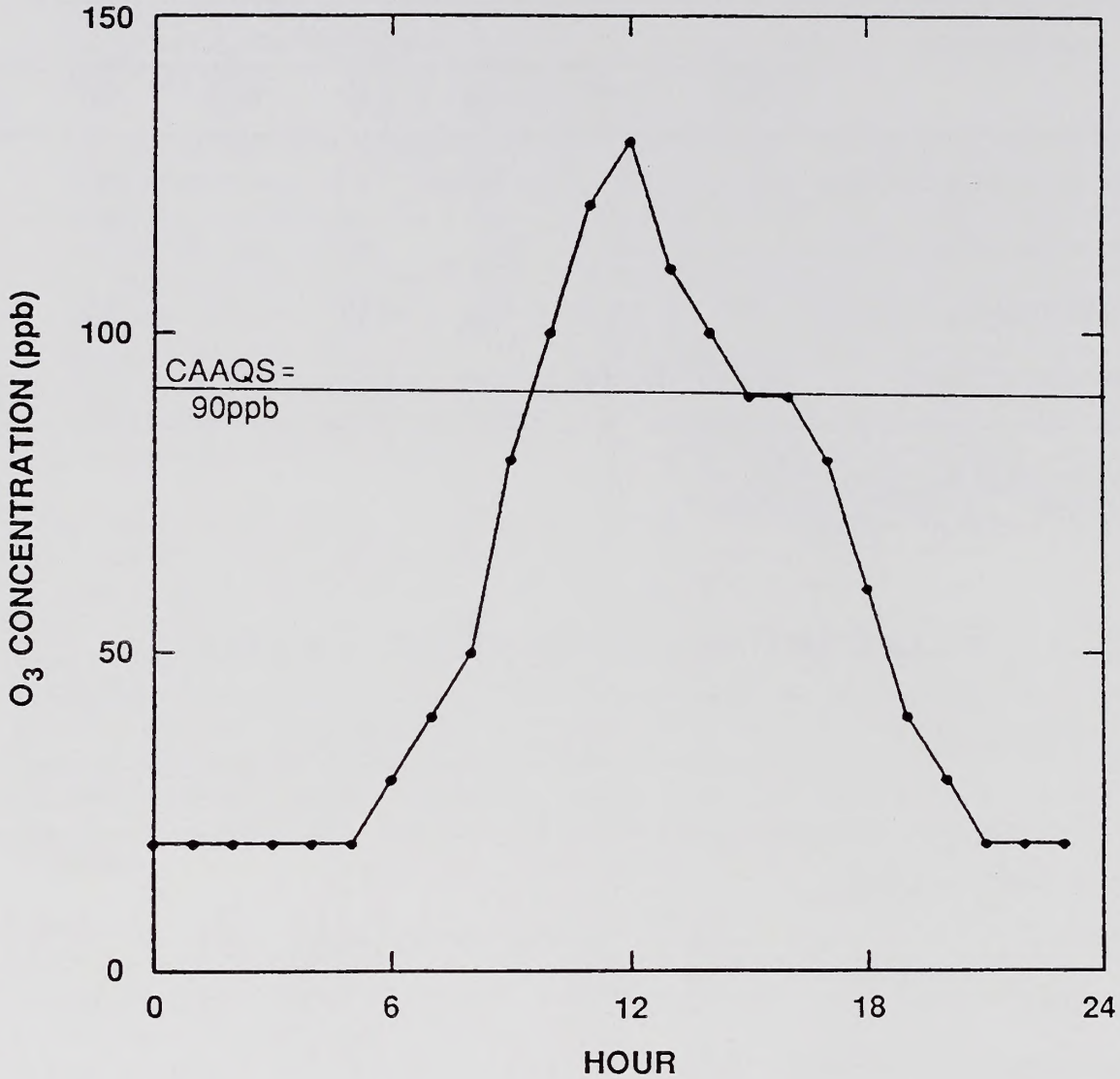
VARIABLE	YEAR[2]						
	1986	1987	1988	1989	1990	1991	1992
Number of Exceedance Hours	0	0	28	8	8	5	28
Number of Exceedance Days	0	0	17	4	6	3	10
Highest Concentration (ppbv)	90	90	120	110	110	110	120
O_3 Exceedance "Season"	No data	No data	Mar-Nov	Feb-May	Mar-Jun	Jun-Oct	Apr-Dec

(1) CAAQS = 90 ppbv, one-hour average.
(2) CARB, 1987, 1988, 1989b, 1990, 1992.
(3) Prior to CAAQS ppbv standard.

PM_{10} EXCEEDANCES[1,2] AT EL CENTRO AND BRAWLEY

VARIABLE	YEAR[2]						
	1986	1987	1988	1989	1990	1991	1992
Number of Exceedance Days							
Brawley	20	31	17	35	33	33	23
El Centro	12	24	24	31	22	31	14
Highest Concentration (µg/m3)							
Brawley	191	148	368	676	258	229	103
El Centro	230	157	192	287	100	243	80

(1) CAAQS = 50 (µg/m3), 24-hour average
(2) CARB, 1987, 1988, 1989b, 1990, 1991, 1992.



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Daily O_3 Concentration Cycle for an Exceedance at El Centro October 9, 1992

FIGURE **3-25** (#441)

including driving on dirt roads, OHV use, construction, and agricultural practices. The contributions of these sources, Mexicali industrial activities, and other sources are currently under study by the Desert Research Institute. Emissions and control strategies are presented in the Final Draft of the State Implementation Plan for PM_{10} in the Imperial Valley (E.H. Pechan and Associates, Inc., 1993).

Local Characteristics

Analysis of wind data from El Centro, California; Imperial Airport, California; Blythe, California; and Yuma, Arizona indicate that weather conditions at the proposed site are generally similar to those in the region, although wind conditions are locally affected by the nearby Chocolate Mountains. Wind data from the existing Mesquite Mine are shown in Figure 3-26, and indicate that the wind frequently blows from the north-northeast, west and south. This distribution is based on one year of data, extending from April 1, 1991 through March 31, 1992, and measured at the site shown in Figure 3-27. Wind data monitored during 1989 were used to verify that the distribution in Figure 3-26 is representative for the site.

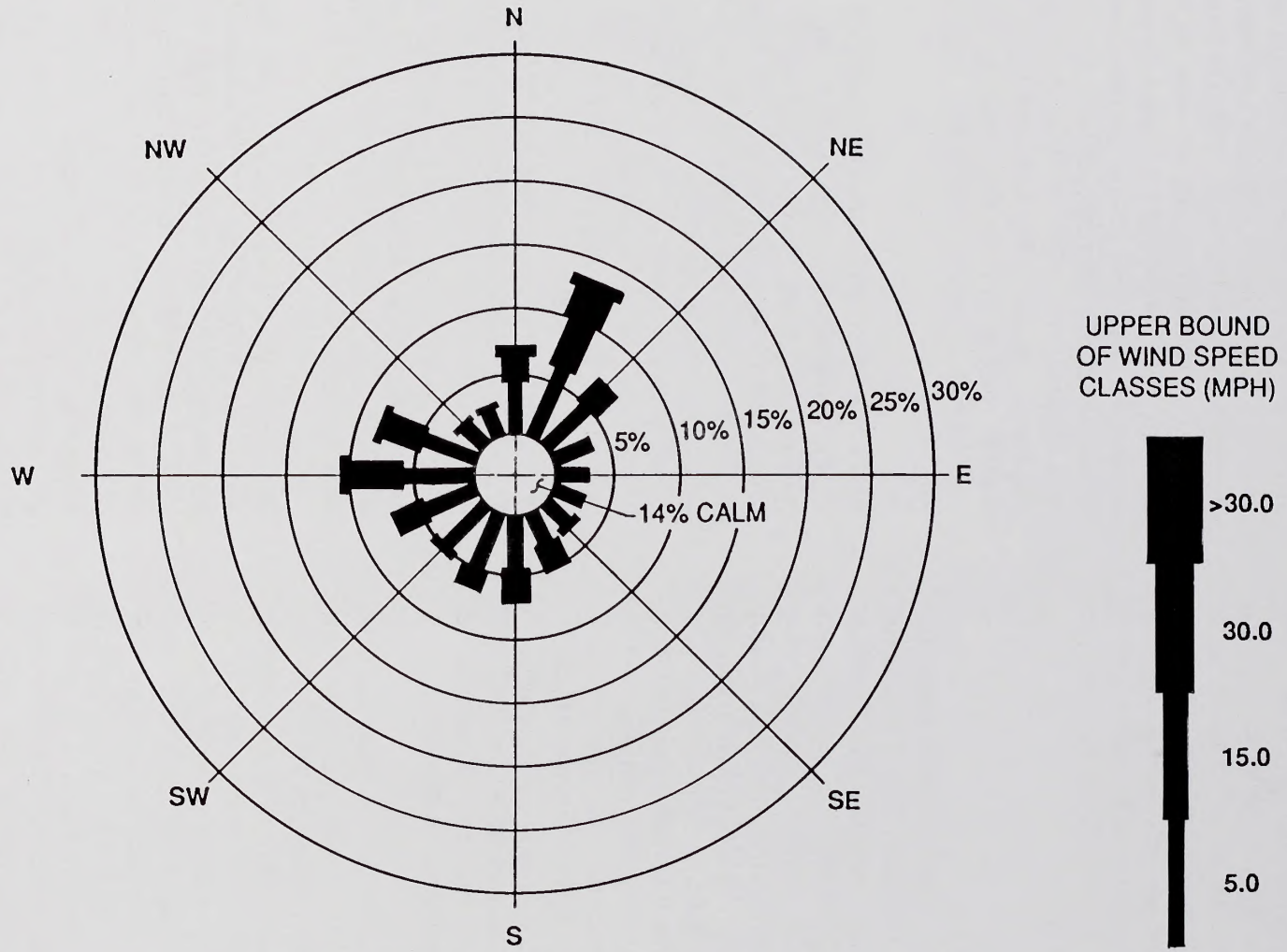
The westerly flow is the "normal" flow over the entire region, especially during afternoons when the wind is well developed by daily heating. The southerly flow is associated with the summer monsoon. The monsoon flow is caused by the large, thermal-low-pressure area that typically forms over the desert southwest. Air drawn into the low-pressure zone includes the southeast flow from the Gulf of California. The prevalent north-northeasterly wind direction at the site is caused by Santa Ana winds coming down from the north, where a high-pressure area typically develops over the deserts in winter. Local topographic conditions steer this wind around the eastern side and southern end of the Chocolate Mountains and the western side of Quartz Peak, through a pass about five miles to the northeast of the site.

An important air quality parameter in the site vicinity is PM_{10}, because of recreational uses of the desert, nearby gravel excavation activities, and the Mesquite Mine operation. PM_{10} is measured at four locations surrounding the mine, as shown in Figure 3-27. Appendix F provides an analysis of the 1991 and 1992 results for these stations. The monitoring results indicate that the 24-hour state standard (CAAQS) of 50 micrograms per cubic meter ($\mu g/m^3$) was exceeded during 18 of the 243 readings for the four stations, although the federal standard (NAAQS) was never exceeded.

Analysis of wind directions and speeds for each of those monitoring days shows only four readings where the mine could possibly have contributed to the exceedance. The measured exceedances generally appear to be caused by naturally blowing desert dust, although nearby gravel excavation probably affected the closest monitor, labeled as the Old Highway 78 monitor in Figure 3-27. Overall, the annual geometric mean of each station is less than the CAAQS Annual Geometric Mean Standard of 30 $\mu g/m^3$. The annual arithmetic and geometric means for the two-year period 1991 and 1992 were 19.9 and 18.1 $\mu g/m^3$. These means are used in the impact analysis as background concentrations and include the impact of the existing Mesquite Mine operation.

During one year from May 21, 1992 through May 31, 1993, O_3 was continuously monitored at the nearby Mesquite Mine well field located south of the mine. O_3 concentration exceeded the 90 ppbv one-hour CAAQS twice, reaching 100 ppbv at 4:00 p.m. on April 28, 1993 and 94 ppbv at 9:00 a.m. on August 15, 1992. The O_3 concentration equaled the 90 ppbv standard at 9:00 a.m. on July 17, 1992. Each time, the wind was blowing from the southwest.

The NO_2 concentrations during this same monitoring year were low, as expected for a relatively undeveloped remote area. The mean and maximum concentrations were 3 ppbv and 39 ppbv, which are both well below the 250 ppbv one-hour CAAQS.



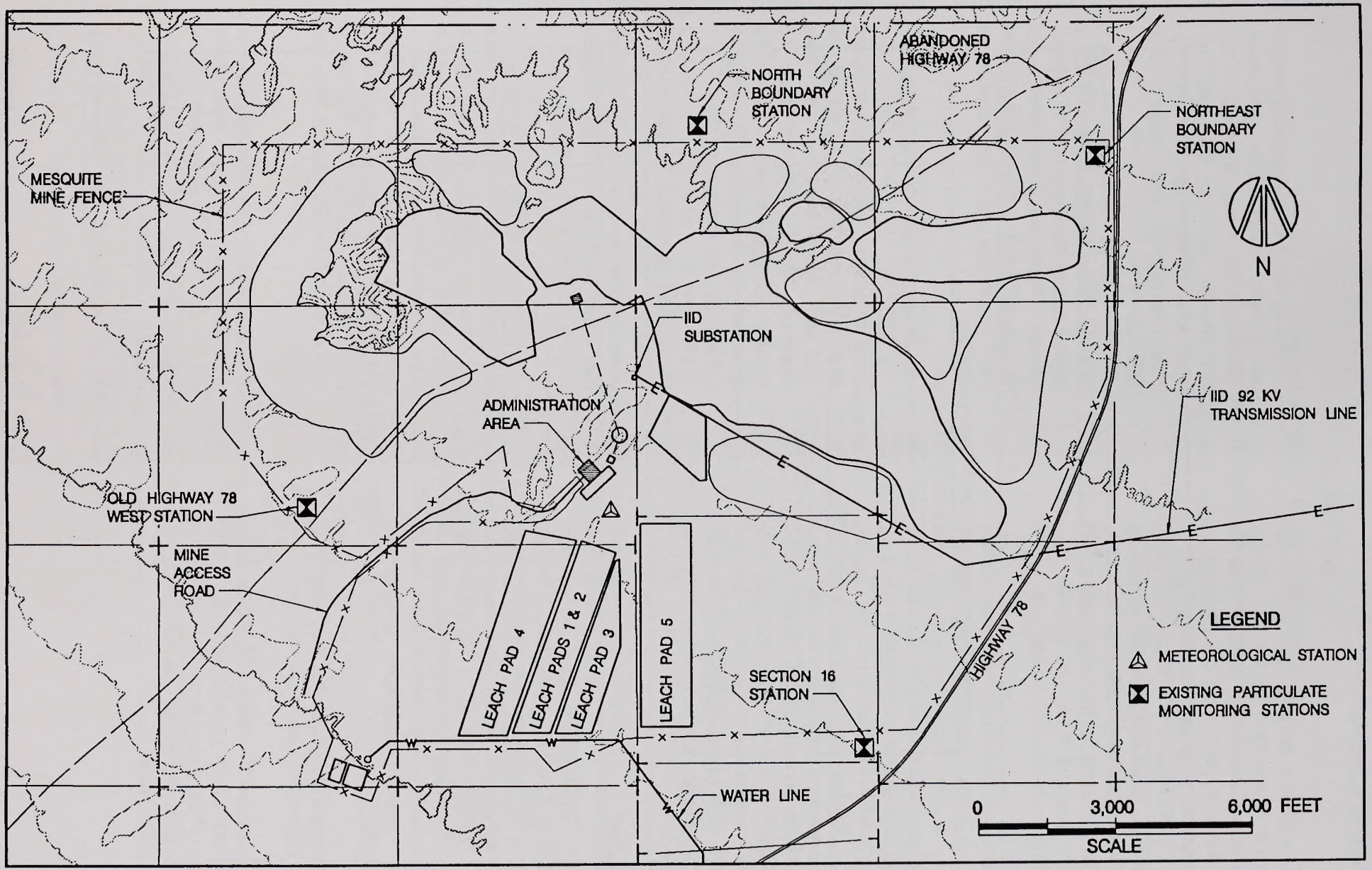
AVERAGING TIME: 1 HOUR
MESQUITE, CALIFORNIA
WIND ROSE ANALYSIS
FOR 4/1/91 TO 3/31/92

SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Annual Wind Rose for Mesquite Mine

FIGURE **3-26**



SOURCE: Gold Fields Mining Co., 1992.

Proposed Mesquite Regional Landfill

Mesquite Mine
PM_{10} Monitoring Station Locations

FIGURE
3–27

The Mesquite Mine is the only significant source of emissions at or near the proposed site. During the three-year period of 1990 through 1992, the actual emissions (in pounds per day [lbs/day]) of criteria pollutants were approximately 4,170 of NO_x, 280 of ROG, 1,960 of PM_{10}, 60 of SO_x, and 910 of CO. The ICAPCD inventory contains different values, including 3,300 lbs/day of NO_x because that inventory is based on earlier fuel consumption data and it did not consider SO_x reductions from the use of low-sulfur fuel.

PM_{10} emissions associated with the mining operation are below permitted levels and are expected to decline further as a result of a decrease in the amount of overburden rock being excavated to expose new ore. In 10 to 15 years, all mining activities are expected to be completed. During the remaining years of operation, emissions of other pollutants (e.g., NO_x and ROG), primarily from mining-related mobile equipment, will also diminish and then stop entirely when mining is completed. Because the mine has been operating continuously since 1985, its emissions are part of the existing environment.

Rail Haul Route

Table 3-16 summarizes the appropriate characteristics of SOCAB and the Salton Trough where air quality would be potentially affected by trains hauling the MSW residue to the proposed regional landfill. The following paragraphs summarize key aspects of each of these geographical areas. The relationship of these areas to regional topographic conditions is shown in Figure 3-24.

General characteristics of the SOCAB, Coachella Valley, and Imperial County areas are that:

- NO_x and ROG emissions are roughly proportional to population in the three areas. Nine times as much of these O_3 precursors are emitted in SOCAB as in the desert areas.

- Much of the land in Imperial County is undeveloped desert. This open space, coupled with many unpaved roads, agricultural burning, and numerous sources around Mexicali, results in PM_{10} emissions of more than twice those in SOCAB.

- Average annual rainfall in the SOCAB is approximately six times that in Imperial County. This would result in some increase in rainfall infiltration and related LFG generation rates for landfills in SOCAB.

Air pollutant dispersion characteristics show that:

- Wind speeds are highest in the desert areas, with large amounts of agricultural land and desert land that has been disturbed. These conditions create the potential for high amounts of dust to be generated, as discussed with regard to PM_{10} air quality conditions below.

- Mixing and dispersion is very good in the Salton Trough, particularly in the summer. Ground-based inversions that may occur during winter nights disperse in early morning thermal mixing.

- The perimeters of Imperial County are topographically open so that emissions that occur at night are primarily blown away prior to being exposed to each day's sunlight. Open perimeters and very good mixing and dispersion, combined with the relatively low emissions in these areas, limit the amount of O_3 that can be produced from locally emitted NO_x and ROG.

- Mixing conditions are relatively poor in the SOCAB and transport of pollutants out of the basin is restricted by the surrounding mountains and an inversion level that commonly occurs below the elevation of the Banning Pass. As a result, nighttime and early morning

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TABLE 3-16
Summary of Air Basin Characteristics

Proposed Mesquite Regional Landfill

GENERAL CHARACTERISTICS

GEOGRAPHIC AREA	SIZE (sq. miles)	POPULATION (1987)	1987 BASELINE EMISSIONS (10^6 lbs/day)			CLIMATE	
			NO_x	ROG	PM_{10}	Average Temperature (° F)	Average Annual Rainfall (inches)
SOCAB	6,600	13.7 million	2.3	2.5	1.6	64(1)	15(1)
Salton Trough							
Imperial County	4,600	120,000	0.06	0.06	3.7	73	2.5(2)
Coachella Valley	3,200	400,000	0.1	0.3	0.5	72	5(1,2)

AIR POLLUTANT DISPERSION CHARACTERISTICS

GEOGRAPHIC AREA	CONTROLLING FACTORS					GENERAL SUMMERTIME DISPERSION CHARACTERISTICS
	Average Wind Speed (mph)	Predominant Direction From Which Wind Originates	Approximate Summer Inversion Layer Heights (feet)		Topographic Constraints	
			Morning	Afternoon		
SOCAB	5	West	1,500(2,3) - 2,200(4)	2,500(3) - 3,400(4)	Mountains north and east. Inversion zone blocked most of day by elevation of Banning Pass at El. 2,200 ft.	• Poor mixing conditions. • Nighttime NO_x and ROG emissions trapped.
Salton Trough	7 to 9	Northwest except southeast for July and August	8,000(5)	16,000(5)	Wind flow channeled by mountains to northeast and southwest.	• Very good mixing conditions. • Nighttime NO_x and ROG emissions dispersed.

NONATTAINMENT POLLUTANTS AND PRIMARY SOURCES

GEOGRAPHIC AREA	NONATTAINMENT POLLUTANTS							
	O_3		PM_{10}		NO_2		CO	
	Status	Primary Source	Status	Primary Source	Status	Primary Source	Status	Primary Source
SOCAB	Extreme federal nonattainment	SOCAB	Nonattainment of NAAQS and CAAQS	Industrial and vehicular emissions atmospheric reactions	Nonattainment of NAAQS in downtown Los Angeles	Vehicular emissions	Nonattainment of NAAQS in downtown Los Angeles	Vehicular emissions
Salton Trough								
Imperial Valley	Moderate nonattainment of CAAQS only	Transport from Mexicali, SOCAB, and San Diego	Nonattainment of NAAQS and CAAQS	Desert roads and agriculture; land and unpaved roads, and industry in Mexico	Attainment	--	Attainment	--
Coachella Valley	Moderate nonattainment of NAAQS and CAAQS	Transport from SOCAB	Nonattainment of NAAQS and CAAQS	Dirt roads and construction	Attainment	--	Attainment	--
Precursor Emissions	NO_x, ROG		PM_{10}, NO_x, ROG, SO_x		NO_x		CO	

91-296 (2/11/93/hs)

(1) SCAQMD, 1980.
(2) Gale Research Company, 1978.
(3) Holzworth, George C., 1972.
(4) Taylor and Marsh, 1991.
(5) National Climatic Data Center, 1992.

Source: Environmental Solutions, Inc., 1993.

emissions are "trapped" within the basin, and are mostly available for the photochemistry that transforms them into O_3 the following morning.

- Predominantly westerly wind conditions in SOCAB result in the transport of O_3, its precursors, and other pollutants through the Banning Pass and into Coachella Valley. Often in late afternoon, the sea breeze reaches its maximum daily strength and causes a substantially higher rate of transport to occur for up to several hours.

The bottom portion of Table 3-16 summarizes air quality conditions within these geographical areas, which are a result of the general and dispersion characteristics described above. The following discussion of these air quality conditions is also supported by the following tables and figures:

- Figure 3-28 shows the number of days O_3, PM_{10}, NO_2, and CO standards were exceeded in SOCAB during 1990.

- Figure 3-29 shows trends of pollutant exceedances in SOCAB for the 1975 to 1990 period.

- Table 3-17 shows O_3 and PM_{10} exceedance data for Banning, Palm Springs, and Indio.

- Figure 3-30 shows example daily O_3 concentration cycles for Banning, Palm Springs, and Indio.

The SOCAB is nonattainment for each of the key pollutants, although the geographical extent and frequency of NO_2 exceedances is small. The biggest problem is O_3, which had exceedances in the eastern San Bernardino and Riverside portions of SOCAB on 125 days in 1990 (Figure 3-29). This high concentration condition, resulting from NO_x and ROG emissions throughout the basin, is the primary source of O_3 transport from SOCAB into the Coachella Valley at Banning Pass. Figure 3-29 shows that O_3 has been the most resistant to reduction by past controls. Ozone is the primary target of current SCAQMD planning.

The Coachella Valley is classified as state and federal nonattainment for PM_{10} and O_3. The PM_{10} concentrations are relatively high, due to local sources associated primarily with windblown dust (50 percent), construction (30 percent), paved roads (3 percent), and unpaved roads (3 percent) (SCAQMD, 1990a).

Ozone exceedances in the Coachella Valley are a direct result of the transport of that pollutant from SOCAB through Banning Pass. This condition is illustrated in Figure 3-29 showing O_3 concentrations at Banning, Palm Springs, and Indio on August 15, 1992 (SCAQMD, 1992b). The Banning plot illustrates how O_3 created in the SOCAB during the midday period was transported eastward and arrived at the Pass around 5:00 p.m. That same peak was then transported into the Palm Springs area about two hours later, corresponding to a wind speed between Banning Pass and Palm Springs of about 10 mph. That same peak continued to travel through the Coachella Valley and arrived at Indio one hour later at 8:00 p.m. Because the distance between Palm Springs and Indio is also 20 miles, the average wind speed appears to have increased to 20 miles per hour. The peak probably continued to travel down the Salton Trough to Imperial County.

Existing air quality conditions in Imperial County were discussed above, in relation to conditions in the vicinity of the proposed regional landfill site.

3.1.8.3 Existing Odor Conditions

Although odor is not monitored in Imperial County, nor in other areas of the project analysis, noticeable odors are sometimes evident as a result of livestock operations (e.g., feed lots), agricultural fertilizers, pesticides, and various industrial facilities, such as waste-to-energy facilities, food processing facilities, and

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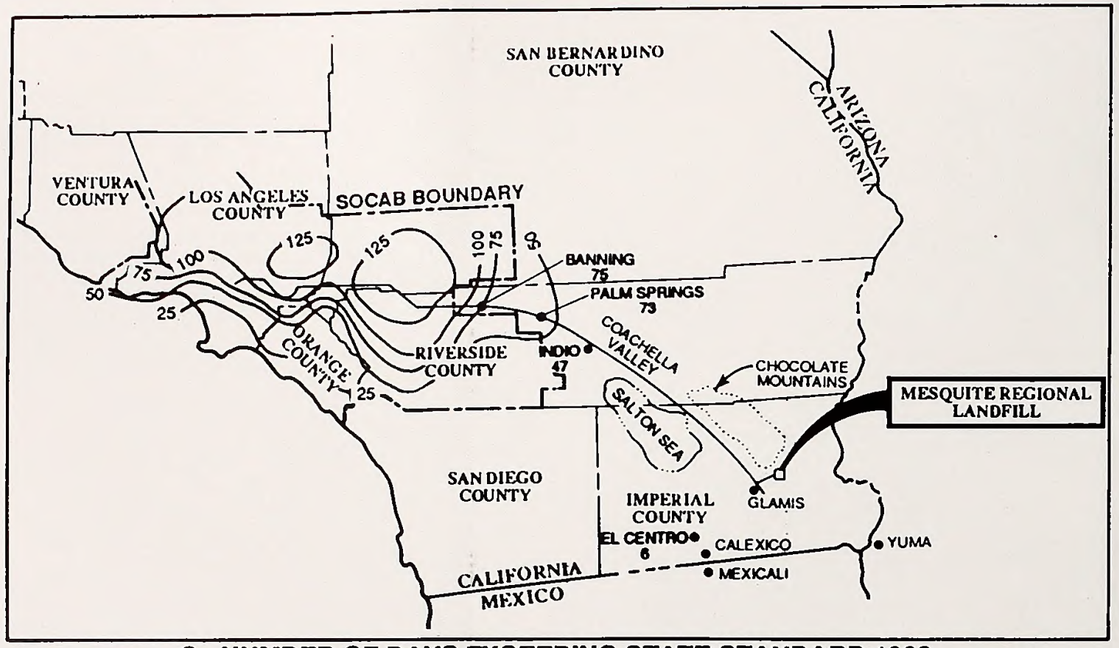
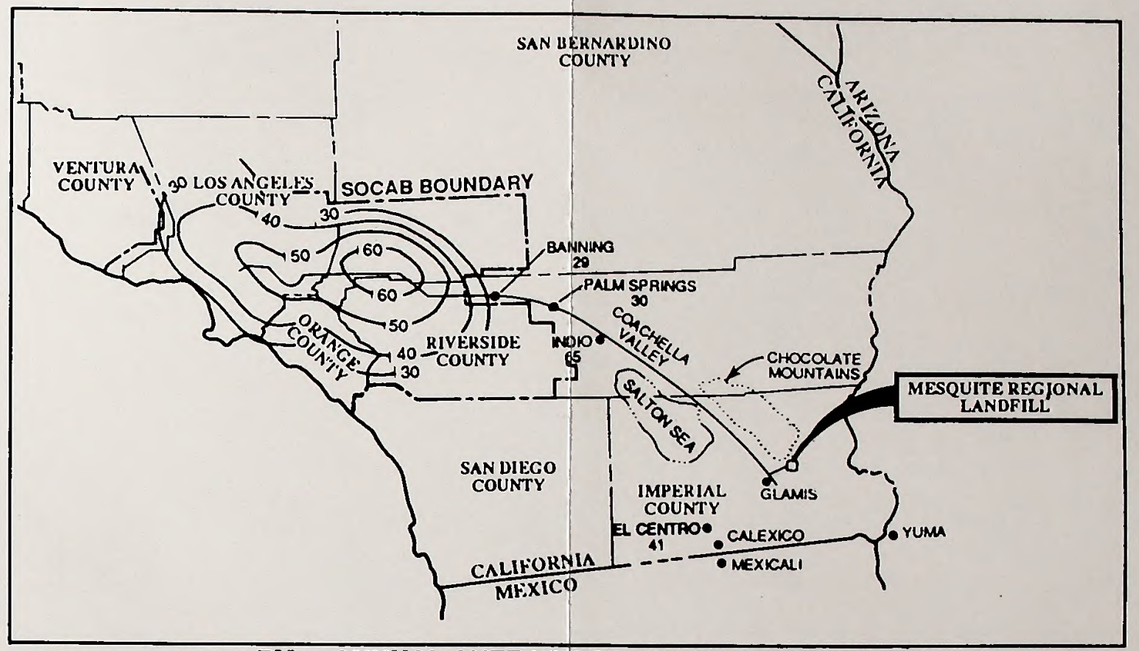


O_3 NUMBER OF DAYS EXCEEDING STATE STANDARD 1990

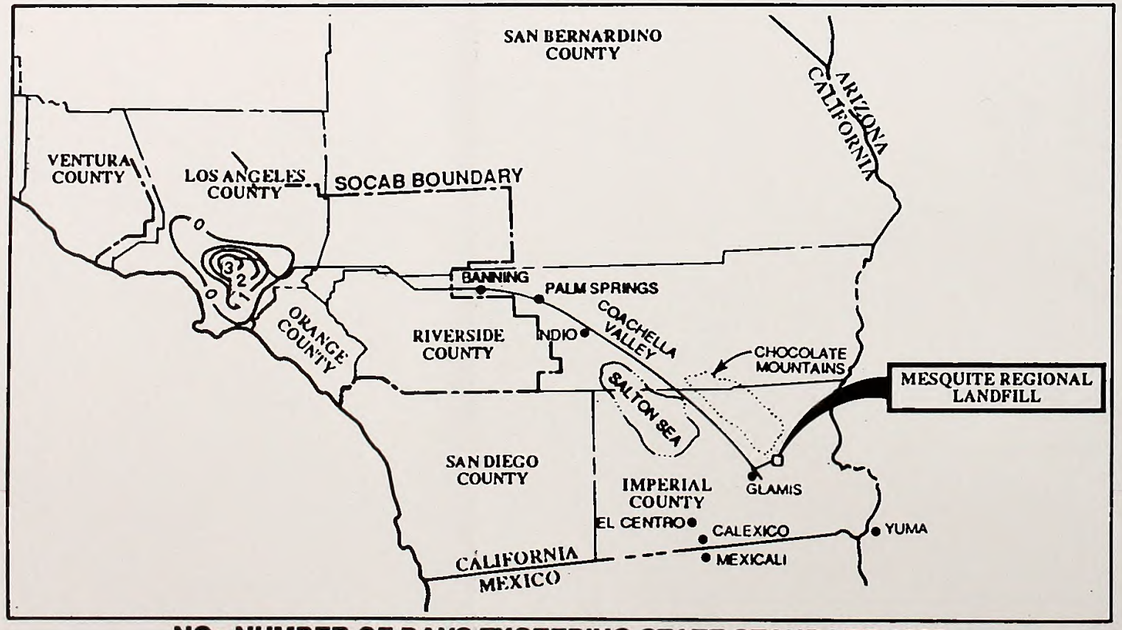
NOTE: 1-HOUR AVERAGE CONCENTRATION >0.09 ppm.



PM_{10} ANNUAL AVERAGE CONCENTRATION 1990

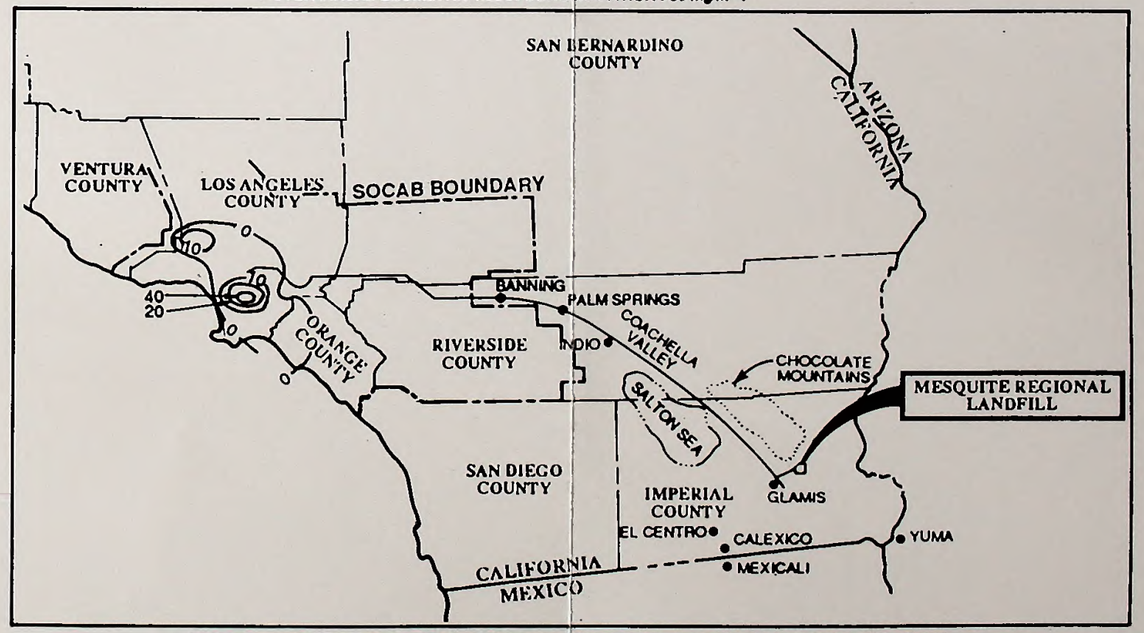
NOTE: ANNUAL GEOMETRIC MEAN CONCENTRATION >30 mg/m 3.

N



NO_2 NUMBER OF DAYS EXCEEDING STATE STANDARD 1990

NOTE: 1-HOUR AVERAGE CONCENTRATION >0.25 ppm.



CO NUMBER OF DAYS EXCEEDING STATE STANDARD 1990

NOTE: 8-HOUR AVERAGE CONCENTRATION >9.00 ppm.

LEGEND

125 — DAYS OF EXCEEDANCE IN SOCAB

EL CENTRO 6 — DAYS OF EXCEEDANCE AT INDIVIDUAL STATIONS

0 50 100 MILES

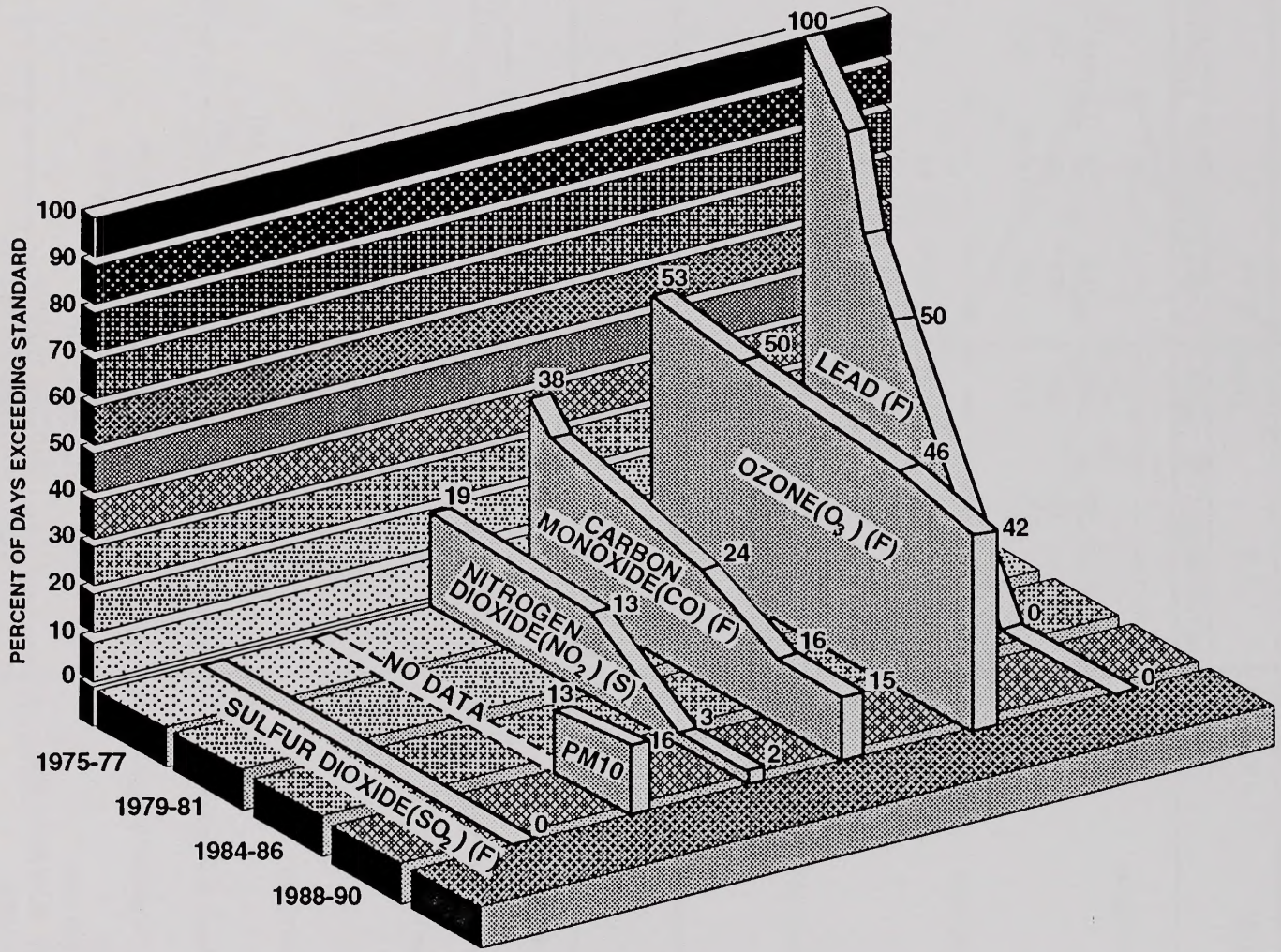
SCALE

Proposed Mesquite Regional Landfill

Number of Exceedance Days in SOCAB 1990

SOURCE: South Coast Air Quality Management District, 1991.

FIGURE 3-28



NOTE:

(F) = FEDERAL
(S) = STATE

SOURCE:
South Coast Air Quality Management District, 1991.

Proposed Mesquite Regional Landfill

Percent of Days Exceeding Levels of Federal or State Standard 1975 - 1990

FIGURE
3-29

TABLE 3-17

O_3 and PM_{10} Exceedances in the Coachella Valley
Proposed Mesquite Regional Landfill

O_3 Exceedances(1,2)

VARIABLE	YEAR						
	1986(2,3)	1987(3,4)	1988(5,6)	1989(5,7)	1990(5,8)	1991(5,9)	1992(9,10)
Number of Exceedance Hours							
Banning	376	409	527	525	358	276	NA(13)
Palm Springs	363	303	378	485	341	341	NA
Indio	-- (12)	250	(5)	361	166	213	NA
Number of Exceedance Days							
Banning	80	96	118	112	75	64	66
Palm Springs	80	74	99	108	73	72	69
Indio	–	41	(5)	76	47	48	45
Highest Concentration (ppbv)							
Banning	220	210	260	230	220	200	160
Palm Springs	180	170	200	190	170	180	150
Indio	80	160	50	160	160	180	140

PM_{10} Exceedances(1,2,11)

VARIABLE	YEAR						
	1986(2)	1987(4)	1988(6)	1989(7)	1990(8)	1991(9)	1992(10)
Number of Exceedance Days							
Indio	25	25	25	39	41	37	18
Palm Springs	–	5	8	17	9	14	4
Highest Concentration (ppbv)							
Indio	111	115	115	712	520	340	117
Palm Springs	–	121	77	292	83	197	175

Notes:

(1) O_3 "Season" = March through October.
(2) CARB, 1987.
(3) CAAQS = 100 ppbv.
(4) CARB, 1988; SCAQMD, 1988.
(5) CAAQS = 90 ppbv.
(6) CARB, 1989b; SCAQMD, 1989.
(7) CARB, 1990; SCAQMD; 1990b.
(8) CARB, 1991b; SCAQMD, 1991b.
(9) CARB, 1992a; SCAQMD, 1992a.
(10) SCAQMD, 1993.
(11) CAAQS = 50 µg/m3.
(12) -- = Insufficient data.
(13) NA = Not Available.

Source: Environmental Solutions, Inc., 1993.

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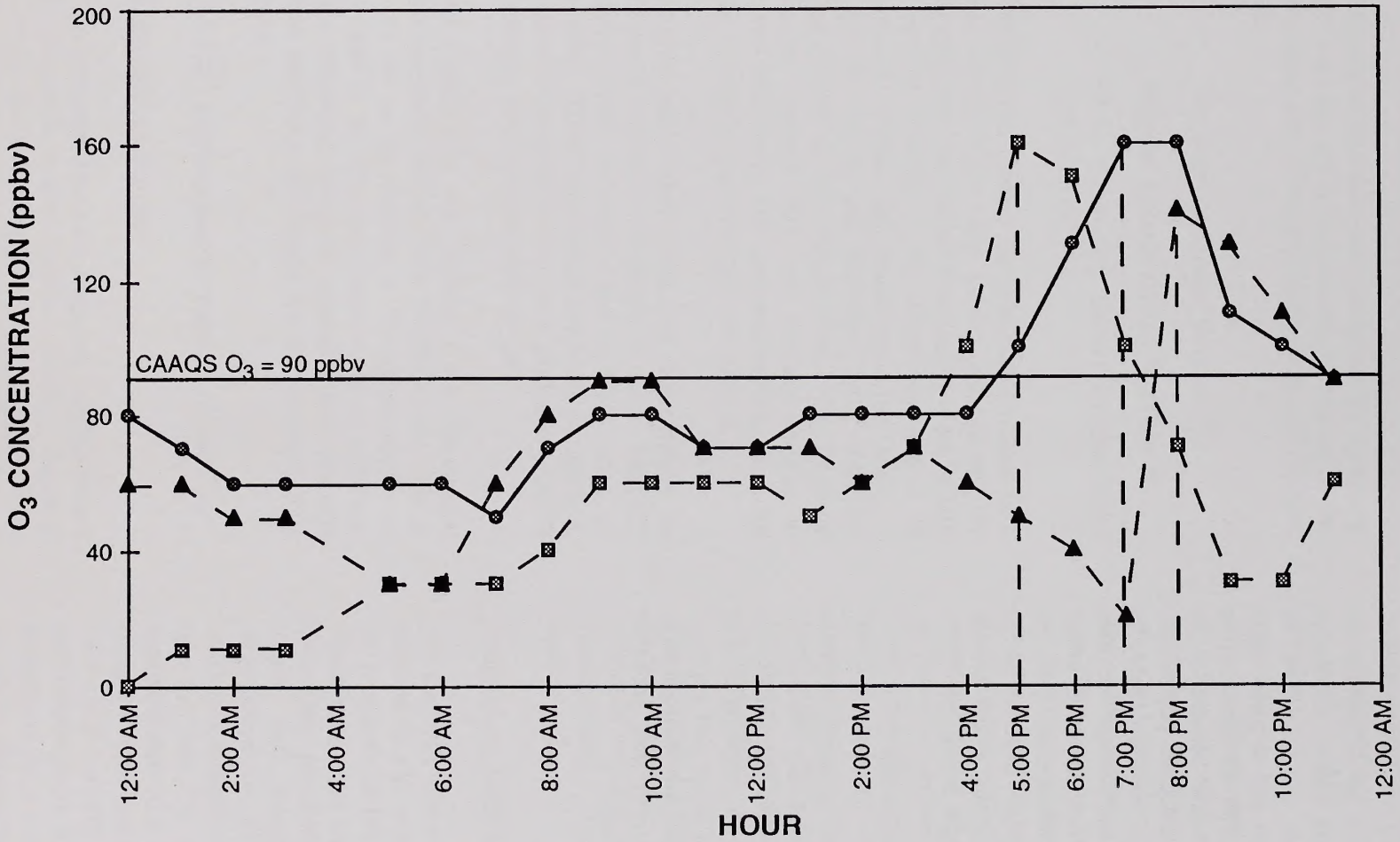

LEGEND

- INDIO
- PALM SPRINGS
- BANNING

SOURCE:
South Coast Air Quality Management District, 1993.

Proposed Mesquite Regional Landfill

Daily O3 Concentration Cycle for Exceedances at Indio, Palm Springs and Banning on August 15, 1992

FIGURE **3-30**

geothermal operations. At the proposed site, no substantial odors have been noticed by mine personnel over the period 1984 to present.

Odors are not reported to be a significant existing issue in the Coachella Valley. Odors are sometimes noticeable in areas close to agricultural uses of fertilizers and at some cattle operations. Odors in SOCAB are much more variable than for the desert areas, because of the land use distribution and increased population. Hydrocarbon odors are sometimes noticeable in the vicinity of oil refining and storage facilities and major highways. Agricultural odors associated with fertilizer application and livestock sometimes occur in undeveloped portions of the basin. Other types of odors may occur locally depending on specific industrial activities.

3.1.8.4 Offered Exchange Parcels

The properties proposed for exchange between the applicants and the BLM are located in SEDAB, and have similar weather, climate, air quality, and attainment status to Imperial County and Coachella Valley. The main difference is that parcels in the SRMNSA are mountainous, experience more precipitation, and probably have lower PM_{10} concentrations.

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3.1.9 LAND USE

3.1.9.1 Scope and Regulatory Status

Impacts to land uses are determined by reviewing the land use plans and policies pertaining to the proposed site. The applicable plans and policies are:

- The Imperial County General Plan
- Imperial County Zoning Regulations
- BLM California Desert Conservation Area (CDCA) 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, therefore, falls under the jurisdiction of the General Plan. The Imperial County General Plan was recently updated to more effectively and comprehensively plan for the County's long-term physical growth.

Zoning and other land use regulations in Imperial County are designed to ensure land use compatibility through a hierarchical system of zoning. These regulations allow the prohibition, within a designated zone, of a particular class of building, structure, premise, or use.

As directed by the Federal Land Policy and Management Act of 1976 (FLPMA), the CDCA was set up to manage a 25-million-acre area located in the deserts of southwestern California. The Proposed Action is located within this area and, therefore, falls under the jurisdiction of this plan.

3.1.9.2 Existing and Surrounding Land Uses

Proposed Landfill Site

The proposed Mesquite Regional Landfill would be located in eastern Imperial County. Imperial County borders Riverside County to the north; San Diego County to the west; the Federal Republic of Mexico to the south; and the State of Arizona to the east. The proposed landfill would be located north of SR 78, approximately 20 miles west of the California/Arizona border, and approximately 20 miles north of the Federal Republic of Mexico/ U.S. International Border (Figure 1-1).

The entire project area covers approximately 4,245 acres, with the actual landfill footprint covering approximately 2,290 acres. The proposed landfill site would be located south of the existing Mesquite Mine. A portion of the landfill would be located on lands controlled by Gold Fields (Figure 1-3). A portion of the proposed landfill would also be located on land (1,750 acres) presently under federal ownership, managed by the BLM. The BLM-managed land is currently undeveloped and unpopulated. The land currently controlled by Gold Fields has been fenced and closed to the general public since 1985. The lands within the project boundaries that are currently managed by the BLM are available for recreational use by the general public.

The Ultimate Land Use Element of the Imperial County General Plan has designated the proposed landfill site and rail spur ROW as "Recreational." These areas are zoned "S-Open Space."

Surrounding Land Uses

The currently operating Mesquite Mine is located adjacent to and within the project boundaries of the proposed landfill site, and is a permitted, non-conforming legal land use. The Mesquite Mine uses open pit mining and conventional heap-leach and ore-processing technologies. Approximately 32 million tons of rock are excavated annually to mine and process 8 million tons of ore. A self-guided overlook trail, approximately 0.8 miles in length, is located along the mine access road. This trail provides a view of the mine's operations as well as other information about the desert. This trail was built voluntarily as a joint effort by Gold Fields and the BLM, and was designed to educate visitors.

The CMAGR is located approximately two miles north of the proposed landfill site, and is used for military aircraft testing and training. The CMAGR is used actively by tactical aircraft devoted to live ordinance delivery. Mine operations are currently compatible with the CMAGR.

Public lands managed by the BLM are located to the west, south, and east of the site. These areas are generally undeveloped and unpopulated, and include a BLM multiple-use area to the west that has been withdrawn by BLM from entry, under the Classification and Multiple-Use Act, to protect salable mineral resources. A BLM-designated ACEC is located southeast of the proposed landfill site. This ACEC contains cultural and historical sites, including the Singer Geoglyphs (Figure 1-3). As shown on Figure 1-3, a portion of the Singer Geoglyphs ACEC (located north of SR 78) overlaps the footprint of the proposed landfill.

The nearest permanent residences are located at the Boardman and Glamis Beach Store areas, located 3 to 3.5 miles, respectively, southwest of the proposed landfill. These facilities serve visitors (primarily on winter weekends) to the ISDRA located approximately five miles to the west. This part of the dunes is the most intensively used recreation area in the California Desert, providing camping and OHV recreation for approximately 30,000 or more recreationers on winter holiday weekends. Recreation activities become much less common outside the sand dunes area. The Algodones Dunes ACEC, north of SR 78 and west of the project area, includes sand dunes used principally for passive recreation, scientific field research, wildlife viewing, photography, and hiking. Other lands surrounding the project area are occasionally used for recreational activities, as described in Section 3.1.10.

Cities closest to the landfill are Brawley and Palo Verde, which are located approximately 35 miles to the west and northeast, respectively. The total permanent population within a 10-mile radius of the site is estimated to be less than 20 persons (Environmental Solutions, Inc., 1992a).

Offered Exchange Parcels

In order for the landfill to be constructed as proposed, the Applicant would be required to execute a land exchange to obtain ownership of the BLM properties. As discussed in Section 2.1.2.1, the Applicant proposes to exchange, in fee simple, the surface and subsurface rights, including mineral rights, of all or the majority of 2,241.96 acres of land within the offered exchange parcels identified in Figures 2-4, 2-5, and 2-6 for the existing surface and subsurface rights, including mineral rights, on the 1,750 acres of federal land on-site within the project boundaries. The land exchange would be conducted with the BLM according to procedures authorized by FLPMA (FLPMA, 43 U.S.C. 1701 et seq.) and all regulations implementing this Act. These offered exchange parcels are located within the SRMNSA and near the Chuckwalla Bench ACEC. They have natural resource values that are similar to or higher than the value of BLM's land within the project area. Prior to the Record of Decision, the appraised values of the BLM land and offered exchange parcels will be determined.

The offered exchange parcels located within the SRMNSA are undeveloped. Most current activities are associated with horseback and hiking recreation. The SRMNSA was created to provide federal assistance and support to efforts of local communities to preserve the scenic, recreational, and biological resources within the Santa Rosa and San Jacinto Mountain Ranges. These ranges represent some of the most important natural attractions of the Palm Springs area. A combination of federal, state, and private land currently exists in the scenic area. An active BLM acquisition program is underway to consolidate public ownership of land in this area to better manage the natural resources.

The offered exchange parcels located near the Chuckwalla Bench ACEC are also undeveloped. Existing land use consists primarily of limited

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recreation over unmaintained and unpaved roadways, and braided washes. The proposed exchange parcels have environmental characteristics similar to those in the Chuckwalla Bench ACEC. This area has been identified as an area of critical environmental concern requiring federal management and protection because of the unique vegetation and wildlife present. In particular, similar to the Chuckwalla Bench ACEC, these offered exchange parcels are classified as Category I (highest quality) desert tortoise habitat, and are designated critical habitat for the desert tortoise. An ongoing BLM acquisition program exists to consolidate public ownership of lands in the Category I tortoise habitat area to better manage this important resource.

3.1.9.3 Adopted Land Use Plans and Policies

The use of land on the project site and the rail spur area is controlled by a number of plans and policies identified in Section 3.1.9.1. These plans are discussed below in greater detail.

Imperial County General Plan

As discussed previously, Imperial Countys General Plan was recently updated. 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.

Four elements in the General Plan are relevant to the Proposed Action. The Land Use Element, the Seismic and Public Safety Element, the Conservation and Open Space Element, and the Noise Element. The first three elements include specific goals and objectives that must be considered for the Proposed Action. The Proposed Action must also be consistent with the Noise Element; however, the specific goals and objectives of the Noise Element relate to the noise criteria developed within the element.

Land Use Element. The Land Use Element guides the decision makers, staff, and the public in 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 the 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 ten 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."

The purpose and specific objectives of each element of the County of Imperial Draft General Plan along with an analysis of the consistency/inconsistency with each relevant General Plan Objective is provided in Section 4.1.9 of this EIS/EIR.

Noise Element. The Noise Element, contained within the General Plan, provides a program for incorporating noise issues into the land use planning process, with a goal of minimizing adverse noise impacts to receptors that are sensitive to noise. The Noise Element identifies existing and future noise sources, and defines noise-sensitive land uses. The element establishes

goals, objectives, and procedures to protect the public from noise intrusion. The Noise Element also provides noise level criteria to be used to determine compatibility with all land use categories.

Zoning

The County has zoned the proposed project site, rail spur, and surrounding area as S-Open Space. The S-Open Space Zone classification permits multiple use of the area, consistent with the objectives of the Open Space Element of the Imperial County General Plan (Imperial County, 1973b).

BLM California Desert Conservation Area Plan

The proposed project site and rail spur area are located within the BLM CDCA, and are 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 formulated by FLPMA. This law was passed by Congress in 1976 to direct the management of the public lands of 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 effect that BLM-managed public lands would have on the other private lands included in the CDCA. Section 601 of 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 resource values so that they are used in a combination that will 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 period 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.

To aid in achieving 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 from 1981 to 1990. Figure 3-31 presents the CDCA Plan Map, including Plan amendments.

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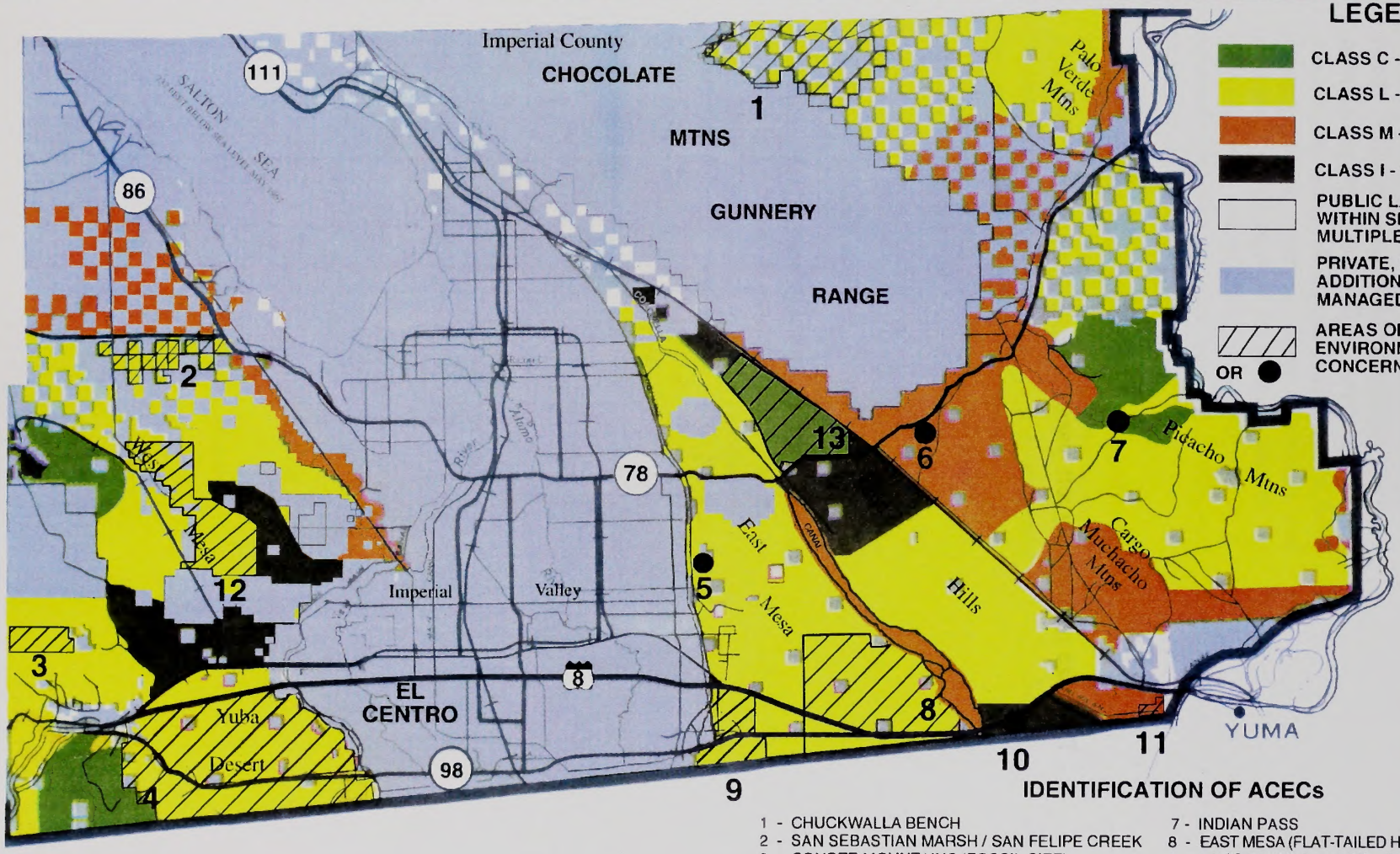

LEGEND

- CLASS C - CONTROLLED
- CLASS L - LIMITED
- CLASS M - MODERATE
- CLASS I - INTENSIVE
- PUBLIC LANDS NOT WITHIN SPECIFIC MULTIPLE-USE CLASSES
- PRIVATE, STATE, AND ADDITIONAL FEDERALLY MANAGED LANDS
- AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACECs)
- OR ●

IDENTIFICATION OF ACECs

1 - CHUCKWALLA BENCH
2 - SAN SEBASTIAN MARSH / SAN FELIPE CREEK
3 - COYOTE MOUNTAINS (FOSSIL SITE)
4 - YUHA BASIN
5 - LAKE CAHUILLA ACECs (NOs. 2 AND 3)
6 - SINGER GEOGLYPH
7 - INDIAN PASS
8 - EAST MESA (FLAT-TAILED HORNED LIZARD HABITAT)
9 - LAKE CAHUILLA ACECs (NOs. 5 AND 6)
10 - PLANK ROAD
11 - PILOT KNOB
12 - WEST MESA
13 - ALGODONES DUNES ACEC

NOTE: The purpose of this map is to aid in the identification of an Alternative Site for comparison to the proposed Mesquite Regional Landfill Site. Detailed information regarding BLM Land Use Designations in Imperial County should be confirmed with the BLM.

SOURCE: BLM CDCA Plan, 1980. Includes 1981 to 1990 Plan Amendments.

Prepared by Environmental Solutions, Inc., 1993.

Proposed Mesquite Regional Landfill

BLM Land Use Designations

FIGURE 3-31

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The proposed project and the rail spur area are mostly designated as Multiple-Use Class M. This designation provides for balanced use between higher-intensity uses and protection of public lands. This designation allows mining, livestock grazing, energy and utility development, and recreational uses. Management of Class M lands is designed to conserve desert resources and mitigate any damage to those lands caused by permitted use (BLM, 1980). Its purpose is to provide for concentrated use of lands and resources to meet human needs.

The management guidelines (1987 amendment) indicate that new waste disposal sites are not allowed on BLM-managed public lands. However, the guidelines indicate that locations suitable for waste disposal, when found on Class M lands, may be transferred to other ownership through sale or transfer.

In support of the goal of the CDCA and FLPMA, special areas designated Areas of Critical Environmental Concern (ACEC) have been identified that possess rare, unique, or unusual qualities of scientific, educational, cultural, or recreational significance. A management prescription is developed for each proposed ACEC area prior to designation. A portion of the 1,253-acre Singer Geoglyphs ACEC overlaps the project site (Figure 1-3). The portion of the ACEC located south of SR 78 has been determined to have cultural resource values. There are no cultural resource values within that portion of the Singer Geoglyphs ACEC located north of SR 78. The General Management Requirements determined for this ACEC include:

- Control and Sign User/Vehicle Access;
- Increase Field Presence;
- Restrict Mineral Exploration and Development; and
- Conduct Intensive Resource Inventory.

3.1.10 RECREATIONAL RESOURCES

3.1.10.1 Scope

This section examines existing recreational resources in the vicinity of the proposed landfill that could be affected by the construction and operation of the landfill. This section also provides a description of the recreational resources at the offered exchange parcels.

3.1.10.2 Recreational Resources in the Vicinity of the Proposed Landfill Site

The lands surrounding the project landfill site are used for recreational activities including rockhounding, scattered site camping, OHV use, target shooting, and hunting. Recreation activities are centered primarily in the Glamis area of the ISDRA, which is extensively used for OHVs. The sand dunes are about five miles southwest of the project site. On winter holiday weekends, the ISDRA is visited by 30,000 or more OHV enthusiasts and other campers (Environmental Solutions, Inc., 1992a).

The BLM has collected data regarding the use of the area surrounding the proposed project site (Recreation Area 16, Figure 3-32). This area was surveyed during select winter weekends from October 1989 to May 1990. Table 3-19 reflects the approximate number of camping units and the number of visitors in this area for two-day, three-day, and four-day weekends. As populations in Southern California, Arizona, and other areas continue to grow, it is expected that the demand for recreational resources, such as those provided in the vicinity of the proposed project site, will also grow.

A self-guided overlook trail, approximately 0.8 miles in length, is located at the Mesquite Mine. This trail provides a view of the mining operations as well as information on the native plants and animals, the local geology, and multiple use public lands. This trail was built as a joint effort by Gold Fields and the BLM, and was designed to educate visitors about contemporary mining practices, public land management, and the natural environment. An interpretive brochure for the trail was also developed by Gold Fields and the BLM. Several thousand visitors use the trail each year, including school children and local groups.

3.1.10.3 Wilderness Study Areas

As directed by FLPMA and the Wilderness Act of 1964, all BLM-managed lands in California were inventoried and specific areas were identified as wilderness study areas (WSAs). WSAs in the vicinity of the proposed landfill site are shown on Table 3-20.

3.1.10.4 Offered Exchange Parcels

The offered exchange parcels are located in the SRMNSA and near the Chuckwalla Bench ACEC. Recreational activities in the SRMNSA are limited to passive activities such as horseback riding and hiking. Existing or allowed activities on the offered exchange parcels near the Chuckwalla Bench ACEC consist primarily of limited recreation over unmaintained and unpaved roadways, and braided washes.

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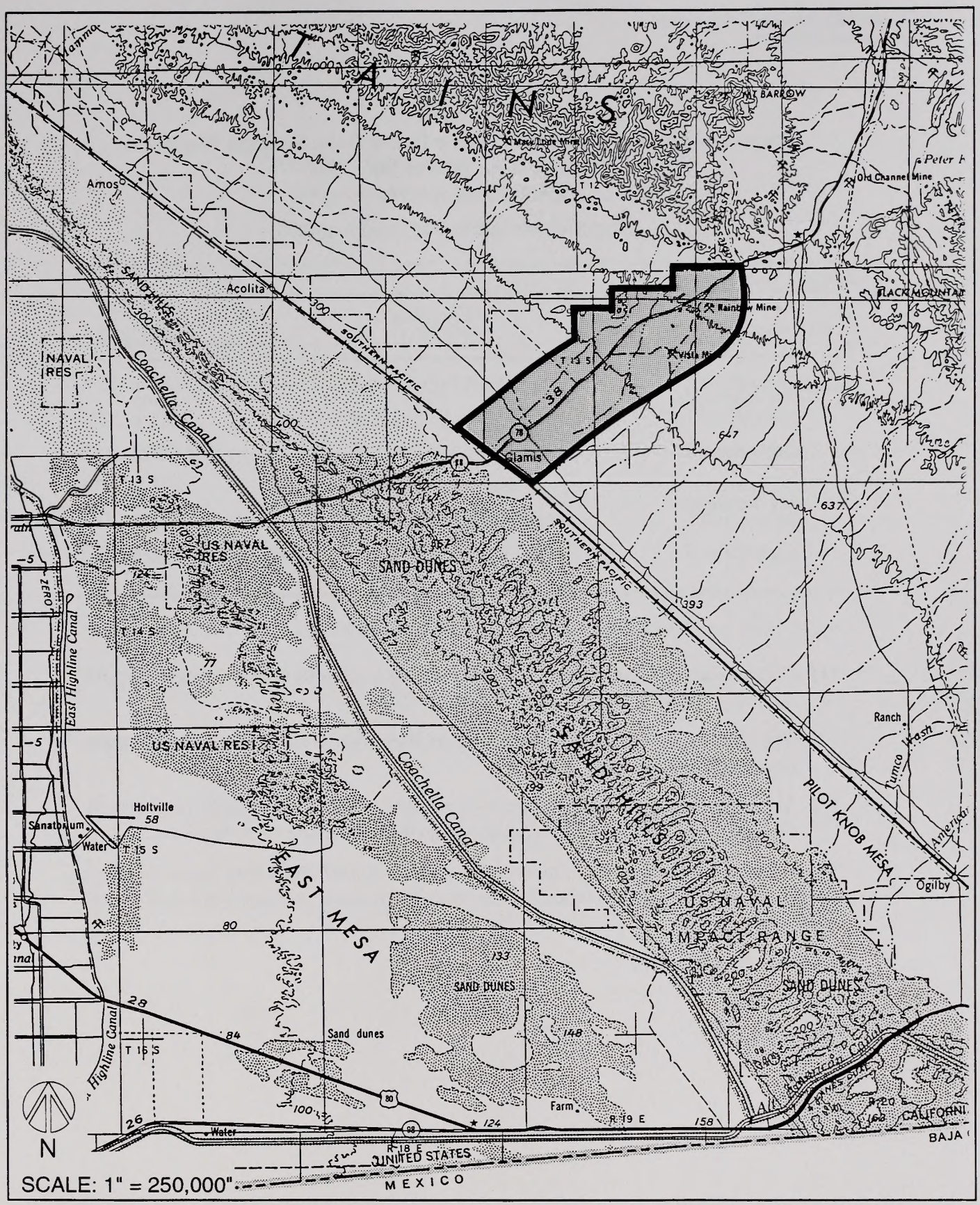

SOURCE: Bureau of Land Management, 1993.	Proposed Mesquite Regional Landfill **Recreational Area Number 16**	FIGURE **3-32**

TABLE 3-19

Bureau of Land Management Visitor Count Data, Selected Weekends from October 1989 to May 1990 for Recreation Area 16

Proposed Mesquite Regional Landfill

	Camping Units (1)	Visitors (2)
2-day weekends	270	945
3-day weekends	567	1,985
4-day weekends	265	938
Total (3)	1,102	3,858

Notes:

(1) The number of camping units counted during weekends between October 1989 and May 1990.

(2) The number of visitors is estimated by multiplying the number of camping units observed by 3.5 persons per unit.

(3) Totals presented are less than the total number of visitors during the period from October 1989 to May 1990 because counts were not made every weekend.

Counts were conducted on an opportunistic basis. Actual totals may be greater than those shown. Use in 1991 and 1992 is projected to have increased at a rate of 5% each year.

Source: BLM, 1993b.

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TABLE 3-20

Wilderness Study Areas in the Project Vicinity
Proposed Mesquite Regional Landfill

WSA Number	WSA	Approximate Distance/ Direction from the Proposed Site
CDCA 352	Palo Verde Mountains	13 miles/northeast
CDCA 355	Indian Pass	11 miles/east
CDCA 355A	Picacho Peak	11 miles/east
CDCA 356	Little Picacho Peak	14 miles/southeast
CDCA 362	South Algodones Dunes	7 miles/south
CDCA 360	North Algodones Dunes	4 miles/west

Note: WSA No. 360, North Algodones Dunes, is also the Algodones Dunes ACEC.

Source: BLM, 1993a.

3.1.11 VISUAL RESOURCES

3.1.11.1 Scope

This section provides a discussion of the existing visual resources within the proposed landfill site, along the rail spur ROW, and at the BLM exchange parcels, that could be affected by the construction and operation of the proposed landfill and the land exchange. The effect that a project could have on visual resources would not be limited to the project site. Rather, the degree to which a project could affect the visual quality of a landscape depends on the visual contrast created between a project and the surrounding existing landscape (BLM, 1986b).

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 proposed project site is located mostly within a Multiple-Use Class M designated area within the CDCA. Multiple-Use Class M provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources that permitted uses may cause (BLM, 1980). A small part of the proposed site contains that part of the Singer Geoglyphs ACEC that occurs north of SR 78. Within this ACEC, the management focus is primarily to protect cultural resources. The visual impacts of any surface disturbing activities would be addressed on a case-by-case basis.

Outside of the CDCA area, Visual Resource Management (VRM) Classes are used to prescribe the amount of change allowed in the characteristic landscape. A parallel can be drawn between the Multiple-Use Classes applied to the CDCA and the VRM Classes applied to other BLM-managed lands. The objectives of Multiple-Use Class M are similar to the objectives of VRM Class III. VRM Class III areas have a "low visual sensitivity" resource value. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape may be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominate natural features of the characteristic landscape (BLM, 1984).

3.1.11.2 Visual Character

Proposed Landfill Site

The site lies adjacent to and north of SR 78, a rural, low-volume highway, carrying approximately 1,250 vehicles per day (Caltrans, 1992). The proposed landfill site consists of relatively flat terrain containing a series of parallel drainage channels, separated by slightly elevated desert pavement areas. Sparse vegetation and sun baked coarse gravels create a reddish-brown and green texture across much of the project area. Elevated overburden and ore residue piles from mining operations, smooth in texture and free of most vegetation, contrast with the desert floor, both in texture and color. The Mesquite Mine is an industrial-looking land use that exists on and adjacent to the proposed site. Noticeable features include the previously described overburden and ore-residue piles, the ore conveyor and associated industrial dome, and buildings. A natural relief feature, Brownie Hill, rises over 300 feet above the site.

The project region is characteristic low desert, with little soil and sparse vegetation. The Chocolate Mountains, a narrow range running northwest to southeast, rise to the east of the project to an elevation of approximately 2,500 feet. The Chocolate Mountain "foothills" lie north, in the visual "backdrop" of the project site. The other element of visual interest is provided

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by the "Algodones Dunes", a large sand dune area located approximately seven miles southwest of the mining area.

A more detailed description of existing land uses on and surrounding the proposed landfill site is provided in Section 3.1.9 (Land Use) of this EIS/EIR.

Offered Exchange Parcels

The proposed land transfer would result in the exchange by the BLM of public land located in and around the proposed project site for land in the SRMNSA that has been recognized by the federal government for its unique scenic value.

The SRMNSA encompasses approximately 200 square miles of mountainous land located primarily within Riverside County. Elevations run from sea level near the mouth of Martinez Canyon in the southeastern portion to 11,000 feet at San Jacinto Peak. The offered exchange parcels include 321 acres within the SRMNSA. These properties are characterized by varied types of vegetative cover, ranging from creosote bush shrub community to alpine forest.

The offered exchange parcels near the Chuckwalla Bench ACEC are located north of the Chocolate Mountains in an area that is characterized by a series of mountain ranges and intervening basins. Elevations range from 1,200 to 4,000 feet across the parcels offered in the exchange.

A more detailed description of the lands offered for exchange is provided in Section 3.1.9, Land Use, of this EIS/EIR.

3.1.11.3 Scenic Quality

The majority of the project site has been disturbed by mining activities. There is minimal disturbance to the surrounding areas. For the most part, the surrounding landscape has retained its natural character. Scenic quality refers to the value of a landscape from a visual perception point of view. Therefore, scenic quality describes the overall scenic quality of the project site within the context of the surrounding environment.

The project site and surrounding lands are characterized by undulating terrain containing a series of parallel drainage channels with accompanying vegetation. Drainage patterns and vegetation form reddish brown to dark gray and light to dark green lines across the desert terrain. The terrain is abruptly changed by occasional dark-colored, rugged hills that reach elevations of up to 400 feet above the surrounding desert floor. The dark form of the Chocolate Mountains, located north of the project site, is seen as a visual backdrop north of SR 78. These mountains increase the area's scenic appeal. Man-made modifications to the area over the past 100 years have been related primarily to mineral exploration and development. These modifications, such as the Mesquite Mine, have changed the scenic character of the area on a local basis. A system of informal (unpaved) roads crosses much of the area.

3.1.11.4 Visibility

The proposed landfill site is visible to the public primarily from SR 78, a rural, low-volume highway that runs adjacent to the southern side of the project area. SR 78 is not a designated scenic route (Imperial County, 1993b). Buildings, facilities, and overburden stockpile areas associated with the Mesquite Mine and processing facilities are visible to motorists traveling on SR 78. Given the general expansiveness and undeveloped nature of the area, the visual impression is locally dominated by these.

Views in the region are expansive, particularly during periods of clear-weather. The primary barrier to visibility is the Chocolate Mountains. Air pollution is the major factor limiting visibility in Imperial County.

The Mesquite Mine is lit up at night to allow for nighttime operations. This lighting produces some fugitive illumination that is seen as a glow in the sky above the mine facilities. This light

source would be eliminated with closure of the mine, anticipated to occur in 10 to 15 years.

Four viewpoints were chosen to illustrate the most important views toward the project site along SR 78 (Figure 3-33). These represent a viewpoint along a travel route, or at a use area or a potential use area, where the view of a management activity would be most revealing (BLM, 1984). Photo-simulations of future conditions (i.e., once the Mesquite Mine is closed) from each of the viewpoints are used to illustrate the visual character and visibility of the project site from nearby affected areas. These simulations are used for the analysis of existing visual conditions. A description of the project site view from each identified viewpoint is presented below.

View Point No. 1

View Point No. 1 (Figure 3-34) is located at the Osborn Overlook, approximately 10 miles southwest on SR 78 from the proposed landfill site. It is from approximately this point that the project site and existing mining activities would first come into view for motorists traveling eastbound on SR 78 and visitors to Osborn Overlook. The overburden piles associated with mining activities are seen as a light contrasting line, just below the horizon. However, the view is dominated by the light-colored, rolling topography of the Algodones Dunes (foreground) and the contrasting dark, rugged topography of the Chocolate Mountains (background) (Environmental Solutions, Inc., 1987a, and BLM, 1987).

View Point No. 2

From View Point No. 2, eastbound traffic on SR 78 views the project site from a distance of approximately two miles. Existing views are still dominated by the surrounding desert (Figure 3-35). The Chocolate Mountains are visible in the distant background. A series of overburden piles associated with mining operations are visible below and at the horizon at the center of the field of view. These stockpiles, with their lighter color, smooth texture, and flat-topped forms, have resulted in a low modification to the characteristic landscape (Environmental Solutions, Inc., 1987a, and BLM, 1987).

View Point No. 3

From View Point No. 3, travelers along SR 78 have close range views of the proposed landfill project site (Figure 3-36). The existing foreground view is dominated by desert pavement. Background views are dominated by the light-colored overburden piles and darker heap leach piles, associated with existing mining operations. These piles are partially screened by intervening vegetation. The Chocolate Mountains are seen intermittently, over the tops of the overburden and heap leach piles.

View Point No. 4

For westbound travelers on SR 78, the proposed landfill project site first comes into view at a distance of approximately five miles northeast of the site. However, because of the screening effect of intervening topography, clear views of the project site from the east do not occur until approximately three miles northeast of the site. From this point (View Point No. 4), the flat-topped overburden piles associated with mining activities become clearly visible, framing most of the horizon line (Figure 3-37). A natural, conical shape hill is seen just in front of the contrasting overburden piles. Foreground-middleground views are dominated by the flat topography and sparse vegetation of the natural desert landscape.

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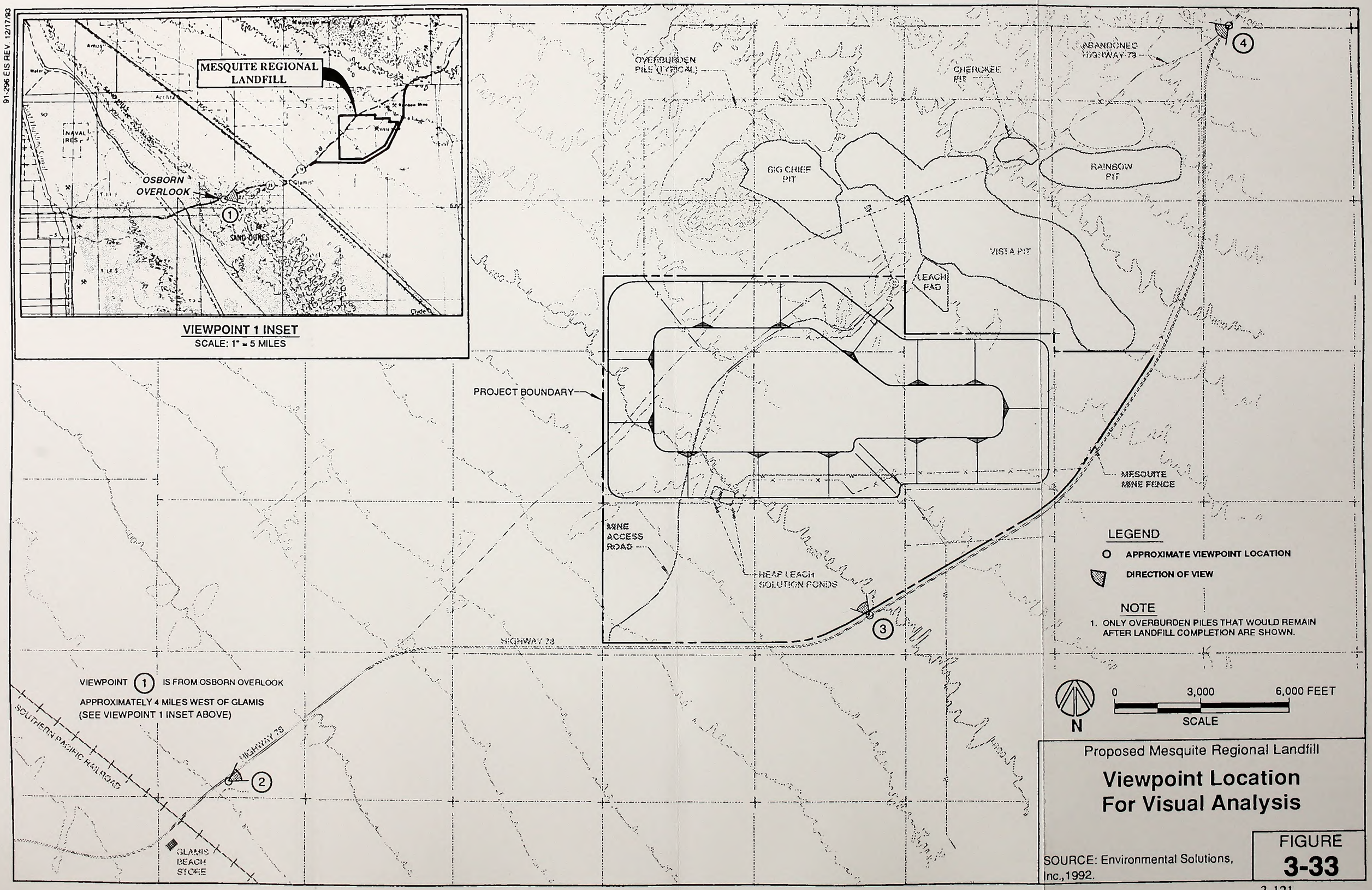

Proposed Mesquite Regional Landfill

Viewpoint Location For Visual Analysis

SOURCE: Environmental Solutions, Inc.,1992.

FIGURE **3-33**

MESQUITE MINE ONLY: View eastward from Osborne Overlook about eight miles from the proposed regional landfill site. After approximately the year 2005, when mining activities have been completed, the remaining overburden piles would be visible as a light line (center) against the dark backdrop of the Chocolate Mountains.

Source: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Viewpoint #1

FIGURE

3-34

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MESQUITE MINE ONLY: View northeast from Highway 78 about 3.5 miles from the proposed regional landfill site after approximately the year 2005. Overburden piles remaining after completion of mining activities would be visible in the distance as light brown in color with some striations due to the natural variation in the rock color, the method of deposition, and drainage.

Source: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Viewpoint #2

FIGURE

3-35

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MESQUITE MINE ONLY: View northwest from Highway 78 about one mile from the proposed regional landfill site after approximately the year 2005. In addition, to the tops of remaining Mesquite Mine overburden piles, the Chocolate Mountains and Brownie Hill are visible in the distance.

Source: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Viewpoint #3

FIGURE

3-36

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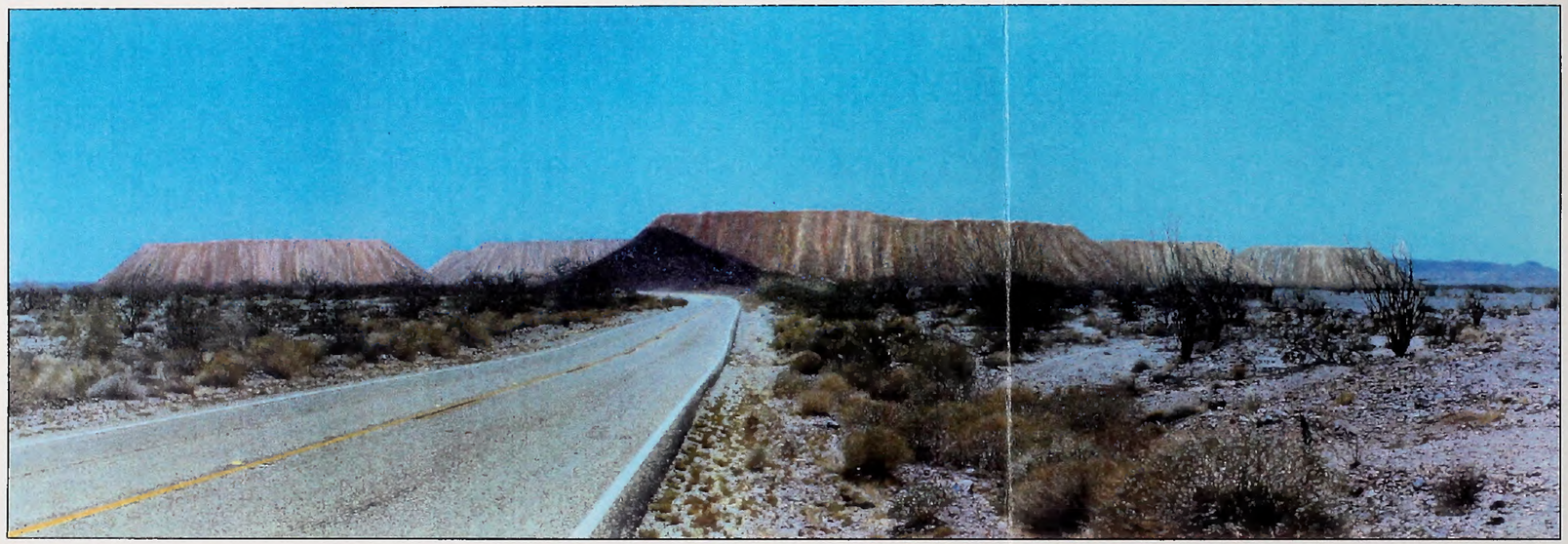

MESQUITE MINE ONLY: View southwest from Highway 78 about 2.5 miles from the proposed landfill site after approximately the year 2005. The remaining Mesquite Mine overburden piles would form most of the horizon line.

Proposed Mesquite Regional Landfill

Viewpoint #4

Source: Environmental Solutions, Inc., 1992.

FIGURE **3-37**

3.1.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

3.1.12.1 Scope

This analysis of health and safety issues focuses on project-related impacts that could potentially affect the public or project personnel. Many of the potential impacts would occur on-site and would be directly associated with the various aspects of daily landfill operations (e.g., worker safety). For convenience, the affected environment discussion and the potential environmental impact analysis for the various on-site landfill operations are presented together in Section 4.1.12.

Some indirect health and safety impacts could occur off-site. Delivery of MSW residue in trains by SP and potential delivery of MSW residue and/or agricultural plant material in trucks from within Imperial County or other landfill generated deliveries could expose individuals along the rail-haul route and in the vicinity of SR 78 to potential health and safety impacts. The affected environment associated with these related impacts is primarily described in Section 3.1.6 (Transportation) and 3.1.9 (Land Use). The potential health and safety analysis of these related impacts is contained in Section 4.1.12 (Environmental Health and Safety). Air emissions from the proposed landfill likely would be airborne toxics. The affected environment and potential airborne toxics health and safety impacts are discussed in Sections 3.1.8 and 4.1.8 (Air Quality), respectively.

This EIS/EIR describes the potential effects of interruptions to the proposed rail-haul delivery system that would be operated by SP. All or the vast majority of infrequent interruptions would be accommodated by surge capacity in the system and alternative disposal arrangements. An evaluation of the safety aspects of rail cars delayed in hot-desert conditions is included to consider the effects of potential long delays along the rail-haul route. In unusual emergency circumstances, MSW residue could be shipped to the proposed regional landfill by truck for a short period (see Section 4.6.2). The potential health and safety aspects of this possibility are analyzed.

3.1.12.2 Applicable Regulations

The primary laws and regulations that would apply to environmental health and safety at the proposed landfill site include:

- The federal Occupational Health and Safety Act and the California Occupational Health and Safety Act. These laws establish strict requirements for maintaining a safe workplace.

- CCR Titles 14 and 23 which regulate landfill design and operation procedures for the protection of general public health and safety.

Health and safety requirements for the rail transport of MSW residue to the landfill would be the responsibility of SP. The railroad is operated under U.S. DOT and PUC regulations. In addition, the applicant would be required to conform to all hazardous waste regulations applicable to the storage and disposal of hazardous wastes that are discovered and removed from the MSW residue, on- site, or generated on-site.

3.1.13 SOCIOECONOMICS

This section discusses the existing socioeconomic environment and identifies the potential socioeconomic impacts that could result from the development of the Proposed Action.

3.1.13.1 Scope

The scope of the socioeconomics discussion presented here and in Chapter 4.0, Section 4.1.13, is based on public and interested agency input and is limited to employment, income, and demographic effects within Imperial County because the majority of project-related effects would occur in Imperial County.

The issue of socioeconomic effects outside of Imperial County was raised at the Indio Public Scoping Meeting (May 28, 1992). The proposed landfill would be offered by the Applicant as an alternative disposal site for MSW residue generated in the Los Angeles Basin. Employment and income losses would occur in the Los Angeles Basin as existing landfills are closed and future landfills are either not opened or scaled back if MSW residue was shipped out of the County. New solid waste industry jobs would be created at transfer stations, MRFs, and intermodals as these facilities are developed to meet the recycling requirements of AB 939 and to process MSW for shipping to the proposed regional landfill. In any event, the net socioeconomic change in the Los Angeles Basin would be incremental and certainly below a level of significance.

The property value effects of MSW residue rail haul along the SP Main Line ROW are addressed because this issue was raised at the Indio Public Scoping Meeting.

3.1.13.2 Employment

<u>Existing Employment and Income in Imperial County</u>

Employment data for Imperial County and the State of California are presented in Table 3-20. In 1991, the County of Imperial's civilian labor force was estimated to be 48,825 persons (EDD, 1991). Of this number, 38,450 were employed and 10,375 were unemployed. The unemployment rate was 21.3 percent. Unemployment in Imperial County was far above the state average of 7.5 percent. More recent data indicates that the County's civilian labor force had grown to approximately 53,600 persons by June of 1993 (EDD, 1993). Of this labor force, 40,625 were employed and 12,975 were unemployed. The unemployment rate was 24.2 percent in June of 1992, an increase of 1.9 percentage points from the 1991 unemployment rate.

By 1994, the civilian labor force is expected to decline to 48,285 with employment and unemployment estimated to be 38,865 and 9,420 respectively (EDD, 1992). This will result from a decreased labor force participation rate in Imperial County.

The following employment data were obtained from the U.S. Bureau of Economic Analysis (U.S. BEA) Regional Economic Information System (1993). The employment data present two different measures of employment; place of residence and place of work. Employed labor force is measured by place of residence (i.e., where a worker resides). Wage and salary employment measures the number of jobs by place of work, a measure of the actual number of jobs within a given area. The number of jobs by place of work presented below is different than the number of jobs by place of residence presented in the preceding paragraph (i.e., there were approximately 1.29 jobs in Imperial County in 1991 for every employed worker that lived in Imperial County). The following examples will help the reader understand the differences between these two measures of employment (place of work and place of residence) :

1. A worker lives in Imperial County and works in a different county, say Riverside County. This worker's job would be included as one job by place of residence in Imperial County but would not be counted as a job by place of work in

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TABLE 3-20

1991 Employment, Imperial County and the State of California

	Imperial County		State of California	
Civilian Labor Force	48,825 (a)		14,833,000 (b)	
Employed Labor Force	38,450		13,714,000	
Unemployed Labor Force	10.375		1,119,000	
Unemployment Rate	21.3%		7.5%	
Wage and Salary Employment (c)				
Agricultural Services, Forestry & Fishing	7,621	16.9	305,538	1.9
Mining	744	1.7	49,901	0.3
Construction	2,098	4.7	752,453	4.7
Manufacturing	1,708	3.8	2,099,764	13.2
Transportation & Public Utilities	1,596	3.5	684,773	4.3
Wholesale Trade	2,345	5.2	785,092	4.9
Retail Trade	8,296	18.4	2,556,118	16.0
F.I.R.E.*	1,774	3.9	1,465,134	9.2
Services	8,442	18.9	4,813,665	30.2
Government	10,362	23.0	2,443,078	15.3
Total Non-Agricultural	37,365		15,649,978	
Total	**44,986**		**15,955,516**	

Notes: Numbers may not add due to rounding. Employed labor force is measured by "place of residence." Total wage and salary employment is measured by "place of work." Therefore, employed labor force and total wage and salary employment are not the same number.
(*) F.I.R.E. = Finance, Insurance and Real Estate.

Source: (a) EDD 1992.
(b) Ca Dept. of Finance, 1992 .
(c) U.S. BEA, 1993.

Imperial County (i.e., the worker's job would be counted as a job by place of work in Riverside County).

2. A worker lives in Imperial County and has two jobs in Imperial County. This worker's jobs would be counted as one job by place of residence in Imperial County (i.e., because the worker is one resident in Imperial County) and two jobs by place of work in Imperial County.

3. A worker lives in Riverside County and works in Imperial County. This worker's job would not be counted as a job by place of residence in Imperial County but would be counted as a job by place of work in Imperial County.

4. A worker lives in Imperial County and has 10 jobs in one year (e.g., a farmworker who travels from one farm to another within Imperial County to harvest crops). This worker's jobs would be counted as one job by place of residence and 10 jobs by place of work in Imperial County.

In past years, the agricultural sector was the largest employer in Imperial County. Approximately 3,950 agricultural jobs were lost in Imperial Valley between 1989 and 1991. Agricultural employment dropped from 25 percent to 16.9 percent of jobs in the County, and from the largest to the fourth largest employment sector in the County by 1991. The government sector was the largest employer (23 percent) followed by the services sector (18.9 percent) and the retail trade sector (18.4 percent) in 1991. The largest economic sector in 1991, by number of jobs, in the State of California was the services sector at 30.2 percent followed by the retail trade sector at 16.0 percent. Government was the third largest sector of the state economy in 1991, by number of jobs, at 15.3 percent. Agriculture was ranked ninth largest by number of jobs of the 10 primary economic sectors in the State at approximately 1.9 percent. For the 38,450 employed workers in Imperial County in 1991, there was an estimated 49,867 jobs for an average of 1.29 jobs per worker. This compares to an average number of jobs per worker of 1.18 for the State of California in 1991.

By 1997, Government employment in Imperial County is expected to be approximately 12,500, an increase of over 2,000 jobs, primarily associated with increased employment at the Calipatria State Prison, a new State prison at Seeley, and increased employment associated with the proposed Border Crossing in Calexico. During this same period, agricultural jobs are expected to continue to decline in Imperial County (EDD, 1992).

Wage and salary earnings in Imperial County totaled approximately $933.1 million in 1991, approximately 0.2 percent of the total wage and salary earnings in the state (Table 3-21). The largest sector, by earnings, in Imperial County in 1991 was government, with 32.8 percent of the total, followed by services with 18.2 percent of the total. For the state, the largest sectors in 1991, by earnings, were services (28.9 percent) and manufacturing (17.6 percent). Agriculture was the fourth largest sector by earnings in the County in 1991. Agriculture was the ninth largest sector by earnings in the state economy in 1991.

Agricultural jobs in the County averaged $11,537 per year (the reader is reminded that this is employment by place of work and that the average agricultural worker holds more than one job per year resulting in a higher average earnings per year by place of residence) as compared to $27,047 for transportation and public utility jobs and $39,337 for jobs in the mining sector (Table 3-22). The low agricultural earnings also bring down average earnings in Imperial County on a per job basis ($20,741) as compared to non-agricultural average earnings ($22,618 per job).

Earnings per job in Imperial County are lower than earnings per job in the State of California. For example, the average agricultural job in the

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TABLE 3-21

1991 Wage and Salary Earnings for Imperial County and the State of California

	Imperial County[a] (in thousands)		State of California[a] (in thousands)	
Agricultural Services, Forestry & Fishing	$ 87,921	9.4%	$ 4,132,974	0.9
Mining	29,267	3.1	1,992,982	0.4
Construction	52,375	5.6	26,263,940	5.7
Manufacturing	39,875	4.3	81,292,067	17.6
Transportation & Public Utilities	43,167	4.6	27,172,554	5.9
Wholesale Trade	57,471	6.2	29,036,546	6.3
Retail Trade	122,482	13.1	45,727,337	9.9
F.I.R.E.*	24,561	2.6	33,343,560	7.2
Services	169,959	18.2	137,341,652	29.7
Government	305,982	32.8	75,845,817	16.4
Total Non Agricultural	$ 845,139		$ 458,016,455	
TOTAL	$ 933,060		$ 462,149,492	

Notes: Numbers may not add due to rounding.
(*) F.I.R.E. = Finance, Insurance and Real Estate.

Source: (a) U.S. BEA, 1993.

TABLE 3-22

1991 Average Earnings Per Job
(Average Annual Wage)
Imperial County and the State of California

	Imperial County (1)	State of California (1)
Agricultural Services, Forestry & Fishing (2)	$ 11,537	$ 13,527
Mining	39,337	39,939
Construction	24,964	34,904
Manufacturing	23,346	38,715
Transportation & Public Utilities	27,047	39,681
Wholesale Trade	24,508	36,984
Retail Trade	14,508	17,889
F.I.R.E.*	14,764	22,758
Services	13,845	28,532
Government	20,123	31,045
Average Earnings for Non-Agricultural Wage and Salary Jobs (3)	$ 22,618	$ 29,266
Average Earning for Wage and Salary Jobs (1989$)	$ 20,741	$ 28,965

Notes: Numbers may not add due to rounding.
(1) Derived by dividing annual average workers provided on Table 3-20 by annual payroll shown on Table 3-21.
(2) Earnings for employment by place of work. The reader is reminded that many agricultural workers tend to hold many jobs per year. (i.e., they travel from farm to farm as needed).
(3) Derived by dividing total annual non-agricultural workers provided on Table 3-20 by total annual non-agricultural payroll shown on Table 3-21.
(*) F.I.R.E. = Finance, Insurance and Real Estate.
(**) Denotes figures withheld by the US Department of Commerce to avoid disclosing data for individual companies.

Source: The Butler Roach Group, Inc., 1993.

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State of California paid $13,527, a 17 percent higher than the average wage for an agricultural job in Imperial County. The average transportation and public utility job in the state paid $39,681, a 47 percent higher than the average wage for a transportation job in Imperial County. On average, a wage and salary job in Imperial County pays 72 percent of the state average for all wage and salary jobs and 77 percent of the average wage for non-agricultural wage and salary jobs.

Existing Employment and Income at the Proposed Site

As of June 25, 1993, Santa Fe Pacific Gold Corporation operates the Mesquite Mine at and adjacent to the proposed landfill site. Prior to that time, Gold Fields operated the Mesquite Mine. The direct and indirect employment and earnings associated with the Mesquite Mine are summarized below.

The gold mine employed 370 workers in fiscal year (FY) ending September 1992 and paid salaries of approximately $11.5 million dollars plus benefits of $5.5 million (Gold Fields, 1992). The average wage paid to employees for FY 1992 was approximately $31,000 with an additional $14,850 in benefits paid per worker.

It is currently anticipated that the Mesquite Mine will close down operations within the next 10 to 15 years. Therefore, the employment, income, and government revenues currently generated by the mine will be lost in the future. Other local employers include the Glamis Beach Store, various aggregate producers who periodically mine aggregate in the area, and BLM which manages the adjacent federal lands. Because it is not expected that these jobs would be impacted by the proposed project and because many of these jobs are seasonal, no effort has been made to quantify employment and earnings associated with these activities.

3.1.13.3 Demographics

The following section includes a discussion of various demographic issues applicable to the proposed project. To obtain a better understanding of the demographic conditions in Imperial County, a comparison of similar demographic characteristics for the State of California, and the United States is included.

Selected Demographic Statistics

Selected demographic statistics for 1990 for Imperial County, the State of California, and the United States are shown on Table 3-23. The total population of Imperial County was estimated to be 109,303 in 1990. This represented 0.4 percent of the population of the State of California (29,760,021) and 0.04 percent of the population of the United States (248,710,000). The 1989 per capita personal income for Imperial County was estimated to be $12,712. This was 64 percent of the per capita personal income for the State of California ($19,840) and 72 percent of the per capita personal income of the United States. The number of persons per household in the County of Imperial was estimated to be 3.26 in 1990. This is 17 percent larger than the average household size in the State of California (2.79) and 24 percent larger than the average household size in the United States (2.63).

Ethnicity

The 1990 ethnicity information for Imperial County, the State of California, and the United States, as reported by the US Bureau of the Census, is shown on Table 3-23. The Census reports that, in 1990, the approximate ethnic makeup for Imperial County was 29 percent white, two percent black, 66 percent Hispanic, and three percent persons of other ethnic backgrounds. The approximate 1990 ethnic makeup for the State of California was

TABLE 3-23

1990 Selected Demographic Statistics
Imperial County, State of California, United States

	Imperial County	State of California	United States
Total Population	109,303[a]	29,760,021[a]	261,259,000[b]
Per Capita Personal Income (1989)	$12,712[a]	$19,840[a]	$17,621[b]
Household Size	3.26[c]	2.79[c]	2.63[b]

	Imperial County[a]		State of California[a]		United States[b]	
	Total	% of Total	Total (in thousands)	% of Total	Total (in thousands)	% of Total
Ethnicity as Reported by the US Bureau of the Census (1990)						
White	31,742	29.0%	17,029,126	57.2%	199,686,000	76.4%
Black	2,272	2.1%	2,092,446	7.0%	29,986,000	11.5%
Hispanic	71,935	65.8%	7,687,938	25.8%	22,354,000	8.6%
Asian & Pacific Islander	1,632	1.5%	2,710,353	9.1%	7,274,000	2.8%
American Indian, Eskimo, Aleut	1,722	1.6%	240,158	0.8%	1,959,000	0.7%
Total	**109,303**	**100.0%**	**29,760,021**	**100.0%**	**261,259,000**	**100.0%**

Source: (a) 1991 California Department of Finance, 1991a.
(b) U.S. Bureau of the Census, 1991.
(c) U.S. Bureau of the Census, 1992.

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57 percent white, seven percent black, 26 percent Hispanic and 10 percent persons of other ethnic backgrounds. The approximate 1990 ethnic makeup for the United States was 76 percent white, 12 percent black, nine percent Hispanic, and three percent persons of other ethnic backgrounds.

Age Distribution

Age distribution information for 1990 is provided on Table 3-24, in 1990 the majority of persons in Imperial County, the State of California, and the United States were within the age bracket of 25 to 34 years of age (U.S. Bureau of the Census, 1990). The major difference between Imperial County's and the state's and nation's age distribution is that Imperial County's population is somewhat younger (e.g. 44 percent of Imperial County's population is 24 years of age or younger compared to 37 percent for the state and nation). Also, 25 percent of the County's population are school-aged (i.e., 5-17) versus 18 percent for the State and nation.

Income

The 1990 median household incomes for Imperial County and various cities within the County are shown on Table 3-25. Overall, Imperial County had a 1990 median household income of $22,422.

Population Projections

Table 3-26 provides the total existing and projected population data for Imperial County and the State of California for 1990, 2000, 2010, and 2040. Between 1990 and 2040 the average annual compound population growth rate for Imperial County is projected to be 2.1 percent and the average annual compound population growth rate for California is projected to be 1.5 percent.

3.1.13.4 Imperial County Revenues and Expenditures

The County of Imperial derives revenue from seven broad sources. For FY 1992-1993, the revenues derived by source is presented in Table 3-27. These revenues are expended by the County to provide services to its citizens. County expenditures for FY 1992-1993 are summarized on Table 3-27.

3.1.13.5 Property Values

Introduction

Property values near a proposed project can be negatively affected, positively affected, or not affected at all. The affect of a project on property values is determined by the degree to which a project changes the use of a particular property. For example, a new roadway built to an otherwise land-locked property would generally increase property values. Projects which negatively impact a neighboring property generally decrease property values.

Property values are established based on an individual's perceived utility of a given parcel and are typically defined by the selling price, which is used by Imperial County and other California counties to determine the appraised value of a property for computing taxes. Many factors can affect the utility of a parcel, including existing structures, proximity to major transportation routes and destinations, neighboring uses, and potential future uses (zoning and community plan designations).

When a property is purchased, the various factors that are known to the purchaser are considered during negotiation of the purchase price. Of course, if the purchaser is not aware of certain factors that may affect a property's utility, the purchaser cannot make a reasoned determination of the value of the property. For this reason, the

TABLE 3-24

1990 Population Age Distribution
Imperial County, State of California, United States

	Imperial County		State of California (in thousands)		United States (in thousands)	
	Total	% of Total	Total	% of Total	Total	% of Total
Under 5 years	9,986	9%	2,489	9%	18,752	8%
5 to 17 years	27,473	25%	5,225	18%	45,330	18%
18 to 24 years	11,095	10%	3,018	10%	26,346	11%
25 to 44 years	31,334	29%	10,003	34%	80,338	32%
45 to 54 years	9,421	9%	2,891	10%	24,897	10%
55 to 64 years	8,886	8%	2,366	8%	21,593	9%
65 years and over	11,108	10%	3,071	11%	30,985	12%
TOTAL	109,303	100%	29,063	100%	248,239	100%
16 years and over	75,980	70%	22,081	76%	191,047	77%

Source: U.S. Bureau of the Census, 1991.

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TABLE 3-25

1990 Median Household Income, Imperial County

City/County	Household Income
Brawley	$22,365
Calexico	$18,635
Calipatria	$20,254
El Centro	$25,147
Heber CDP	$20,306
Holtville	$21,083
Imperial	$32,000
Niland CDP	$16,207
Seeley CDP	$21,689
Westmorland	$21,359
Imperial County	$22,422

Note: CDP = Census Designated Place, an area that is defined by the U.S. Bureau of the Census to facilitate data collection, reporting and analysis.

Source: U.S. Bureau of the Census, 1992.

TABLE 3-26

**Projected Population for
Imperial County and State of California, 1990 to 2040**

	1990	2000	2010	2040
Imperial County	110,400	142,300	183,000	310,000
California	29,976,000	36,444,000	42,408,000	63,343,000

	1990-2040 Numeric Growth	Annual Avg. Compound Growth Rate
Imperial County	199,600	2.09%
California	33,367,000	1.51%

Notes: Population projections given for the month of July for each projection year.

Source: Ca Dept. of Finance, April 1993.

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TABLE 3-27

County of Imperial Revenues and Expenditures
FY 1992-1993

Revenues

Revenue Source	Amount
Aid from Other Governmental Agencies	$ 81,233,527
Total Taxes	21,363,294
Charges for Current Services	18,497,104
Other Revenues	4,661,760
Licenses and Permits	3,578,441
Fines, Forfeitures, and Penalties	2,108,901
Use of Money and Property	1,910,088
Grand Total	$ 133,353,115

Expenditures

County Function	Amount
Public Assistance	$ 56,520,067
Public Protection	34,556,713
General Government	19,739,930
Health and Sanitation	13,472,499
Public Ways and Facilities	9,807,093
Appropriation for Contingencies	918,888
Education	740,506
Grand Total	$ 135,755,696

Source: Imperial County, 1993__.

State of California requires that the seller of a given property fully disclose all pertinent factors that may negatively impact the value of the property being offered for sale.

Public comments at the Indio Public Scoping Meeting (May 28, 1992) did express a concern for property value impacts along the proposed rail-haul route. Therefore, the discussion of property values in the EIS/EIR will address impacts to property values along the rail-haul route.

Properties Near the Proposed Rail-Haul Route

As described in Chapter 2.0, the proposed rail haul would occur along the existing SP Main Line. This line has been owned by SP since 1877. It is anticipated that MSW would be hauled by rail from the LATC to the proposed landfill site. The total distance is approximately 216 miles.

A large number of private and public properties lie adjacent to or within sight/hearing distance of the existing SP Main Line ROW. These properties have been subject to train-related impacts on a daily basis for over one hundred years. While the level of rail activity has fluctuated over the years, the SP Main Line has been in constant use since 1877.

All properties along the existing SP Main Line ROW currently experience the normal operational effects of train traffic on a daily basis, including evenings, nights, and early mornings. In addition, these properties are subjected to a certain level of risk associated with the materials transported by train traffic along the SP Main Line.

Materials carried along the existing SP Main Line include a wide variety of goods ranging from raw materials to finished consumer products. Typically, these materials are relatively inert and, similar to MSW residue, are not identified as being hazardous. However, hazardous substances including acutely hazardous materials, flammable materials, materials known to the State of California to be toxic and/or carcinogenic, and explosives are also carried on the existing SP Main Line.

3.1.13.6 Socioeconomic Effects Outside of Imperial County

This issue was raised at the Indio Public Scoping Meeting (May 28, 1992). The decision to landfill MSW residue within the jurisdiction of origin or a more distant jurisdiction would likely be guided by both monetary and non-monetary factors. The proposed landfill would be an alternative disposal site for MSW residue generated in the Los Angeles Basin. These jurisdictions would have to weigh the monetary and non-monetary costs involved with disposing MSW residue before making a decision to use the proposed regional landfill. At this time, it is not possible to reasonably predict all of the variables involved in the decision to dispose of MSW within the Los Angeles Basin or to rail haul MSW to the proposed Mesquite Landfill. Any attempt to determine the potential socioeconomic impacts on the residents of the Los Angeles Basin would be speculative and would not add materially to the environmental discussion presented in this EIS/EIR.

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3.1.14 PUBLIC SERVICES AND UTILITIES

3.1.14.1 Scope

This section discusses the public services available within Imperial County and the utilities currently existing at the Mesquite Mine. This section also discusses utilities provided for the Mesquite Mine that would be available for the proposed landfill and rail spur operation.

3.1.14.2 Existing Public Services

The proposed Mesquite Regional Landfill would be located within a sparsely inhabited area of Imperial County, where the local population base is insufficient to maintain separate community service facilities. Therefore, most facilities, such as police and fire stations, schools, libraries, and hospitals, are located in the more populous areas to the west. Brawley, about 35 miles west of the proposed site, is the closest community providing a full range of public services. The next closest, El Centro, California, is about 50 miles to the southwest.

Police, Fire Protection, and Medical Services

An emergency vehicle and first aid station with trained personnel are maintained at the Mesquite Mine to administer treatment in the event of any emergency. In addition, a heliport is located on-site to coordinate with available medical air evacuation services. A private security force and fire fighting system and equipment are provided on the Mesquite Mine site as well.

Community Facilities

Schools

There are 34 elementary schools, five junior high schools, eight high schools, one K-8 elementary school, one combined elementary/high school, and two combination junior/senior high schools in Imperial County. Schools located within the incorporated cities and unincorporated communities of Imperial County are shown on Table 3-28. There are three advanced education institutions within the Imperial County area. They include: the Imperial Valley College (two year), in Imperial, California; San Diego State University, Imperial Valley Campus, in Calexico, California; and Arizona Western College (two year) located east of Yuma, Arizona.

Parks and Recreational Facilities

Numerous recreational opportunities are available in Imperial County. These include, but are not limited to, sand dune areas, desert areas, the Salton Sea, the Colorado River, and local community parks. These recreational facilities are managed by the BLM, the County, or the City in which they are located. There are 46 parks and 20 playgrounds located within the incorporated cities and unincorporated communities of Imperial County. Table 3-28 shows the public parks and recreational facilities located within the incorporated cities and unincorporated communities of Imperial County.

In addition, County recreation facilities include the following:

Sunbeam Lake	Palo Verde Marina
Weist Lake	Walker Roadside Park
Niland Marina	Heber Beach Sand Dunes
Red Hill Marina	Pioneer Museum Park

Source: Pers. Comm., Bravo, B., 1992

Much of the public lands used for recreation in Imperial County are managed by the BLM. The types of recreational activities these areas offer include :

- Open Space
- Nature Study and Resource-Oriented Recreation
- Education and Research
- Wilderness
- OHV
- Organized Competitive Vehicle Events

TABLE 3-28

Community Facilities within Imperial County
Proposed Mesquite Regional Landfill

#153)

Incorporated Cities	Brawley	Calexico	Calipatria	El Centro	Holtville	Westmorland	*Imperial*
Schools	4 Elementary 1 Junior High 1 Sr. High	6 Elementary 1 Private Elementary 1 Sr. High 1 Private Sr. High	2 Elementary 1 Sr. High	9 Elementary 4 Parochial 1 Center for Exceptional Children 2 Jr. Sr. High 1 Sr. High	2 Elementary 1 Jr. Sr. High 1 Sr. High	1 Elementary K-8	*2 Elementary* *1 Jr. High* *1 Sr. High*
Parks and Recreation Facilities	14 Parks 2 Playgrounds Other Recreational Facilities include: Brawley Lions Center, Community Facility Brawley Boys and Girls Club	7 Parks 2 Playgrounds Other Recreational Facilities include: International Golf Course & Country Club	4 Parks 3 Playgrounds	5 Parks 2 Playgrounds	4 Parks 4 Playgrounds	2 Playground and picnic facilities Other Recreational Facilities include: Youth Center, Swimming Pool Little League baseball park	*4 Parks* *4 Playgrounds*
Libraries	1 Library	1 Library	1 Library	2 Libraries	1 Library	1 Library	*1 Library*

Unincorporated Communities	Bombay Beach	Heber	Ocotillo	Niland	Seeley	West Shores	Winterhaven
Schools	None	1 Elementary	None	1 Elementary	1 Elementary	1 Elementary 1 Sr. High	1 Elementary/ Sr. High
Parks and Recreation Facilities	1 Park 1 Community Center	2 Parks 1 Community Center	1 Park 1 Community Center	1 Community Center	1 Park 1 Playground	3 Parks	None
Libraries	1 Library	None	County Library Branch	None	None	None	None

Source: County of Imperial, Division of Community Economic Development, June 1992.

Three Recreation Area Management Plans have been developed for the Imperial County area. They include: the ISDRA; the McCain Valley Resource Conservation Area (in Eastern San Diego County); and the Jacumba Outstanding Natural Area .

Recreational facilities located in the vicinity of the proposed project are discussed in Section 3.1.10, Recreational Resources, of this EIS/EIR.

Libraries

As shown on Table 3-28 there are nine public libraries and one branch of the county library located within the various communities of Imperial County.

Solid Waste Facilities

There are 11 Class III solid waste disposal sites within Imperial County. Of this total, 10 are operated by the County and one is privately operated. The Class III landfills in Imperial County are listed on Table 3-29 and currently provide in excess of 50 years of capacity, assuming the successful implementation of AB 939. Additionally, a permitted landfill for disposal of Class III inert waste and equipment tires exists at the Mesquite Mine site on land controlled by Gold Fields.

3.1.14.3 Utilities

Electricity

Electric power is provided to the most populous areas of the County by the Imperial Irrigation District (IID). Electric power is provided to the Mesquite Mine via an existing IID seven-mile, 92 kV transmission line and a 161/92 kV tap substation.

Communications Systems

Telephone service is currently provided at the Mesquite Mine via an on-site microwave station.

Water

The Mesquite Mine well field includes three large diameter wells, large high production pumps, three monitoring wells, a five-mile long electric power line and a four-mile long above-ground pipeline.

As discussed in Chapter 3.0, Section 3.1.2, Water Resources, of this EIS/EIR, the Mesquite Mine well field is approved for extracting up to 4,033 acre-feet of water per year, based on maximum estimates of potential water demands for dust control, heap leaching, and evaporation (CUP No. 684-84). The actual water use between 1987 and 1991 varied from 700 to 1,100 acre-feet per year.

Water from this source is not suitable for drinking without prior treatment. Gold Fields historically treated a portion of this water (less than 50 gpm) by a reverse osmosis process for potable uses at the Mesquite Mine. In addition, bottled water may be used for drinking.

Sanitation

Public sewer services in the larger communities are provided by municipal governments or special districts. In less densely populated areas, individual sewage disposal systems are more common. The Mesquite Mine uses individual sewage disposal methods (i.e., septic tanks).

TABLE 3-29

Class III Landfills in Imperial County

Proposed Mesquite Regional Landfill

Landfill Sites	Life Expectancy (Year)
County Operated	
Calexico	2014
Ocotillo	2075
Holtville	2006
Hotspa	2006
Salton City	2085
Palo Verde	2100
Niland	2083
Brawley	2004
Picacho (on Indian Res Land)	2015
Worthington	2016
Privately Operated	
Public Imperial Acquisition Corp	2005

Source: Pers. Comm., Armas, J., 1993

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3.2 NO ACTION ALTERNATIVE

For the No Action Alternative, the proposed landfill would not be located at the proposed site or at an alternate site. MSW residue would not be transported along the SP Main Line to the proposed or alternative site. Instead, the MSW residue would continue to be disposed at existing and new landfills within the Southern California coastal region and/or at one or more other regional landfills proposed to receive MSW residue from various Southern California communities.

By about 2010 many existing landfills in the coastal region would be closed. The majority of any new local landfills likely would be located in more remote areas, farther from the population centers than the existing landfills. Example locations would be the proposed Sunshine landfill expansion and new Elsmere facility, if those facilities receive the necessary approvals to operate to the extent being planned. Those two potential landfills are located about 45 miles from the center of the Los Angeles County population, in comparison with the largest existing landfills (Puente Hills and BKK), that are on the order of 15 to 20 miles away.

Because the locations of future local or other regional landfills cannot be determined reasonably at this time, it is not possible to provide a meaningful discussion of existing conditions at future sites. Air quality effects of the No Action Alternative in the SOCAB and SEDAB are qualitatively described in this EIS/EIR.

3.3 ALTERNATIVE I - SMALLER LANDFILL FOOTPRINT

Alternative I includes on-site modifications related to a smaller landfill footprint. Under Alternative I, the project life would be shortened to approximately 85 years. The landfill and associated facilities for the smaller footprint alternative (Alternative I) would be located completely within the Proposed Action area. Therefore, the existing conditions descriptions provided in Section 3.1 are also applicable for this alternative. The land exchange would be about 136 acres instead of the 1,750 acres land exchange required for the Proposed Action. The offered exchange parcels for this alternative would be located in the SRMNSA (Figure 2-4). Seven of the ten recommended eligible cultural resources that were identified on the proposed project site are in Sections 7 and 18. These sections are not included in Alternative I.

3.4 ALTERNATIVE II - REDUCED DAILY VOLUMES

Alternative II includes modifications of the operation of the Proposed Action. By reducing the amount of MSW residue accepted on a daily basis, the project life would be extended to approximately 165 years. The landfill would occupy the same footprint as for the Proposed Action. Therefore, the existing conditions descriptions provided in Section 3.1 are also applicable for this alternative. Also, the land exchange required for this alternative would be the same as that required for the Proposed Action.

3.5 ALTERNATIVE III - ALTERNATIVE LANDFILL SITE

Alternative III is the construction and operation of a 600-million ton, 100-year Class III MSW residue landfill at the alternative site identified in Chapter 2.0 of this EIS/EIR. A regional landfill constructed and operated at the alternative site would be subject to the same regulatory controls as a regional landfill at the proposed site. Also, the alternative site is located in close proximity to the proposed site and would utilize the same rail-haul route. Therefore, the Scope and Regulatory Status discussions in Section 4.1 would also apply to the alternative site. Existing conditions at the alternative site are very similar to conditions at the proposed site, except as noted below.

3.5.1 Existing Geologic Setting

The alternative site is situated above deep layers of alluvial deposits that are believed to vary in age from Holocene to late Pleistocene. A basement rock unit begins over 2,000 feet below the surface of the alluvium, which consists of Oligocene to Pre-Mesozoic Age rock. Soils in the area are similar to those contained in the proposed site area, consisting of sandy or gravely materials that are low in nutrients and that tend to support only sparse plant growth. No known mineral resources exist on the alternative site, though some sand and gravel resources may exist as these are common in this desert area.

The alternative site is affected by the same active regional faults as the proposed site (Figure 3-6). A detailed discussion of faulting in the region is contained in Section 3.1.1. Investigations associated with the proposed site indicate that no Holocene or active faults exist in the alternative site area. Detailed site-specific investigations would be required to confirm this determination. The closest active fault to the alternative site is the East Mesa Fault, located approximately 12 miles to the northwest. Horizontal ground accelerations at the alternative site for an MCE event from this fault would be less than 0.30 g's.

3.5.2 Existing Water Resources

Like the proposed site, the alternative site is located on the edge of the Imperial Valley, which is part of what is hydrologically referred to as the Salton Sea Drainage Basin. As described in Section 3.1.2, the Salton Sea Drainage Basin consists of a closed hydrologic system in which surface drainage generally flows to an internal sink (the Salton Sea) and subsequently evaporates.

No irrigation exists east of the ISDRA near the alternative site. This area contains no permanent surface flows or bodies of water. Occasional surface flows resulting from infrequent rain events do occur in small, braided washes. Approximately eight blue line washes, delineated on the USGS 7.5 minute Clyde and Glamis quadrangles, traverse the 5,200 acre site in a northeast to southwest direction. However, some 20 to 25 washes are actually present on the site. The larger of the washes have recent flow depths of two to three feet, with channels approximately 30 to 40 feet across. The eastern portion of the site contains a greater number of washes than the western portion of the site. These braided washes receive flows from upgradient in the Chocolate Mountains and pass near the proposed site area. Flows from these washes do not reach the Salton Sea. Instead, the smaller-volume flows percolate into the shallow, loose soils in the bottom of the washes and evaporate. Infrequent, larger-volume flows terminate at the Algodones Sand Dunes where they eventually evaporate. Flows in the washes usually occur for less than one hour. No calculations of anticipated maximum flow volumes in the alternative site area have been performed.

The alternative site is located directly above the Amos-Ogilby Ground Water Basin (Figure 3-11), a large alluvial basin that covers an area of between 300 and 600 square miles (depending on data interpretation concerning the likely connection between the Amos-Ogilby Basin and the East Mesa Basin; see discussion in Section 3.1.2.2). Depth to ground water in the alternative site area is approximately 80 feet. Available water storage in the Amos-Ogilby Basin is at least 126,000,000 acre-feet. Figure 3-13 shows the location of various public and private production wells that rely on the Amos-Ogilgy Basin for water. Table 3-6 contains data for some of these wells. The thick water-bearing alluvial deposits of the Amos-Ogilby Basin extend to a depth of greater than 2,000 feet in the alternative site area, as illustrated in the cross section shown in Figure 3-16. Water quality data for the Amos-Ogilby Basin is contained in Table 3-8. This data indicates that water from this source is generally of low quality, with drinking water standards exceeded for chlorine, fluorine and TDS.

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3.5.3 Biological Resources

3.5.3.1 Vegetation

Plant Communities

Sonoran Creosote Bush Scrub is the dominant plant community of the alternative site. This community usually contains well-drained secondary soils of slopes, fans, and valleys, rather than upland sites with thin residual soils or sites with high soil salinity. Many species of ephemeral herbs likely flower in late-February and March if the winter rains are sufficient. Characteristic species include burroweed, bursage, brittle bush, ocotillo, and creosote bush (Holland, 1986). These species and conditions are typical of the alternative site.

Desert Microphyll Woodland is the subdominant plant community of the alternative site. This community exists in desert arroyos and canyon bottoms. It consists of open clumps of large shrubs and small trees growing to heights of 12 to 15 feet (4 to 5 meters). Many of the plants in this community are phraeatophytic, having deep root systems. The most common shrubs in this community are catclaw, smoketree (*Psorothamnus spinosus*), desert lavender, cheese bush ironwood, mesquite (*Prosopis glandulosa*), and desert willow (*Chilopsis linearis*) (Beauchamp, 1986).

Desert washes and canyons are occasionally inundated by flash floods during the late summer and early fall months. Extreme floods may completely clear washes of shrubs for a few years before seedlings are re-established (Beauchamp, 1986).

No formal biological survey was performed for the alternative landfill site. However, an on-site visit was undertaken in the spring of 1993 to obtain a sample of the plant species common to the site. A walk through of several washes adjacent to the lower western portion of the site, and a drive through of the site boundary on Ted Kipf Road revealed many common plant species of the site. Catclaw and blue palo verde are the dominant woody perennial species forming a frequent bank wash association with scattered bursage, cheese bush, and brittle bush. Creosote bush forms the dominant interfluvial woody cover. Scattered ocotillo, ratany (*Krameria grayi*), smoketree, beavertail cactus (*Opuntia basilaris* var. *basilaris*), silver cholla (*Opuntia echinocarpa*), and galleta grass (*Hilaria rigida*) are also found on the site. Table 3-30 provides a complete listing of the common plant species observed in the vicinity of the alternative site.

3.5.3.2 Wildlife

Several species of animals were seen in the vicinity of the alternative site. These included a white-tailed antelope squirrel (*Ammospermophilus leucurus*), zebra-tailed lizard, desert iguana, and a western tanager (*Piranga ludoviciana*). Desert tortoise is also expected to occur in the vicinity of the alternative site. Table 3-30 provides a complete listing of animal species observed in the vicinity of the alternative site.

3.5.3.3 Threatened and Endangered Species and Other Special Interest Species

The BLM has classified the alternative landfill site as Category III habitat for the desert tortoise. The desert tortoise is listed by the State of California and the federal government as a threatened species. A detailed discussion on the desert tortoise is located in Section 3.1.3.3. The Vista Well Tortoise Relocation area was established by BLM to relocate desert tortoises found in the vicinity of the Mesquite Mine site. A portion of the Vista Well Tortoise Relocation Area encompasses the northwest portion of the alternative regional landfill site. Figure 3-38 shows the location of the Vista Well Tortoise Relocation area. Gold Fields began keeping records of desert tortoises relocated to the Vista Wells Relocation area on April 1, 1992. Prior to the state and federal listing of the species as threatened, no desert tortoise relocation records were required. Gold Fields records indicate that a total of 18 tortoises have been

TABLE 3-30

Species Observed in the Vicinity of the Alternative Landfill Site Proposed Mesquite Regional Landfill

Scientific Name	Common Name
Plants	
ASTERACEAE (Sunflower)	
Ambrosia dumosa	Burroweed, Bursage
Bebbia juncea var. aspera	Sweet bush
Encelia farinosa	Brittlebush, Incienso
Hymenoclea salsola	Cheesebush
Monoptilon bellioides	Mohave desert star
BORAGINACEAE (Borage)	
Cryptantha angustifolia	Narrow-leaved cryptantha
BRASSICACEAE (Mustard)	
Lepidium dictyotum	Peppergrass
CACTACEAE (Cactus)	
Opuntia basilaris var. basilaris	Beaver-tail cactus
Opuntia echinocarpa	Silver cholla
EUPHORBIACEAE (Spurge)	
Chamaesyce polycarpa	Desert sand mat
FABACEAE (Pea)	
Acacia greggii	Catclaw
Cercidium floridum	Blue palo verde
Psorothamnus spinosus	Smoketree
FOUQUIERIACEAE (Ocotillo)	
Fouquieria splendens	Ocotillo
KRAMERIACEAE (Ratany)	
Krameria grayi	Krameria, Ratany
PLANTAGINACEAE (Plantain)	
Plantage ovata	Wooly plantain
POACEAE (Grass)	
Hilaria rigida	Galleta grass
SOLANACEAE (Nightshade)	
Nicotiana trigonophylla	Desert tobacco

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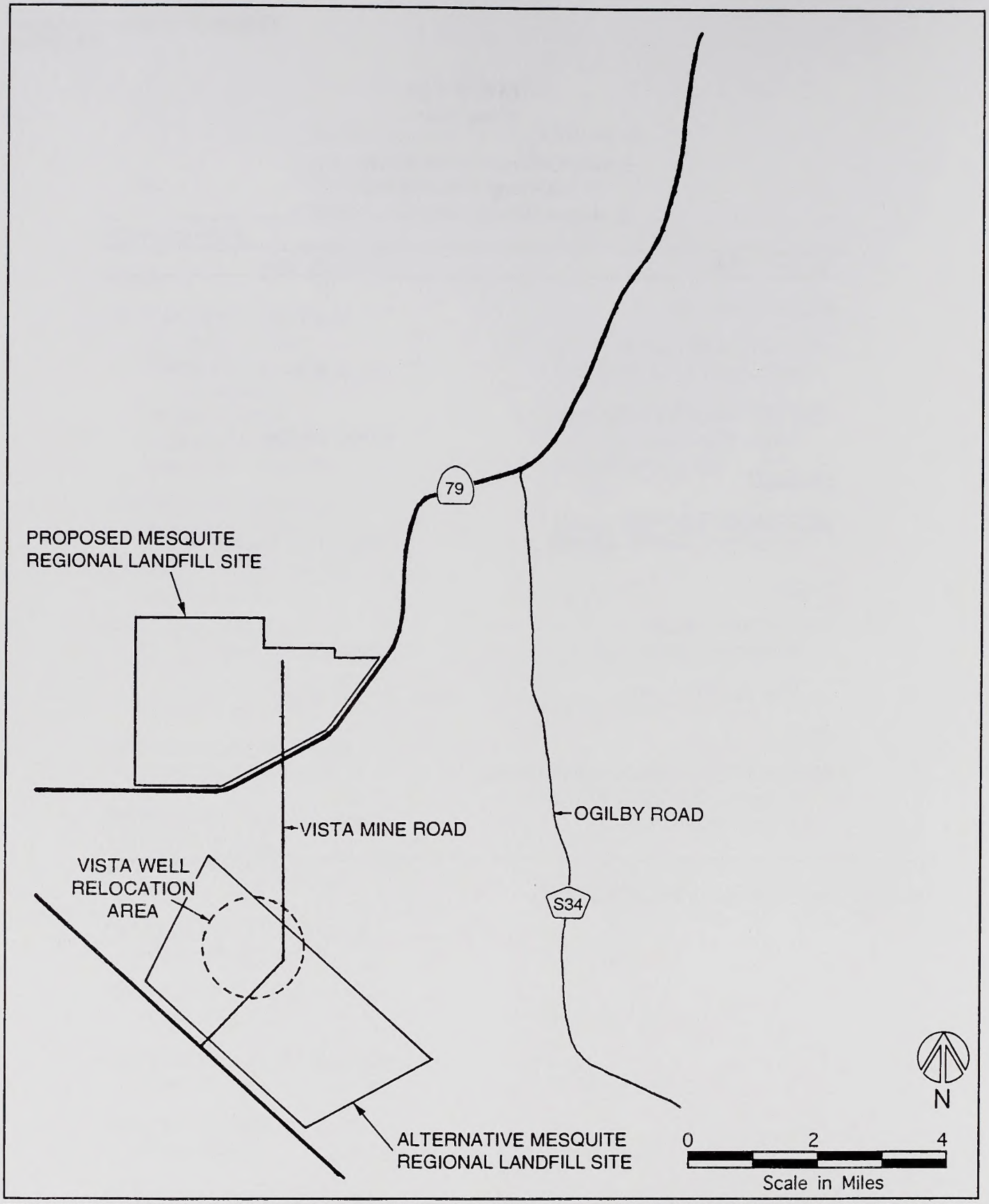
TABLE 3-30
(Continued)

Species Observed in the Vicinity of the Alternative Landfill Site Proposed Mesquite Regional Landfill

Scientific Name	Common Name
Plants (Continued)	
VISCACEAE (Mistletoe)	
Phoradendron californicum	Desert mistletoe
ZYGOPHYLLACEAE (Caltrop)	
Larrea tridentata	Creosote bush
Mammals	
SCIURIDAE (Squirrels)	
Ammospermophilus leucurus	White-tailed antelope squirrel
Reptiles	
IGUANIDAE (Iguanids)	
Callisaurus draconoides	Zebra-tailed lizard
Dipsosaurus dorsalis	Desert iguana
Birds	
EMBERIZIDAE (Wood warblers, Orioles, Tanagers, Grosbeaks, Sparrows)	
Piranga ludoviciana	Western tanager

Source: The Butler Roach Group, Inc., 1993.



SOURCE:
Goldfields Operating Co.

Proposed Mesquite Regional Landfill

Desert Tortoise Relocation Site

FIGURE

3-38

relocated to the Vista Well Relocation area since April 1, 1992.

A review of the CDFG NDDB revealed no additional sensitive, threatened, or endangered animal species on the alternative site. However, one species was shown to exist within approximately one mile of the site. Table 3-31 contains a list of the species in the vicinity and their status. The flat-tailed horned lizard (*Phrynosoma mcallii*) was found to be located to the southwest of the site in the ISDRA. In addition, the flat-tailed horned lizard was also found to the northwest of the site in the Algodones Dunes ACEC.

It is not known if any game species use the alternative site.

3.5.4 Cultural Resources

An archival data search and records review was completed by the Southeast Information Center of the California Archaeological Inventory, located at the Imperial Valley College Desert Museum (Wilcox, 1993). The archival records search revealed that one archaeological site has been recorded in the alternative site and that two additional sites have been recorded within one mile of the alternative site. All three resources were recorded in 1979. The on-site cultural resource is site Ca-Imp-4623, a prehistoric short-term campsite containing pottery, lithic artifacts, and a hearth feature in an estimated 250 m^2 area. The description of Ca-Imp-4623 indicates that it may be significant under 36 CFR Part 60.4(d) due to the presence of pottery in association with a hearth feature. The two off-site cultural resources were recorded in the vicinity of the SP Main Line, directly southeast of the alternative site. Ca-Imp-4151 and Ca-Imp-4152H were both situated in disturbed contexts related to the railroad and associated facilities. The former is an isolated Colorado Buffware pottery shard, while the latter comprised fragments of a Chinese rice bowl and a Liberty half dollar coin dated 1856. The historic resource was collected and the artifacts are housed at the Imperial Valley College Desert Museum. Ca-Imp-4151 and Ca-Imp-4152H are located outside of the APE associated with the construction and operation of a regional landfill at the alternative site.

3.5.5 Paleontological Resources

The alternative site is situated on soils that are similar to those found at the proposed landfill site. Unlike the proposed landfill site, the underlying deposits are alluvial dating to the Holocene to late Pleistocene. Alluvial deposits are not considered to be important sources of paleontological deposits.

3.5.6 Transportation

The highway system that would serve the alternative site would be the same as the Proposed Action, as discussed in Section 3.1.6.2. Access to the alternative site is via SR 78, which is approximately four miles northwest of the site. Highway access would be provided via a new intersection east of the existing intersection with Ted Kipf Road. The access would loop south, connecting with Ted Kipf Road approximately one mile south of SR 78. From that point south to the boundary of the proposed site, Ted Kipf Road would be improved to handle large trucks delivering supplies to the alternative site.

Two unpaved roads traverse the alternative site. These roads are the Vista Mine Road and A2110 (unnamed), which are classified as "unmaintained dirt" and "maintained dirt" roads by BLM, respectively. These roads are infrequently traveled and are used primarily by recreationalists from the adjacent ISDRA.

The Alternative III rail-haul route, would be the same as the Proposed Action, as discussed in Section 3.1.6.3. However, the MSW residue trains would encounter one additional at-grade railroad crossing at Glamis and SR 78.

3.5.7 Noise

Existing conditions with respect to noise sources and receptors are the same as described for the Proposed Action except as follows:

TABLE 3-31

Special Status Species in the Vicinity of Alternative Landfill Site
Proposed Mesquite Regional Landfill

Scientific Name	Common Name	Status
Plants		
ASTERACEAE (Sunflower)		
Helianthus niveus ssp. tephrodes	Algodones dunes sunflower	C2,CE
Palafoxia arida var. gigantea	Giant Spanish-needle	C3c
EUPHORBIACEAE (Euphorbia)		
Croton wigginsii	Wiggins' croton	C3c, CR
FABACEAE (Pea)		
Astragalus magdalenae var. peirsonii	Peirson's milkvetch	C2, CE
Birds		
MIMIDAE (Mockingbirds, Thrashers)		
Toxostoma lecontei	Le Conte's thrasher	CSC
Reptiles		
Gopherus agassizii	Desert tortoise	CT, T
Phrynosoma mcallii	Flat-tailed horned lizard	C1, CSC

Notes: Federal listings
C1 = Federal Category 1 species. Enough data are on file to support the federal listing.
C2 = Federal Category 2 candidate species. Enough data are on file to support the federal listing.
C3c = Data are insufficient at this time to support listing.
T = Threatened

State listings
CE = California (CDFG) endangered species.
CR = State listed, rare.
CSC = California Species of Special Concern.
CT = State listed, Threatened

Source: The Butler Roach Group, Inc., 1993.

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- The alternative site is closer to the ISDRA and Boardmanville resulting in an increased potential for adverse noise impacts to and from recreationists who use these facilities.

- The alternative site is not in close proximity to the Mesquite Mine; therefore, mining-related noises do not impact this site.

- The alternative site is immediately adjacent to the SP Main Line and experiences higher train-related noise impacts.

3.5.8 Air Quality

Regional air quality characteristics for the alternative site and associated rail-haul route are identical to those for the proposed site.

Local air quality characteristics for the alternative site area are generally similar to those in the region. They would differ from the local characteristics of the proposed site in two ways. First, since the Mesquite Mine and gravel excavation pits are not adjacent to the alternative site, emissions from these source do not have the same effect on background concentrations of NO_x and ROG or PM_{10}. Second, PM_{10} emissions from OHV recreation in the adjacent ISDRA likely are a bigger factor in PM_{10} concentrations at the alternative site than at the proposed site.

3.5.9 Land Use

The alternative site consists of approximately 5,200 acres, all but one section of which are federal lands managed by the BLM. The remaining section (Section 16) is owned by three private owners. It consists of vacant land bisected by numerous washes that travel from the northeast to the southwest. The alternative site is rectangular in shape, and is located 1.75 miles south of SR 78 and just east of Ted Kipf Road. Ted Kipf Road travels in a southeast direction, beginning at SR 78, north of and parallel to the SP Main Line. The southern boundary of the site is located parallel to Ted Kipf Road.

The alternative site is located approximately 1.5 miles from the ISDRA and is used predominantly for camping. The ISDRA is located west of the SP Main Line. The Algodones Sand Dunes ACEC is located approximately 6.5 miles northwest of the alternative site, north of SR 78 and is reserved for non-vehicular use and scientific research.

The nearest residential area and commercial uses are located in Boardmanville, approximately 1.5 miles northwest of the site, and Glamis, approximately 3.75 miles northwest of the site.

A landing strip is identified on the BLM Midway Well Desert Access Guide just north of the alternative site. This landing strip is not licensed, and does not show up on aviation maps of the area (pers. comm., Smith, C., 1993). The Mesquite Mine well field is located within about one mile north of the alternative site.

The alternative site is located a few miles from the proposed site. Section 3.1.9.3 of this EIS/EIR discusses the Imperial County General Plan. This discussion and the goals and objectives stated in this section are also applicable to the alternative site. The Imperial County General Plan has designated the alternative site for recreational use. The alternative site is zoned S-open space.

The alternative site is located within and falls under the jurisdiction of the CDCA Plan. The land is designated as Multiple-Use Class M. In order to obtain the BLM land at this alternative site, a land exchange, as described in Section 3.1.9.2 would be required. The parcels offered by the Applicant for the proposed land exchange along with additional parcels in SRMNSA and near the Chuckwalla Bench ACEC would be required if the alternative site were implemented. No ACEC's are located within the alternative site area and the site is not in a gravel withdraw area.

3.5.10 Recreational Resources

The alternative site is located approximately 3.75 miles southeast of Glamis, 1.75 miles south of SR 78, immediately east of the SP Main Line. The ISDRA is located west of the SP Main Line, approximately 1.5 miles from the site.

The BLM has collected data regarding recreational users in the vicinity of the alternative site. Table 3-32 reflects the number of vehicles and number of persons using the area located east of the SP Main Line and south of SR 78 on holiday and non-holiday weekends during the 1991-1992 season. The season begins on October 1st and ends on May 31st.

People like to camp in this area because it provides easy access to the sand dunes, but it is less crowded and less dusty than the sand dunes themselves. The area south of Boardmanville on Ted Kipf Road is only graded a few times a year; therefore, four wheel drive vehicles are the predominant traffic in this area.

Two unpaved roads traverse the Alternative III landfill site. These roads include Vista Mine Road and A2110 (unnamed), which are classified as "unmaintained dirt" and "maintained dirt" roads by BLM, respectively. These roads are infrequently traveled and are used primarily by recreationists from the adjacent ISDRA.

There are no wilderness areas or WSAs on, or adjacent to, the alternative site. The nearest WSAs, their distance and direction, are listed on Table 3-33.

3.5.11 Visual Resources

The alternative site consists of vacant, relatively flat terrain, bisected by numerous washes that travel across the site from the northeast to the southwest. Similar to conditions at the proposed project site, sparse vegetation and sun-baked coarse gravel create a reddish-brown and green texture across much of the alternative site. Dissimilar to the proposed site, the alternative site is relatively undisturbed, with the exception of a two unpaved roads that traverse the site.

Two viewpoints were chosen to illustrate the most important views toward the project site along SR 78, representing viewpoints from where the landfill-related activity would be most visible (Figure 3-39).

<u>View Point No. 1</u>

View Point No. 1 is located at Osborne Overlook, approximately 10 miles northwest of the alternative site. The existing view from the Osborne Overlook toward the alternative site is provided as the upper picture on Figure 4-20, contained in Section 4.5.11 of this EIS/EIR. The light-colored sand and rolling topography of the Algodones Dunes dominate foreground and middleground views. The desert floor and the Cargo Muchacho Mountains are seen as silhouetted, thin bands of brown and blue-gray at the horizon line.

<u>View Point No. 2</u>

View Point No. 2 is located on SR 78, approximately 3.75 miles from the alternative site. The view of the alternative site from this View Point is provided as the upper picture on Figure 4-21, contained in Section 4.5.11 of the EIS/EIR. Foreground and middleground views are dominated by the open expanse of the predominantly flat, but gradually ascending desert floor. The natural landscape forms a horizontal orientation, with minimal angular variation created by sparse, irregular patterns of desert vegetation. The Cargo Muchacho Mountains are seen as a blue-gray, silhouetted form just above the horizon line at the center of the field of view.

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TABLE 3-32

Bureau of Land Management 1992 Holiday and Non-Holiday Recreational Users in the Vicinity of the Alternative Site

Proposed Mesquite Regional Landfill

	Average Number of Vehicles	Average Number of Persons*
Holiday Weekends	300	1,050
Non-Holiday Weekends	25	88

Note: * The number of visitors is calculated by multiplying the number of vehicles by 3.5.

Source: BLM, 1993c.

TABLE 3-33

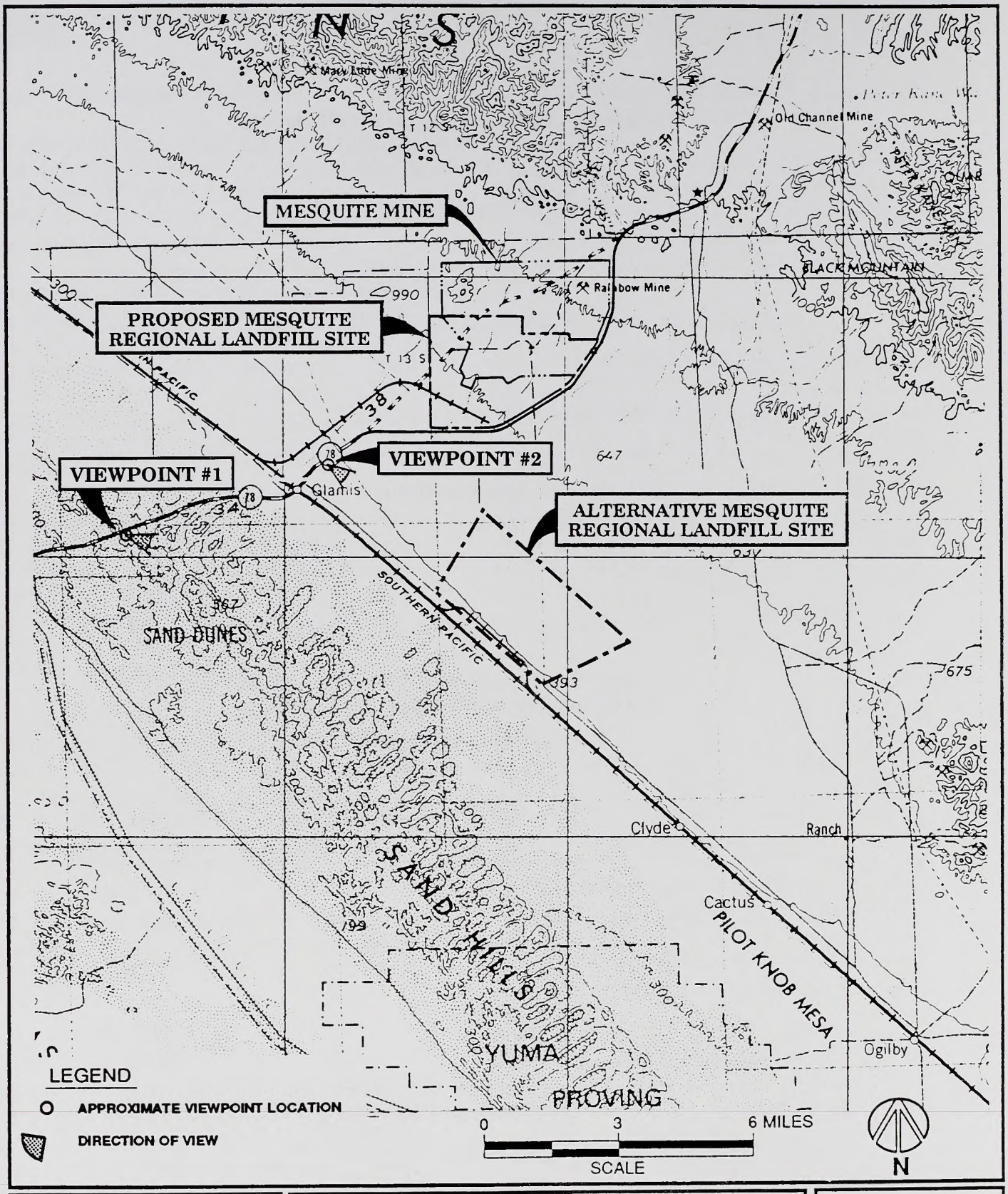
Distance and Direction of Wilderness Study Areas Located Within 25 Miles of the Alternative Site

Proposed Mesquite Regional Landfill

Wilderness Study Area	Distance from Alternative Site	Direction from Alternative Site
Palo Verde Mountains (CDCA 352)	25	Northeast
Indian Pass (CDCA 355)	16	East
Picacho Peak (CDCA 355A)	20	East
Little Picacho Peak (CDCA 356)	24	East
North Algodones Dunes (CDCA 360)	10	Northwest
South Algodones Dunes (CDCA 362)	1.5	South

Note: WAS No. 360, North Algodones Dunes, is also the Algodones Dunes ACEC.

Source: The Butler Roach Group, Inc., 1993



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Viewpoint Location for Visual Analysis

FIGURE **3-39**

3.5.12 Environmental Health And Public Safety

A regional landfill sited at the alternative site would be operationally the same as the Proposed Action. However, the MSW residue trains would cross one additional existing at-grade railroad crossing near Glamis and SR 78.

3.5.13 Socioeconomics

Because the alternative site is located so close to the proposed site, the affected environment described in Sections 3.1.13.2 to 3.1.13.6 of this EIS/EIR would also apply to Alternative III.

3.5.14 Public Services and Utilities

Public services that serve the alternative site are the same as the services that currently serve the proposed site.

The alternative site is currently undeveloped. Electric power is provided to the most populous areas of the County by the IID. No power lines run to the alternative site. However, utility poles are located along the existing railroad right-of-way in the vicinity of the alternative site. No telephone or water lines currently run to the site. There are no existing public sewer services available at the alternative site.

3.5.15 Offered Exchange Parcels

For Alternative III, a land exchange similar to that required for the Proposed Action would occur. Therefore, the existing environmental conditions at the Offered Exchange Parcels described in Section 3.1 of this EIS/EIR would also apply to the exchange parcels required for Alternative III.

3.6 ALTERNATIVE IV - LARGER PROJECT

The larger footprint alternative (Alternative IV), is completely within the property characterized for the Proposed Action. The only difference is that the larger landfill would be located on about 810 additional acres as compared to the proposed landfill. The area of disturbance associated with Alternative IV is fully addressed in Section 3.1, because it is entirely contained within the fenceline of the Proposed Action. The land exchange required for the Proposed Action would also be required for Alternative IV.

4.0

CHAPTER 4.0

ENVIRONMENTAL CONSEQUENCES

4.1 PROPOSED ACTION

4.1.1 GEOLOGY/SOILS/MINERAL RESOURCES

4.1.1.1 Assumptions and Assessment Guidelines

This section assesses impacts to geologic, soils, and mineral resources that could result from the proposed Mesquite Regional Landfill. A significant impact would be one in which the proposed project would:

- Result in substantial erosion in the landfill area or in the surrounding desert environment.
- Be damaged or destroyed as a direct consequence of a geologic event.
- Release substantial quantities of municipal solid waste (MSW) residue, leachate, landfill gas (LFG), or chemicals/untreated washdown water into the environment as a result of a geologic event.
- Substantially restrict the ability to utilize geologic (mineral) resources.

4.1.1.2 Impacts of the Proposed Action

Proposed Landfill Site

Impacts described for facilities at the proposed landfill site would also apply to the optional energy recovery facilities. These facilities could be constructed on-site, between the proposed landfill and intermodal.

Soils

Four of the five soil types in the project area have minimal or no erosion potential (Borst, 1983). The one soil type susceptible to displacement is unidentified sandy loam which comprises the smallest percentage of the five (i.e., estimated at about 10 percent of the total soil present). This type of soil generally occurs on the steeper slopes, which are naturally erosion prone.

Precipitation runoff could cause minor erosion on the manufactured slopes of the proposed landfill. Several aspects of the proposed project design would reduce the potential for erosion. Drainage systems such as those depicted in Figure 2-16 would be constructed on the proposed landfill to prevent substantial erosion. Additionally, coarser mine overburden material would be utilized on the outside of the proposed stability berms that form the landfill slopes, and at appropriate locations on the landfill top, so that long-term erosion of slopes would be minimized (Figure 2-11). Also, if erosional activity is discovered, the Applicant would be required to apply coarse mine overburden material, sand bags, geotextile fabric, or other erosional control measures to the area of erosional activity.

Diversion structures (dikes and trenches) would be constructed to control run-off from the landfill area, including the landfill, intermodal, optional energy recovery facilities, and other project-related structures. There is some potential for increased erosion where these diversion channels would redistribute storm flows into existing downgradient washes. Therefore, the proposed diversion facilities would be constructed to discharge occasional flows at locations approximating the existing conditions. The proposed project would be constructed and operated in accordance with a Storm Water Pollution Prevention Plan as required under the

State of California NPDES general permit. As such, Best Management Practices for control of erosion would be implemented. Therefore, erosion impacts would not be significant.

Mineral Resources

Condemnation borings drilled by Mesquite Mine geologists have been used to determine the limits of gold ore bodies. These borings indicate that valuable mineral resources common to the project area do not exist beneath the proposed site (Morton, 1993b). Therefore, impacts to valuable economic mineral resources would not occur as a result of the proposed project. The future construction of energy recovery facilities would occur on-site and would not impact mineral resources. All sand and gravel resources existing in the proposed landfill site would be utilized in construction and operation of the landfill and related facilities. The proposed project would not substantially restrict the ability to utilize other mineral resources. Therefore, impacts to mineral resources would not be significant.

Leaseable Mineral Resources

The lands within the proposed landfill site are classified prospectively for geothermal resources. Subject parcels are also located in lands classified as prospectively valuable for oil and gas and sodium mineral resources. The closest known geothermal developments are at the Salton Sea geothermal fields. No interest in leasing or exploration and development of geothermal resources is known in the area. Based on Godwin, et al., 1980, the potential for development of these resources at the proposed landfill site is considered low. No impacts to geothermal or other leaseable mineral resources are expected as a result of the proposed action. Therefore, impacts would not be significant.

Seismicity

Surface rupture would not be anticipated, because no Holocene faults exist within the project site. The nearest potentially active fault is approximately nine miles from the proposed site (Section 3.1.1). Regional seismicity is not expected to cause large ground motions at the project site. The slopes of the proposed landfill would be constructed at angles that are shallower than those for which CCR Title 14 § 17777 requires stability analyses (e.g., 3:1 horizontal to vertical). There are no special site conditions that would cause the Title 14 standards to not apply (Environmental Solutions, Inc., 1993c). Nevertheless, stability analyses would be prepared for all permanent landfill slopes and other substantial slopes on-site, and would be submitted with landfill permit applications. Therefore, no noticeable displacement of the proposed landfill would occur as a result of seismic shaking. Also, current Uniform Building Code seismic safety standards would be applied for building designs, including the optional energy recovery facilities. Emergency power would be provided to keep essential facilities operating (e.g., the flare station) in the event of power failures caused by remote seismic activities. Therefore, impacts would not be significant.

Mesquite Mine Reclamation Plan

Appropriate modifications to the Mesquite Mine Reclamation Plan would be made, if necessary, in coordination with Imperial County and the California Division of Mines and Geology (CDMG). One of the requirements of the existing reclamation plan is that the overburden and leached ore be made available for other uses and to this extent, the proposed landfill would be in compliance with this aspect of the existing mine reclamation plan.

Proposed Rail Spur Right-of-Way

Storm water runoff would be passed beneath the proposed rail spur at three locations. Diversion structures would be built within the proposed right-of-way (ROW). Appropriate erosion control measures would be implemented to minimize erosion.

Active gravel "pits" would be avoided by the proposed rail spur and access to areas with

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existing gravel withdrawal agreements would be maintained. Other than gravel, there are no known mineral resources or leaseable mineral resources within the proposed ROW (Morton, 1993b). Because the proposed ROW does not cross any active faults, the proposed rail spur would not experience surface rupture effects (Environmental Solutions, Inc., 1993c). Therefore, impacts would not be significant.

Existing SP Main Line ROW

Rail haul along the existing Southern Pacific Transportation Company (SP) Main Line right-of-way (ROW) would not physically alter water courses or runoff. Therefore, there would be no change in erosional activity along the SP Main Line ROW. Use of the SP Main Line ROW would not impact mineral resources or leaseable mineral resources. The SP Main Line ROW crosses several active faults, including the San Andreas Fault (Environmental Solutions, Inc., 1993c). Seismically-induced ground rupture could result in the temporary closure of the SP Main Line ROW. As discussed in Section 4.1.6, Transportation, this would not substantially affect the Proposed Action. Therefore, impacts related to the use of the SP Main Line ROW would not be significant.

Potential Gas Pipeline to Niland

The potential gas pipeline to Niland would be constructed underground, beneath the proposed rail spur ROW and the existing SP Main Line ROW. Therefore, there would be no impacts to mineral resources or leaseable mineral resources. During and after construction of the pipe, best management practices would be implemented to minimize erosion-related impacts. The pipeline route crosses the potentially active East Highline Canal Lineament and could be subject to seismic impacts related to ground rupture if this pipeline were built (Environmental Solutions, Inc., 1993c).

Pipeline-related impacts to soils (erosion), mineral resources, and leaseable mineral resources would not be significant. Without specific design information, it is not possible to determine if seismic effects to the potential pipeline would be significant. The Applicant could still operate the proposed landfill without the potential gas pipeline. Environmental analysis of this potential project feature would be conducted in the future, if the Applicant decides to pursue construction of this pipeline.

Offered Exchange Parcels

Exchange Parcels in the Santa Rosa Mountains National Scenic Area

Because no known mineral resources occur on the offered exchange parcels in the Santa Rosa Mountains National Scenic Area (SRMNSA), and no disturbance would occur from the proposed land exchange, no impacts to geologic resources are expected to occur (Morton, 1993a).

Exchange Parcels Near the Chuckwalla Bench Area of Critical Environmental Concern (ACEC)

The offered exchange parcels at the Chuckwalla Bench ACEC possess no potential or known mineral values for gold or any other locatable minerals, or leaseable minerals such as geothermal resources, petroleum, asphalt, bituminous rock, oil shale, coat, phosphate, sodium, or potassium. In addition, the offered exchange parcels possess low potential, but no known mineral values for potential salable minerals other than a well "picked over" geode bed. Because the offered exchange parcels near the Chuckwalla Bench ACEC contain no known substantial mineral resources, no significant impacts to geologic resources are expected to occur with the implementation of the proposed land exchange (Morton, 1993a).

4.1.1.3 Mitigation Measures

Incorporated by Regulation

The Applicant shall design and construct the proposed landfill to meet the following geology and soils requirements of California Code of Regulations (CCRs) Title 23, Chapter 15.

- The landfill slopes, foundation, and structures for controlling leachate, surface drainage, erosion, and LFG shall be constructed to withstand ground motions associated with an event between the Maximum Credible Earthquake (MCE) and the Maximum Probable Earthquake (MPE) without damage that could result in environmental impairment or health and safety impacts.

- The landfill slopes and drainage system shall be designed and maintained to limit erosion.

The Applicant shall design and construct project structures that are subject to the Uniform Building Code according to Seismic Zone 4 standards, which are the most stringent in the Uniform Building Code. Implementation of seismic Zone 4 standards would satisfy current Building Code Requirements of the Imperial County Planning and Building Department.

The Applicant shall construct and operate the proposed project, the proposed rail spur, optional energy recovery facilities, and the potential gas pipeline to Niland in accordance with the State of California NPDES general permit for storm water management.

Incorporated Into the Project Design

The Applicant shall implement the following measures to minimize off-site erosion.

- The Applicant shall direct precipitation runoff to the approximate locations where it would have occurred without the proposed project.

- The Applicant shall ensure that peak flow conditions are substantially the same as those that would have occurred without the proposed project.

- The Applicant shall incorporate stable slopes and/or protection such as riprap to limit erosion to diversion ditches not associated with the landfill.

Incorporated to Avoid Significant Impacts

There would be no potential for significant impacts to geology, soils, or mineral resources from proposed project elements with the implementation of the regulatory and project design mitigation measures.

Should the Applicant choose to construct a gas pipeline to Niland, future environmental review of that project shall be required. At a minimum, the issue of ground rupture as it relates to pipeline integrity and the potential release of methane gas shall be addressed.

Offered Exchange Parcels

No mitigation is warranted for the exchange parcels, because no impacts would occur as a result of the exchange.

4.1.1.4 Level of Significance After Mitigation

Based upon regulatory requirements and mitigation measures that would be incorporated into the project design, effects of the Proposed Action would be mitigated so that geology, soils, or mineral resources impacts would not be significant. The significance of potential seismic impacts to the potential future gas pipeline to Niland cannot be determined at this time.

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4.1.2 WATER RESOURCES

4.1.2.1 Assumptions and Assessment Guidelines

This section assesses impacts to water resources that could potentially result from the Proposed Action. It is summarized from detailed water resource investigations conducted by Environmental Solutions, Inc., (1992b), presented in Appendix B. This assessment also identifies mitigation measures resulting from state water quality control, state and federal MSW control regulations, and control factors incorporated into the project design, which would reduce potential impacts to below a level of significance. For purposes of this analysis, a significant impact would be one which:

- Alters surface flow conditions, resulting from short-term precipitation events, to the extent that such flows would substantially alter existing patterns and amounts of surface flow and ground water recharge.

- Degrades precipitation runoff or ground water quality such that other uses would be substantially limited.

- Substantially depletes ground water resources in the Amos-Ogilby hydrologic basin.(1)

4.1.2.2 Impacts of the Proposed Action

Proposed Landfill Site

Impacts described for facilities at the proposed landfill site would also apply to the optional energy recovery facilities. These facilities could be constructed on-site, between the proposed landfill and intermodal.

Surface Water

Certain aspects of the construction and operation of the proposed landfill facilities would have the potential to increase the total amount of precipitation runoff. Specific examples would be on-site buildings such as the optional energy recovery facilities and the intermodal facility, and certain portions of permanent road systems that would be paved, preventing shallow infiltration of rainfall and subsequent evaporation. Runoff from the intermodal area would be directed toward a detention basin designed to collect the first 0.1 inch of water. This design would prevent the runoff from small storms, which could contain minor contaminants from the intermodal surface (i.e., oils), from escaping the site. This water would be pumped to the water reclamation facility. This design would substantially reduce the potential for significant degradation of surface runoff from the intermodal area.

Runoff from the slope portions of the landfill may be greater than runoff from existing desert conditions. On the other hand, peak flows would be reduced as a result of drainage systems installed to control runoff around, and from the landfill surface. The engineered and protected ditches, diversion channels, and detention basins would tend to reduce the peak runoff flow by lengthening the path from the point where precipitation would otherwise reach the ground to its discharge locations into the desert. A reduction in peak flows would reduce flow velocities, and would result in somewhat less erosion in the downstream desert washes. However, considering the relationship of the landfill area to the total watersheds draining through the site from the Chocolate Mountains, the overall changes in flow and erosion potential would be small. Complete diversion of storm water flows to new locations would be avoided by providing a diversion system that, to the

(1) The Amos/Ogilby basin is anticipated to have hydrogeologic connection with the East Mesa basin shown in Figure 3-11. Impact analyses consider both that this connection exists and the conservative assumption that this condition does not exist.

extent possible, would maintain historical flow velocities and would return flows to the same discharge locations adjacent to and across State Route 78 (SR 78) (see Section 2.1.5.2 and Figure 2-16).

Use of previously leached ore as daily cover would not substantially degrade storm water runoff because these materials would only be used after they have been rinsed adequately to satisfy regulatory requirements. The existing Waste Discharge Order (WDO) for the mine requires that the materials be rinsed with fresh water to ensure reagent concentrations do not adversely affect the environment.

Hydrocarbon fuels, miscellaneous reagents, and potentially hazardous residues from the optional energy recovery facilities or other on-site sources would be stored in aboveground tanks and containers and within containment areas to prevent uncontrolled releases. However, there would be the potential for minor hydrocarbon leaks/spills from equipment (e.g., trucks) that would be used for landfill construction and operation. These spills likely would be small, and easily excavated and removed to contained areas for subsequent treatment and/or removal from the site. Procedures to respond to small petroleum hydrocarbon leaks or spills would be developed in the landfill WDO in accordance with criteria approved by the Regional Water Quality Control Board (RWQCB).

Ground Water

Ground Water Use. The Proposed Action would use water from the existing Mesquite Mine well field located south of the project area in the Amos-Ogilby alluvial basin. Even during the remaining 10- to 15-year projected life for the Mesquite Mine, the combined water use from the two projects would not exceed the currently permitted maximum withdrawal rate of 4,033 acre-feet per year. The most-probable, actual water use during this period is expected to range between the existing mine usage rate of about 1,500 acre-feet per year to 3,000 acre-feet per year when both facilities are operating at maximum water use. The increment between the maximum-allowed and the average-anticipated use represents a reserve to allow for unusually high evaporation conditions and the implementation of a LFG enhancement program and optional energy recovery facilities, if approved in the future.

Following closure of the mine, the average annual water usage associated with landfill operations would be expected to be less than 1,000 acre-feet per year, primarily for dust control and for use as make-up water (i.e., replacement for evaporated water) for container and equipment washdown facilities. The majority of the washdown water used on-site would be recycled through the proposed water reclamation facility.

Assuming the maximum annual water use for the proposed 100-year landfill operating life, the total project-related use would represent about 0.2 percent of the 229,000,000 acre-feet of usable and recoverable water estimated to exist within the combined Amos-Ogilby and East Mesa alluvial basins (Environmental Solutions, Inc.; United States Geological Survey (USGS), 1972). The maximum usage would represent 0.3 percent of the available storage if it is conservatively estimated that the Amos-Ogilby and East Mesa alluvial basins are not connected.

The maximum extraction rate represents only about 4 percent of the estimated 100,000 acre-feet of annual recharge that would occur from the Colorado River and the All American Canal to the combined basins, or 8 percent of the 50,000 acre-feet of estimated recharge to just the Amos-Ogilby basin. In either case, the Amos-Ogilby alluvial basin would continue to experience a large, net recharge of water. Based on the comparison of the water to be extracted in relationship to the available stored water and the much larger amount of recharge, water usage for the Proposed Action would not cause a significant impact to the available water supply of the Amos-Ogilby alluvial basin.

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The localized cone of depression that would form around the well field as extraction continues for the proposed project life would potentially have some effect on the depth of water at the several other wells identified within the general area. These would include the Boardman and Glamis wells (Figure 3-13) located 3.5 and 5.5 miles from the Mesquite Mine well fields, respectively, in the Amos-Ogilby basin. The potential drawdown for U.S. Bureau of Land Management's (BLM) Cahuilla Ranger Station well, which is located about 12 miles to the west of the well field in the East Mesa basin, was also estimated. If the Amos-Ogilby and East Mesa basins are not connected, the BLM well would not be impacted at all. Noticeable well drawdown conditions would not be expected at the Gold Rock Ranch or American Girl Mine wells (Figure 3-13) because these wells are closer to the large Colorado River and All American Canal recharge zone (Section 3.1.1) than to the existing Mesquite Mine well field. Table 4-1 summarizes the estimated drawdown projected to occur at area wells for up to 100 years of landfill operations, at the extraction rate of 1,000 acre-feet per year, which is the projected average annual water use for landfill operations alone, and at the extraction rate of 4,033 acre-feet per year, which is the maximum allowable under the existing CUP for the Mesquite Mine well field.

The estimated drawdown amounts are considered to be conservative because: (1) they use the lowest of the range of aquifer properties determined from pumping tests at the Mesquite Mine well field; and (2) no allowance for the large basin recharge is accounted for in the calculations. Estimates using less conservative properties would result in predictions of less drawdown at each of the wells discussed.

The Boardman well, being closest to the Mesquite Mine well field, would have the most potential drawdown. If the Mesquite Mine well field operated at a capacity of 1,000 acre-feet per year, the conservative estimate of drawdown at the Boardman well would be approximately 3 feet after 100 years. For a maximum pumping rate of 4,033 acre-feet per year, the drawdown at the Boardman well with no basin recharge would be about 13 feet. The Glamis well, located 5.5 miles from the Mesquite Mine well field, could have a drawdown between 3 and 12 feet after a 100-year period of continuous production by the Mesquite Mine well field operating between a range of 1,000 and 4,033 acre feet per year. The conservative estimated drawdown at BLM's Cahuilla Ranger Station well would be 2.6 and 11.1 feet for the same conditions, and assuming that this well is within the same basin as the Mesquite Mine well field.

A comparison of the drawdown estimates for the area wells and the total water column in each well (Table 4-1), shows that the potential effect created by the maximum pumping rate for 100 years from the Mesquite Mine well field would be a small percentage of the available water in the affected wells. The conservative maximum estimated drawdown of 13 feet in the Boardman well represents 3 percent of the 430-foot depth of water in that well. The maximum drawdown of 12 feet at the Glamis well represents 4 percent of the 290-foot depth of water in that well. The 11 feet of maximum drawdown at the Cahuilla Ranger Station well would represent about 6 percent of the 186 feet of water available at that location. These modeled changes would not adversely affect the capacity of these existing wells to provide permitted amounts of water at these locations. Therefore, impacts to existing wells would not be significant.

Pumping of the Mesquite Mine well field would not have any noticeable effect on water levels in the rock subbasin beneath the landfill. Because of the lack of drawdown, and considering that ground water does not occur in the shallow alluvium at the proposed site, there is no potential for dewatering-related subsidence that could potentially affect landfill liner continuity. Ground water use would not cause subsidence at the landfill site.

TABLE 4-1

Potential Drawdown Effects at Project Area Wells

Proposed Mesquite Regional Landfill

Pumping Rate (acre-feet per year)	Length Of Pumping (years)	Estimated Drawdown In Feet (1)(2)		
		Boardman Well (3.5 miles from well field. 430-foot water column.)	Glamis Well (5.5 miles from well field. 290-foot water column.)	Cahuilla Ranger Station Well (12 miles from well field. 186-foot water column.)
1,000	25	1.1	0.8	0.5
	50	1.8	1.6	1.3
	75	2.5	2.3	2.0
	100	3.3	3.0	2.6
4,033	25	4.4	3.5	2.3
	50	7.3	6.3	5.1
	75	10.2	9.0	8.0
	100	13.3	12.1	11.1

Notes:

(1) The estimates are considered to be very conservative because they assume the lowest aquifer hydraulic properties determined from pumping tests at the Gold Fields wells, and that the estimated existing recharge of 50,000 to 100,000 acre-feet per year to the alluvial basin does not occur.

(2) Calculations based on two-dimensional MODFLOW model and "This" equation, using the Mesquite Mine well field as the location for the pumping well cone of depression (Environmental Solutions, Inc. 1992b).

Source: Environmental Solutions, Inc., 1993.

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Ground Water Contamination. Potential impacts to ground water quality at the site could occur in several ways:

- The leakage of stored liquids (e.g., fuels, lubricating oils, and hazardous materials) containing undesirable constituents into the subsurface.

- The seepage of leachate from the landfill through the triple composite protective liner and through the vadose (unsaturated) zone to the ground water.

- The migration of LFG from the facility into the unsaturated zone, resulting in the dissolution of trace gases into the underlying ground water.

Site conditions at the proposed landfill site would naturally mitigate against potential ground water contamination because of the small amount of rainfall and the naturally low soil moisture conditions in the vadose zone. These conditions indicate that the downward migration of rainfall infiltration toward the ground water, which is a possible mechanism for contaminant transport, is not currently occurring in this desert area. The potential sources for ground water impacts within the subbasin area are discussed in the following paragraphs.

Leachate. In general, leachate generated by Class III landfills is recognized as a potential threat to ground water. Because of the arid conditions at the site, the likely removal of green waste from the MSW prior to shipment to the proposed landfill, and the high amount of compaction of the waste, it is not anticipated that leachate would be generated for the majority of the operating life or after closure of any disposal segment. The primary exception could occur if an infrequent rainfall event were to occur when MSW residue was being placed at the lowest 10-foot lift and a portion of the operating layer soil (Section 2.1.4.1) was exposed to runoff. In that unusual case, the rainfall that would fall on the landfill working face could flow into the leachate collection and recovery system (LCRS) for a period of a few hours to a few days.

The factors that determine if leachate would escape a lined facility, along with the landfill design elements proposed to substantially reduce leakage of any leachate that would form at the proposed landfill, are listed in Table 4-2.

If defects of a reasonable size and spacing still occurred, the probability that a defect would occur in each of the three liner components in close enough proximity to one another that they would cause a release of leachate would be extremely remote. It is estimated that only fractions of a gallon per minute would leak from an area even if the defects were aligned. However, the chance of the alignment of such defects in the proposed liner system would be so remote that no leakage would be expected to occur. The proposed leachate surface monitoring system that would be constructed along the southern and western landfill segment boundaries and in the southwestern corner of each segment of the proposed landfill would further reduce the potential for leachate to escape to the underlying vadose zone.

Environmental Solutions, Inc. (1992b and Appendix B) analyzed the potential for seepage to occur through the low permeability liner, considering a reasonable size and spacing of hypothetical defects in a synthetic layer portion of the composite liner. This estimate indicates that, for a worst-case assumption, the time for any leaked fluid to reach ground water in the subbasin would be greater than 100 years. This estimate considers the depth to ground water beneath the proposed site, and the low permeability of the Bear Canyon Conglomerate and Basement Rock underlying the proposed site. Approximately an additional 1,000 years would be required for the liquid to flow to the main Amos/Ogilby alluvial basin. During such a long period, contaminant constituents in the seepage water would be naturally degraded and attenuated.

TABLE 4-2

Factors that Determine if Leachate Would Escape a Lined Facility and Design Elements Proposed to Minimize the Potential for Leachate to Escape the Propose Landfill

Proposed Mesquite Regional Landfill

Determining Factors	Design Feature
The height of liquid or water above the liner component.	The proposed leachate collection and recovery system (LCRS) would minimize the height above the liner system of any leachate that may be generated in the landfill. Any leachate that would be generated in the proposed landfill would be conveyed to perforated pipes through a gravel layer, collected in the perforated pipes and conveyed through sealed pipes by gravity out from under the landfill for treatment.
The hydraulic conductivity of the continuous liner material.	The proposed triple composite liner described in Section 2.1.5 would incorporate a flexible membrane liner (FML), a layer of low permeability clay, and a second FML.
The potential for defects (e.g., holes, slits, cracks) in the liner.	The design specifications would include a rigorous quality assurance/quality control (QA/QC) program during liner construction to identify any holes, slits, cracks, and unsealed FML seams. Any potential flaws discovered during the QA/QC process would be corrected by the liner installation contractor to the satisfaction of the QA/QC team before the work was approved by the applicant and all other appropriate permitting agencies.
The hydraulic conductivity, porosity, and natural water content of the soil or rock underlying the liner.	The proposed site has minimal hydraulic conductivity, porosity, and natural water content, as described in Section 3.1.2.

Source: Environmental Solutions, Inc., 1993.

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As described in Section 2.1.7.1, a second leachate drainage layer would be placed under the flow line portions of each landfill segment. This layer would act to collect any small amount of leachate that might penetrate through the triple composite system at the critical liner locations. In the case that leachate were to reach this layer, it would be collected and transported to the site's water reclamation facility.

Based on the combination of site climate, subsurface conditions, proposed leachate control systems, and proposed monitoring procedures, ground water quality impacts as a result of liquids derived from within the landfill (i.e., leachate) would not be significant.

Landfill Gas. Even though the landfill would be constructed at or near the existing ground surface, the potential for downward migration of LFG to the depth of ground water in the subbasin would be possible because of the large area of the proposed landfill. For example, the maximum width of the landfill is about 8,000 feet, while the depth to ground water is 140 or more feet. Because of this configuration, there would be the potential for LFG generated in the decomposing trash to migrate to the ground water, if special gas control systems are not implemented.

The proposed landfill, including the triple composite liner system, would include provisions to collect the majority of the LFG in a manner, and at locations, that would avoid: (1) the development of air and methane mixtures that could be explosive, and (2) the transport of trace organics to the atmosphere and/or ground water. The proposed LFG control system would initially consist of gravel-filled horizontal collector trenches, with perforated pipes, installed at approximately 50- and 250-foot vertical and horizontal spacings, respectively. Each perforated pipe would be connected to a vacuum header pipe on the outside of the landfill. Vacuum applied throughout the landfill would collect and transport LFG to a common location, for destruction by flaring or for energy recovery usage. This would substantially reduce the potential for landfill gas to migrate downward, through any undetected defects in the liner system and through the vadose zone, to come into contact with the ground water at least 140 feet below the surface of the proposed site. The gas control system arrangement could be modified in the future, if appropriate, in response to changing technology.

To further protect the ground water in the subbasin, the RWQCB would require a series of redundant LFG monitoring systems. Initially, these would include the following elements (see Figure 2-20 and Section 2.1.5) as a minimum:

- Vacuum probes at the top of the operations layer to assure that the LFG control system is functioning adequately.

- LFG subsurface monitoring systems (Section 2.1.7.2) in the vadose (unsaturated) zone beneath the landfill.

A vacuum would be drawn on the vadose zone probes periodically to determine if there is evidence of leachate or LFG escaping from the landfill containment. If any indication of an escape is observed, the affected area would be covered with a low permeability intermediate cover to minimize infiltration of the air above the landfill and to allow an increase in the vacuum to be applied. The gas control systems would be adjusted to assure that a negative pressure is maintained above the liner to positively prevent downward gas migration.

Based on the proposed LFG control system and LFG subsurface monitoring systems, and based on the site subsurface characteristics previously described in this section, ground water quality impacts as a result of potential LFG contamination would not be significant.

Other Liquids. The MSW container washdown facility (see Figure 2-8 for location) would include an impoundment and treatment facility for the long-term storage of water that could include concentrations of contaminants that would represent a threat to ground water quality

in the event of a spill or leak. A failure of this storage facility could potentially result in washwater penetrating the large depth of vadose zone and contaminating ground water. The potential for washwater to escape containment into natural subsurface materials would be prevented by: (1) double-lined containment systems to separate the impoundment from the natural geologic materials; (2) a drainage layer for controlling the hydrostatic head on the outside liner to a minimal potential driving force; and (3) a monitoring and pumpback system to remove any liquids that could occur between the liners.

LFG condensate would be transported in the gas collection piping system via gravity flow. This condensate could represent a potential threat to ground water quality if a continuous leak or long-term ponding were to occur. The piping systems for this facility would be located aboveground so that any leakages would be observed and corrected, eliminating the potential for long-term exposures. Also, all tanks or containment impoundments for "waste waters," including waste water from optional energy recovery facilities, would be located either aboveground or in double-contained systems (i.e., aboveground tank with surrounding containment wall) to avoid spills. Sumps for leachate collection would be below ground with monitored double containment systems.

Petroleum hydrocarbons used as fuel for the numerous site vehicles, and recovered solvents from energy recovery systems would also have the potential to affect ground water quality. This potential impact would be minimized by installing all tanks aboveground and within lined spillage containment facilities. In addition, loading and unloading stations for these materials would be located within contained areas to collect any spillages that may occur.

There would also be the potential for isolated petroleum hydrocarbon spills due to mechanical breakdowns of equipment. The potential for such spills to affect ground water would be very small because such spills would be isolated events, incapable of penetrating the site soils sufficiently to reach ground water. In addition, standard operating procedures for the proposed landfill facility would include procedures for excavation of isolated pockets of any contaminated soil for treatment on-site, using approved procedures, or for transport off-site to appropriate disposal facilities.

As a service to transfer station/material recovery facility (MRF) operators, the Mesquite Regional Landfill would provide short-term storage space for recyclable materials. The storage would occur in unlined portions of the landfill footprint and would be limited in duration and volume.

The potential storage of recyclable materials in these areas could affect ground water quality. To prevent this possibility, the Applicant would provide certification to the County of Imperial from the transfer station/MRF operators that the recyclables do not contain hazardous materials, and would limit the materials to include only paper, plastic, aluminum, and recyclable metals. The potential for contaminants to be released from the stored recyclables would be further mitigated by storing these materials underneath protective covers (e.g., plastic or synthetic material) to avoid the potential for occasional precipitation to enter into and/or through the storage area. Also, once the recyclables are returned to the originating community or are landfilled, the storage area would be inspected for evidence of contamination. In the unexpected event that contamination did occur, the contaminated soils would be either treated in situ, removed and treated on-site, or removed and disposed of at a facility permitted for such disposal. Specific storage requirements for each recyclable commodity would be reviewed and approved by the Local Enforcement Agency (LEA) before any material for storage is brought to the site. As a result of these protection measures, this temporary storage activity would not affect surface or ground water quality.

Ground water quality would not be impacted if previously processed ore (from the Mesquite Mine) used for landfill cover is subjected to

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infrequent rainfall events, because processed ore would be used as intermediate or final cover only if it meets the WDO specification for maximum allowable free cyanide.

Proposed Rail Spur ROW

Construction of the proposed rail spur would incorporate best management practices to control storm water pollution. Use of the proposed rail spur by MSW residue trains could result in a spill of MSW residue if a train were to derail. Surface water in the vicinity of the proposed rail spur only occurs as intermittent storm runoff that eventually percolates into the ground or evaporates. In the event of a spill, the MSW Residue Contingency Plan described in Section 4.1.12, Environmental Health and Safety, would be implemented to ensure the impacts to surface and ground water would not be significant.

Existing SP Main Line ROW

The public scoping process identified concerns related to the potential for derailments or other rail accidents to cause the discharge of MSW residue into irrigation water canals crossed by the railroad track. Because MSW residue is a nonhazardous, solid material, there would be no substantial hazardous material danger to public health associated with such an incident. The biggest water quality concern related to a spill of MSW residue into a canal would be bacteriological contamination. This would not be a significant impact as described in Section 4.1.12, Environmental Health and Public Safety. Operators of the canals do not presently have emergency procedures associated with train derailments. The Imperial Irrigation District (IID), operator of the East Highline Irrigation Canal, is presently in the process of preparing an emergency plan associated with highway trucks, as a result of vehicle accidents that have occurred in the past. The Applicant would provide the canal operators with the MSW Residue Contingency Plan described in Section 4.1.12, Environmental Health and Public Safety, to assist in their response to the possibility of a derailment or rail accident in the vicinity of a canal.

Because use of the existing SP Main Line would not create significant surface water quality impacts, ground water impacts would not be significant.

Potential Gas Pipeline to Niland

Construction of the potential gas pipeline to Niland from a future energy recovery facility at the site would incorporate best management practices to control storm water pollution. Once constructed, the gas pipeline could only impact surface or ground water if the pipeline were to leak. The pipeline would be periodically inspected to determine if a leak were occurring and would be repaired as necessary. Because the gas pipeline would carry commercial grade (i.e., cleaned) methane gas, and because the pipeline would be inspected and repaired as necessary, surface and ground water impacts would not be significant.

Offered Exchange Parcels

Ownership of the offered exchange parcels in the Santa Rosa Mountains National Scenic Area (SRMNSA) and nearby the Chuckwalla Bench Area of Critical Environmental Concern (ACEC) area would be transferred to the BLM, and no development or disturbance of these properties is planned. Therefore, water resources would not be affected by the proposed exchange.

4.1.2.3 Mitigation Measures

Proposed Project

Incorporated by Regulation

The Applicant shall incorporate the following water protection features into the proposed landfill construction, operation, and closure as required by CCR Title 23, Chapter 15 regulations administered by the RWQCB, and CCR Title 14 regulations administered by the LEA.

Precipitation Runoff

- Design and construct diversion and drainage facilities to accommodate precipitation conditions associated with the 100-year, 24-hour precipitation event.

- Design and construct the landfill and related containment structures to limit, to the greatest extent possible, erosion.

- Repair any erosion and take steps to prevent further occurrence in a timely manner.

- Collect and manage precipitation onto the landfill that is not diverted by covers or drainage control systems through a leachate control and management system designed and constructed to accommodate the 100-year, 24-hour precipitation event.

Ground Water

- Accept only nonhazardous solid waste, as defined in CCR Article 23, Chapter 15, at the proposed landfill.

- Construct the proposed landfill such that it is not located within 200 feet of any known Holocene faults that could rupture and damage the composite liner and leachate collection system.

- Design and construct diversion and drainage facilities to accommodate precipitation conditions associated with the 100-year, 24-hour precipitation event.

- Collect and manage precipitation onto the landfill that is not diverted by covers or drainage control systems through a leachate control and management system designed and constructed to accommodate the 100-year, 24-hour precipitation event.

- Control moisture infiltration from precipitation into the MSW residue by:

  - Totally covering all refuse left exposed at the end of the working day with 6 inches of compacted soil or an alternative daily cover material approved by the LEA and RWQCB. The alternative daily cover shall only be used if it is determined that it is no longer efficient to use overburden and ore residue from the Mesquite Mine. The alternative shall perform as required by the LEA and RWQCB.

  - The maximum area of MSW residue exposed at any time shall be less than 3.0 acres.

- Ensure a minimum 5-foot separation between highest anticipated level of underlying ground water and the waste (by design, the actual minimum separation will be many times this regulatory requirement).

- Provide a triple composite clay and synthetic material liner, or its equivalent using available technology that satisfies the intent of Resource Conservation and Recovery Act (RCRA) Subtitle D requirements, under the entire base of the landfill area.

- Provide a leachate collection system above the composite liner to direct any leachate to sump areas for collection and on-site treatment.

- Provide leachate subsurface monitoring systems and LFG subsurface monitoring systems in accordance with CCR Chapter 15, Article 5 and requirements of the RWQCB.

- Provide that any leached ore residue used for cover or landfill construction

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materials satisfies standards established by the RWQCB.

- Close the proposed landfill by using wide, compacted soil stability berms with a minimum cover thickness of 7 feet at all slope areas and a synthetic liner protected by at least 2 feet of soil for the final cap closure to prevent water infiltration into closed portions of the landfill. Alternative closure procedures with equivalent permeability and stability performance characteristics may be used to take advantage of future technological advances in material systems, if approved by a modified WDO from the RWQCB.

- Store fuels and other liquids with the potential to contaminate ground water in aboveground containers within containment areas.

- Provide monitored, double-containment systems for any below ground sumps for collecting leachate.

- Design and construct impoundments for the water reclamation facility, optional energy recovery facilities, and all other facilities with double containment liners, and with monitoring and pumpback systems to prevent high hydrostatic pressures on the bottom liner.

Incorporated Into the Project Design

The Applicant shall incorporate the following additional water protection features into the proposed landfill design, construction, and operation.

Surface Water

- Design and construct diversion channels to discharge flows at approximately the same locations and flow rates that occur presently or which historically occurred prior to development of the mine diversion system .

- Locate fuel loading and unloading stations in lined areas, designed and constructed to prevent releases of accidental spills.

Ground Water Usage

- Treat and recycle container washwater and mobile equipment washdown water to the maximum extent practicable.

- Treat and use collected leachate and LFG condensate as washwater or for dust control, to the maximum extent practicable.

Ground Water Quality

- Accept only solid MSW residue that was previously sorted at a transfer station or MRF. Agricultural plant material could also be accepted, provided it is nonhazardous, to offset project-related air emissions.

- Provide a LFG collection system at the base, and throughout the landfill, to collect methane and related trace gases, to prevent the potential contamination of ground water that could occur as a result of subsurface gas migration.

- Collect, treat, and reuse gas condensate water in aboveground systems to avoid the potential for long-term leaks to enter into the subsurface materials.

- Store recyclable materials that may be delivered to the proposed landfill in accordance with procedures agreed with the LEA prior to receipt of the materials.

- Furnish certification from transfer station/MRFs that temporarily stored recyclable materials shipped to the site do not contain hazardous materials.

- Store collected leachate and LFG condensate in aboveground tanks or double-lined ponds with an LCRS prior to treatment. Liquids treated to specifications of the RWQCB may be stored in aboveground tanks or single-lined ponds.

- Install weather protection for temporarily stored recyclable materials to avoid the potential for infiltration of infrequent precipitation into those materials, to prevent the potential for subsequent subsurface leaching to occur at unlined portions of the ultimate landfill footprint.

- Inspect the ground surface in areas used for recyclable materials storage to identify signs of soil contamination once temporarily-stored recyclables have been returned to the originating community or landfilled. Any contaminated areas shall be properly treated in situ, on-site, or disposed of off-site at a permitted facility.

- Develop procedures for the rapid remediation of minor petroleum hydrocarbon spills from vehicles used for construction or waste handling on the project site.

- Use watertight transport containers (e.g., have seals at doors).

Incorporated to Avoid Significant Impacts

There would be no potential for significant water resources impacts after mitigations required by regulations or incorporated into the project design are implemented. Therefore, no additional mitigation measures are recommended.

4.1.2.4 Level of Significance After Mitigation Measures

Based upon regulatory requirements and mitigation measures that would be incorporated into the project design, construction, and operation, effects of the Proposed Action would be mitigated so that the impact to water resources would not be significant.

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4.1.3 BIOLOGICAL RESOURCES

This section is based on the information contained in the biological technical reports included as Appendices D-1, D-2, D-3, D-4, D-5 and D-6 to this EIS/EIR.

4.1.3.1 Assumptions and Assessment Guidelines

In order to determine the potential significance of an impact to biological resources, it is necessary to determine both the relative importance of the resource and the degree of potential project-related impact to the resource. This section identifies the factors considered in determining the importance of the biological resources that occur in the vicinity of the proposed landfill site, proposed rail spur, and the SP Main Line, and the significance of impact.

General Vegetation and Wildlife Categories

Biologic resources are generally considered important if they are limited in distribution, or if their ecological role is critical within a regional or local context. Plants, animals, and habitat that meet the following criteria are therefore considered to be important biological resources:

- Communities, habitats, and populations of plant and animal species that are restricted in distribution.
- Habitat that is critical to a species or a group of species for feeding, breeding, resting, and migrating.
- Biological resources that are of scientific or educational interest because they exhibit unusual physiological, social, or ecological characteristics.
- Areas that serve as core habitats and surrounding buffer zones.
- Corridors or areas that link significant resources to facilitate ecological interchange.
- Habitats supporting species listed as rare, endangered, or threatened.
- Biological resources that are declining or have economic value.

Threatened and Endangered Species

Threatened or endangered species are those species that are in danger of extinction throughout all or a significant portion of their range. Threatened or endangered species are plants and animals that are legally protected under the California Endangered Species Act (CESA) and or the federal Endangered Species Act (ESA), or other regulations. Protected species include:

- Plants and animals that are listed or proposed for listing as threatened or endangered under the ESA (50 Code of Federal Regulations (CFR) 17.11 for listed animals; 50 CFR 17.12 for listed plants; various notices in Federal Register for proposed species).
- Plants and animals that are listed, or proposed for listing, as rare, threatened or endangered under the CESA (California Department of Fish and Game (CDFG), 1991).
- Animal species that are "fully protected" in California (CDFG Code, Sections 3511, 4700, 5050, and 5515).

In addition to listed species, a second group of species are identified under the ESA (50 Federal Register 6184, February 21, 1990, for plants; 50 CFR Part 17, November 21, 1991, for animals). This group, known as candidate species, have not yet been the subject of a proposed or final ruling to become listed. While not provided protection under the ESA, federal agencies are required to consider candidate species in their planning process. For planning purposes, BLM treats candidate species as if they are threatened or endangered. Two categories of candidate species

and one category of non-candidate species are recognized:

- Category 1 - Candidate species for which there is adequate information to support listing as threatened or endangered, but for which, the U.S. Fish and Wildlife Service (USFWS) has not completed listing procedure.

- Category 2 - Candidate species for which there is information that indicates that proposing to list as threatened or endangered is possibly appropriate, but substantial data on vulnerability and threat are not currently known.

- Category 3 - Species no longer under consideration for listing.

Special-Interest Species

Special-interest plants and animals are those species that are vulnerable and recognized as rare (sometimes known as "sensitive") by scientists, conservationists, or agencies, and are therefore, afforded special consideration under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Vulnerability may be due to limited distribution of a species, rarity throughout a wide distribution, particular sensitivity to environmental effects, or a combination of these and other factors.

Special-interest plant or animal species include:

- BLM Sensitive Species. The BLM maintains a list of "sensitive species" which generally includes federal Category 1 and 2 species, as well as other protected species (such as the state protected bighorn sheep).

- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of the *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (Smith and Berg, 1988).

- Animals designated "Species of Special Concern" by the CDFG and listed on the Natural Diversity Data Base (NDDB) (Remsen, 1978; Williams, 1986; CNDDB, 1991).

- Game species, are considered here as special-interest species because of their economic and recreational value.

Significance of Impacts

Based upon NEPA and CEQA guidelines and commonly accepted criteria, an impact would be determined significant if it could:

- Substantially diminish habitat for a plant or animal species.

- Substantially affect a threatened, endangered, or category species, special-interest species, or its habitat.

- Interfere substantially with the movement of a resident or migratory wildlife species.

The significance of potential impacts to vegetation and wildlife are evaluated based upon sensitivity of the resource and the extent of the impact. Highly sensitive resources (such as a threatened or endangered species) may be able to absorb only a limited degree of impact. Conversely, resources determined to have a low sensitivity (e.g., common or widely distributed species, or species that may be declining elsewhere but have a large, locally stable population) may be able to sustain a relatively large impact or population loss and not be significantly affected.

"Incidental take" refers to takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant (50 CFR §402.02). Some impacts associated with large construction projects can be considered incidental takings. Take is defined as an action that would "harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 U.S.C. §1538 [1973]). Take has also been

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defined through case law as an adverse modification of habitat. Habitats falling within any of the three categories for desert tortoise (*Gopherus agassizii*) management by BLM are considered important resources (Threatened and Endangered Species, Section 3.1.3.5). Impacts to tortoises and their habitat are evaluated according to the above criteria. Incidental take of federally threatened or endangered species is authorized by the Secretary of the Interior through the Section 7 consultation process.

Biological impacts are not considered significant if the resource is not considered important or sensitive according to the above criteria, or if the extent of impact on the species or its habitat is limited.

4.1.3.2 Impacts of the Proposed Action

The Proposed Action includes optional energy recovery facilities that could be constructed and operated in the future. These facilities would be constructed on-site, between the proposed landfill and the intermodal. The impacts of these facilities are considered in the discussion of on-site impacts.

Vegetation

Plant Community Impacts

Proposed Landfill Site. Figure 3-18 depicts vegetation and wildlife habitat areas in the vicinity of the proposed landfill site. Approximately 588 acres on-site has been previously disturbed to the extent that they are no longer considered to have value as habitat. The Proposed Action, including the proposed rail spur, would impact the remaining vegetation on approximately 3,657 acres not previously disturbed by mining, primarily through direct removal of plants for construction of facilities. The majority of surface disturbance would be required for the construction of primary facilities, including the landfill, intermodal, and roadways. Additional areas of surface disturbance would be required for ancillary facilities such as the LFG flares, power lines, water lines, storm water and erosion control, fencing, and for gas, ground water and air monitoring stations. Areas for temporary storage and use of materials (staging areas) for construction activities prior to and concurrent with landfill operations would also be required.

The two native plant communities in the project area, desert microphyll woodland and creosote bush scrub, are the habitat types that would be directly impacted. Blue palo verde (*Cercidium floridum*) and desert ironwood (*Olneya tesota*), associated with these two plant communities, would also be impacted.

The vegetated areas that would be disturbed by the project represent a very small percentage of similar vegetation communities that occur in the project vicinity and in the Colorado Desert as a whole. As such, the project area is not considered a significant portion of the available plant community. Undisturbed adjacent areas throughout the region provide similar habitat for plant species. Because the proposed project would be located in plant communities that are widely distributed, it would not significantly reduce the overall species diversity or population of any plant species within the Colorado Desert.

Based upon the types of vegetation communities and species represented, and the location of the project site in the context of the Colorado Desert, proposed activities at the landfill would not result in significant impacts to: (1) vegetative communities restricted in distribution, (2) core habitats, or (3) buffer zones.

Proposed Rail Spur Right-of-Way. The proposed rail spur ROW contains approximately 78 acres of native plant communities that are similar to those of the proposed landfill site. Based on the types of vegetation communities and species represented, and the location of the rail spur alignment in the context of the Colorado Desert, proposed activities along the rail spur alignment would not be significant.

Existing SP Main Line Right-of-Way. The increased daily train trips along the existing SP Main Line ROW would not be significant. No additional disturbance to the SP Main Line ROW

would be required as a result of increased train trips. Only a minimal increase in routine maintenance would be necessary along areas that have been previously disturbed within the SP Main Line ROW. This would not create a significant adverse impact to vegetation communities along the rail-haul route.

Potential Gas Pipeline to Niland. The potential gas pipeline to Niland would be located entirely within the existing SP Main Line ROW and proposed rail spur ROW. Vegetation in the SP Main Line ROW has already been completely disturbed due to the installation of another pipeline and a communications cable within the last 20 years. Vegetation within the proposed rail spur ROW would be disturbed during construction of the rail spur. Additional disturbance attributed to potential gas pipeline installation and maintenance would not be expected to be significant when considered with maintenance activities required within the SP Main Line and rail spur.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

Impacts to Threatened and Endangered Species

Proposed Landfill Site. There are no plant species listed as threatened, endangered, or category candidates for listing that occur or are expected to occur on the proposed landfill site.

Proposed Rail Spur Right-of-Way. There are no plant species listed as threatened, endangered, or category candidates for listing that occur or are expected to occur on the proposed rail spur.

Existing SP Main Line Right-of-Way. There are no plant species listed as threatened, endangered, or category candidates for listing that occur or are expected to occur within the disturbed SP Main Line ROW. However, several threatened, endangered, and category species occur adjacent to the disturbed SP Main Line ROW.

Potential Gas Pipeline. There are no plant species listed as threatened or endangered that occur or are expected to occur within the disturbed SP Main Line ROW or rail spur ROW.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

Impacts to Other Special-interest Species

Proposed Landfill Site. Plant species recognized as sensitive by scientists, conservationists or agencies do occur on or near the project site, as indicated in Appendix D-6. The following plants are not currently provided legal protection, but they could possibly meet federal or state criteria for listing as threatened or endangered because of their declining populations.

Fairy Duster (Calliandra eriophylla) CDFG NDDB; CNPS List 2. This species was found in the project area, and is considered "rare in California" by the CNPS, although it is common elsewhere. The occasional presence of fairy duster has been noted within the area of the Proposed Action, primarily in the washes. A larger population was noted off-site at the Mesquite Mine (Pritchett, 1984). Pritchett estimated that the plants constituted a very small portion of the population in the eastern Colorado Desert, and noted that they ranged well outside of California. Project-related impacts would not be significant in the context of the species distribution of this plant.

Booth's Evening-Primrose (Camissonia boothii) [C. decorticans] CDFG NDDB; CNPS List 4. This species was reported to exist within the project area, and is considered a special plant due to concerns regarding its range and status. Because this species ranges both in and outside of

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California, project-related impacts would not be significant in the context of the distribution of this plant.

Ribbed Cryptantha (Cryptantha costata) CDFG NDDB; CNPS List 4. This species was found in the project area, and is considered a special plant due to concerns regarding its range and status. It is found on-site in sandy wash deposits. Because this plant species is found in sufficient numbers and because it is distributed in five counties (Imperial, Inyo, Riverside, San Bernardino, and San Diego), this plant is not considered to be threatened at this time. The loss of individuals on-site would not be significant.

Long-lobed Four-o'-clock *(Mirabilis tenuiloba)* CDFG NDDB; CNPS List 4. This species was reported to exist within the project area, and is considered a special plant due to concerns regarding its range and status. Because this species ranges both in and outside of California, project-related impacts would not be significant in the context of the distribution of this plant.

Blue palo verde and desert ironwood would be impacted by the Proposed Action. These plants are classified as regulated state plants and are protected by state law. However, this law was designed to regulate harvest of plants for nursery and other purposes and does not apply to land clearing or other development activities (CDFG, 1993). The Applicant would allow collection of these species by interested collectors prior to their disturbance. Therefore, impacts would not be significant.

Proposed Rail Spur Right-of-Way. Ribbed cryptantha, Booth's evening-primrose, blue palo verde, and desert ironwood are expected to occur within the proposed rail spur alignment. Impacts would not be significant.

Existing SP Main Line Right-of-Way. Concerns regarding the rail-haul route center on the increase in the number of trains, potential accidents, and maintenance activities and their impact on plant species that are in proximity to the rail line. A list of potentially affected plant species of interest was compiled from the CDFG, NDDB, CNPS, and other sources. These are contained in Appendix D-6.

The increase in rail traffic would result in a potential for an increase in the number of train accidents along the line. Based on actual experience, rail transport accidents are infrequent and are rapidly cleaned up for both environmental and operational reasons. Effects of accidents that do occur generally are localized at the SP Main Line ROW. Exceptions would involve explosion or liquid spill, neither of which would be a foreseeable occurrence related to the transport of MSW residue. Proposed rail accident clean-up methods are fully discussed in Section 4.1.12.2.

Plant species that could be affected along the existing ROW are known to occur primarily outside of the disturbed ROW and so, by definition, would not be significantly affected.

Proposed Gas Pipeline to Niland. Concerns regarding the installation and maintenance of the proposed gas pipeline center on the disturbance of vegetation within the ROWs for the SP Main Line and proposed rail spur. As noted above, Ribbed cryptantha, Booths's evening-primrose, blue palo verde, and desert ironwood would be affected by construction and maintenance of the proposed rail spur. Construction of the proposed gas pipeline to Niland would be confined to the same area, and would therefore not result in significant impacts. Similarly, plant species that could be affected along the existing SP Main Line ROW are known to occur primarily outside of the disturbed ROW, and so by definition, would not be significantly affected.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

Wildlife

General Wildlife and Wildlife Habitat Impacts

Proposed Landfill Site. Implementation of the proposed Mesquite Regional Landfill project would result in the removal of on-site wildlife habitat as facilities were developed and landfilling progressed. Potential impacts to wildlife and wildlife habitat would occur from both construction and operation. Most wildlife would be precluded from using the landfill site following the construction of the tortoise proof perimeter fence, and on-site habitat would be reduced in association with vegetation removal for project facilities. Eventually, facilities associated with project operations would replace approximately 3,579 acres of existing wildlife habitat on the proposed landfill site.

Construction would affect the habitat of many common species of desert animals that are found in this region, as well as a few sensitive or protected species that use the area. Resident reptiles, including the desert tortoise, would be displaced from the site. On-site habitat would be lost or reduced for resident birds. On-site habitat used by wintering and migrating birds for cover, forage, and nesting sites would be lost or reduced. The loss of habitat for migrant birds in the lower Colorado River Valley has created a need to maintain peripheral habitats for bird breeding and wintering. The habitat in the project area is a small part of a large but lesser-quality, bird-breeding and wintering habitat resource provided by the Colorado Desert. Because vegetation in the project area is sparse, loss of this area as a bird-breeding and wintering area would not be considered a significant impact.

Mammals, such as the mule deer (*Odocoileus hemionus*), Nelson's bighorn sheep (*Ovis canadensis nelsoni*), and Gambel's quail (*Callipepla gambelii*), visit the site to browse. The development of the proposed landfill would decrease available foraging area on a regional basis. However, the surrounding area is virtually undeveloped and would not be affected by the proposed landfill. Therefore, there would be no overall effect on the ecological systems that supports mammals that are indigenous to the area and impacts would not be significant. Smaller mammals, reptiles, and amphibians (i.e. wildlife with small home ranges and reduced mobility) would be affected the most due to their inability to relocate off site. Because these species are regionally abundant, their displacement would not significantly impact the regional ecosystem.

Equipment operation and human presence would be expected to further affect wildlife. Direct mortality could occur to resident animals in burrows or nests destroyed by heavy equipment. Increased road and rail traffic and on-site operating equipment may result in individual animal fatalities. Animals that would move (or be moved) off the site could indirectly affect animals in adjoining habitat by inducing temporary population stress. Daily operations could impact species sensitive to high noise levels. Noise and the presence of humans associated with project operations may discourage the presence of the larger mammals such as the mule deer and bighorn sheep, as well as the larger predators such as the kit fox (*Vulpes macrotis*), gray fox (*Urocyon cinereoargenteus*), and coyote (*Canis latrans*).

Surface disturbances and water use for dust control could facilitate the spread of introduced plants such as tumbleweed, salt cedar, and black mustard. Controlled water use and implementation of weed control measures, as necessary, would mitigate these effects. Surface disturbances and habitat loss as a result of project construction would not be expected to significantly affect wildlife populations due to the availability of adjacent large habitat areas. In addition, compensation lands primarily provided to offset loss of desert tortoise habitat, would also benefit other species.

The proposed landfill would similarly not be expected to significantly interrupt wildlife movement patterns or result in additional habitat fragmentation (the local habitat is already fragmented by the Mesquite Mine and SR 78) because wildlife would be able to move around the proposed project area to get to the other side. The

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project site is not known to provide significant habitat for animal species of restricted distribution, or to provide core habitat for any species. Impacts would not be significant.

Human and landfilling activities could facilitate the introduction or spread of the house sparrow, raven (*Corvus corax*), gull (*Larus spp.*) and rodent populations. Long-term establishment of rodents accidentally transported to the site is unlikely (Section 4.1.12). Active use of daily cover and other mitigation measures incorporated in the Proposed Action would minimize the proliferation of rodents, house sparrows, gulls, and ravens.

Concern has been expressed about the potential for wildlife species to be exposed to hazardous substances that would be associated with landfill operations. Concern has also been expressed over the small amounts of household hazardous waste (HHW) that could exist in properly-screened, landfilled MSW residue, or HHW removed from the MSW residue and temporarily stored on-site. Any HHW removed at the landfill face would be taken to a specially designed storage facility on-site. The storage facility would be locked and the area fenced to preclude accidental entry by humans or wildlife. The materials themselves would be stored in containers and would be shipped to an appropriately permitted disposal facility as specified by law. Other potentially hazardous substances used in connection with landfill operations (e.g., oil, gasoline) would also be stored in containers in appropriate areas to prevent access. During normal landfill operations, each of the working faces of the landfill would be kept relatively small (a maximum of 0.5 acres), with completed areas covered by at least six inches of cover. Further, the landfill would be fenced. For these reasons, the potential for wildlife to access hazardous materials would not be significant.

The affects of vehicle traffic along SR 78 and Ogilby Road, which can be attributed to the proposed landfill project, are not expected to increase significantly over current use (Table 4-3). Consequently, impacts negatively affecting wildlife along those routes would not change, and would continue to be insignificant.

Proposed Rail Spur Right-of-Way. Construction of the proposed rail spur would disturb approximately 78 acres of creosote bush scrub and desert microphyll woodland habitat. Approximately four to five miles of track would extend between the existing SP Main Line ROW and the western boundary of the landfill. Potential impacts to wildlife and wildlife habitat would occur from both construction and operation.

Rail spur construction would affect the habitat of many common species of desert animals that are found in this region, as well as a few sensitive or protected species that utilize the area. Resident reptiles, including the desert tortoise, would be displaced from the proposed rail spur alignment. It would also contribute to habitat fragmentation for small mammals, reptiles, and amphibians in the area. These forms of wildlife have small home ranges and are less mobile than larger wildlife.

Rail traffic along the proposed rail spur (ten one-way train trips per day) would impact existing wildlife crossings. However, this train traffic would not threaten the existence of any common species. Construction and operation/ maintenance of the rail spur would not significantly impact common wildlife species in the area.

Maintenance activities associated with the rail spur would be restricted to the rail line or existing roads provided for that purpose. No activity outside of the rail spur ROW would occur without prior BLM approval.

Existing SP Main Line Right-of-Way. The additional ten one-way train trips per day along this line, would incrementally impact existing wildlife crossings. However, this small incremental increase in train traffic would not threaten the existence of any common wildlife species.

Maintenance activities for the SP Main Line involve inspection for damage and replacement of worn components. Inspection of the entire SP Main Line track, including the track on the trestle

at Salt Creek, occurs at least once a week. Typically inspections are completed using the rail line itself, or existing roads. These activities are not dependent on traffic volume and so are not expected to be altered in relation to the proposed project.

Track replacement occurs about once every 12 years, a schedule that is related to traffic volume. Therefore, the addition of landfill-related traffic could result in track replacement occurring more frequently, such as 10-year intervals. Disturbance associated with track replacement is confined to right-of-way, as personnel and equipment are transported to the site via rail. Therefore, impacts associated with maintenance activities would not be significant.

Concern has also been expressed that, in the event of a rail accident, MSW residue could be spilled, and wildlife would have access to hazardous components in the waste creating impacts to existing wildlife. Although such a scenario is feasible, the potential for a significant effect on wildlife is remote. As discussed in Section 4.1.6, rail accidents would be quickly cleaned up. Moreover, prior to rail transport, the MSW would be sorted at a transfer station/MRF where hazardous materials and liquids would be removed from the waste stream. This would substantially reduce the amount of HHW contained in the MSW residue containers during transport to the proposed landfill. In the event of a rail accident, spillage of MSW residue would not automatically be expected because of strict International Standards Organization (ISO) certification standards regarding container construction. Current rail freight spillage tends to be localized within the railroad ROW. This ROW (varies between 100 and 200 feet) is already disturbed by rail operations and maintenance. Therefore, wildlife activity in this area is reduced. In the event of a spill, initial personnel would be expected to arrive within an hour of derailment; heavy duty equipment, if needed, would not arrive for three to four hours. Waste would be removed from areas that are accessible to wildlife and, at the same time, human activity introduced into the area would discourage wildlife. These activities would be expected to be a deterrent to wildlife scavenging. Impacts would not be significant.

Potential Gas Pipeline to Niland. Impacts to common wildlife species resulting from construction and operation of the potential gas pipeline to Niland are expected to be minimal. Installation of the pipeline would occur within the disturbed SP Main Line ROW and rail spur ROW, as would all maintenance activities for the gas pipeline. Maintenance would involve inspection and repair. Some burrowing animals may be impacted by installation of the potential gas pipeline if they use the berms supporting the tracks in both the SP Main Line ROW and the proposed rail spur ROW. Vegetation used as fodder would have been previously disturbed by other ROW activities. Therefore, impacts are not expected to be significant.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

Impacts to Threatened and Endangered Species

Proposed Landfill Site. This section discusses impacts to the desert tortoise, ferruginous hawk, loggerhead shrike, and the California leaf-nosed bat, the only threatened, endangered, or candidate species found or expected to occur on-site.

Desert tortoise (USFWS: Threatened; CDFG: Threatened). The project area lies at the periphery of the geographic distribution of desert tortoise populations in California, as mapped by the BLM. Due to its low elevation, the habitat is relatively poor, as reflected by the low density of the tortoise population. A total of 83 definite and questionable tortoise sign was found during specific tortoise surveys of the proposed site (Appendix D-3). Of the 83 sign, 63 were located on the planned facility site, and 20 on the proposed rail spur and associated zone of

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influence transects. Approximately 15 tortoises greater than 140 mm in carapace length are anticipated to exist on sections 7, 15, 18, 19, and the rail spur. There is an approximate total of some 75 tortoises, a peripheral population that does not serve as a corridor connecting important populations (Appendix D-3).

It is proposed that resident desert tortoises be located and removed from the project site prior to surface-disturbing activities. The tortoises would be relocated to surrounding habitat and precluded from site reentry by fencing. Figure 2-33 shows the proposed fencing plan for the Mesquite Regional Landfill. The USFWS has previously approved similar measures for the adjacent Mesquite Mine. Based on these procedures, primary impacts to the on-site tortoises would be relocations (incidental take) and the loss of up to approximately 3,579 acres of BLM Category III desert tortoise habitat on the proposed landfill site.

Direct impacts could also occur to tortoises that encounter road traffic. There would be the potential for tortoises to be killed by increases in traffic on SR 78 and on the access road that leads to the site. This increase in traffic on SR 78 would be small (see Table 4-3 in the Transportation analysis) and landfill workers would receive desert tortoise training and would be taught authorized procedures regarding encounters with desert tortoises. Therefore, impacts would not be significant.

Secondary impacts to the relocated tortoises could occur as a result of potential stresses associated with relocation (mostly, but not limited to, lack of knowledge of cover sites, nest sites, and foraging areas). Established tortoises in the recipient population could potentially be affected by competition for foraging land and increased antagonistic social interactions. The degree to which these factors would occur and affect the success of relocation are not well understood. Impacts would also include temporary disruption of the vertebrate community structure, including predator/prey relationships, adjacent to the site.

Effects to relocated tortoises include disturbance and stress, habitat loss, and potential disease transmission during relocation efforts. Relocated tortoises and resident tortoises at the release site would be affected by these factors. There is no evidence at the landfill site of the respiratory disease that has affected northwestern Mojave Desert population of tortoises. However, Chuckwalla Bench, approximately 30 miles northwest, has been experiencing statistically significant tortoise losses since at least 1988 from an unknown pathogen.

Although every effort would be made to place tortoises in areas where resources would be capable of supporting the additional animals, it would be possible that the relocated tortoises would attempt to return to the proposed landfill site. Animals attempting to cross SR 78 could be killed by motor vehicles. Construction of tortoise fencing along large segments of highly traveled roads is being accomplished at some locations in the Mojave Desert to prevent tortoises from wandering across the roads. Use of fencing along the south side of SR 78 would block northward travel of tortoises that might attempt to return to the landfill area. However, such fencing would prevent both north-south and south-north wildlife movements of various species, including the desert tortoise, depending on the height and type of fence installed, acting as an additional barrier to wildlife movement. In addition, desert tortoise populations at the proposed landfill site are relatively low compared to areas where roadside fencing has been installed. Use of roadside fencing along SR 78 would not provide a significant benefit to the long-term survival of the desert tortoise, or other wildlife species.

Other secondary impacts could result from increased predation by ravens and other carnivores attracted to the landfill site in response to MSW residue, lights, increased perch sites, road kills, standing water, and windblown refuse. The growth of raven populations would be a potential impact to tortoises because ravens have been known to eat tortoises. Ravens have apparently preyed on juvenile tortoises for years, but excessive or abnormally high rates of consumption have been

noted recently (BLM, 1989). Once a raven family develops a habit of preying on a particular animal as a food source, this behavior can be learned by other individuals, affecting the available prey. In some areas of the western Mojave Desert, for example, ravens have been found to consume large numbers of young tortoises, from hatchlings up to six years of age. This predation may have an impact on the population dynamics of the affected tortoise population (Berry, 1988). Project-related tortoise predation by ravens, if it were to occur, would be significant.

Unmitigated impacts to the desert tortoise would be significant. The project design incorporates several mitigation measures designed to reduce impacts to the tortoise. While some impacts (such as habitat loss) would be unavoidable at the site, the established mitigation measure of compensating for such habitat loss through the acquisition and transfer to federal ownership of higher quality habitat would be implemented. The level of such habitat compensation would be determined by the BLM in consultation with the USFWS and the CDFG. For the landfill to be constructed, these agencies would have to be satisfied that the mitigation measures for the tortoise were adequate so as to prevent the project from jeopardizing the continued existence of the tortoise.

The number of noise events along the SP rail line would increase with the addition of project-generated traffic. It is expected, however, that tortoises would not be significantly affected by such an increase. Lawhead, et al. (1991) conducted two studies to investigate the relationship of the desert tortoise to potential habitat along active rail lines. One survey was conducted along an active rail line between Mojave and Searles, and one was along an active line between Mojave and Barstow. Both studies concluded that tortoises are not appreciably affected by train noise and vibration. In one study, tortoise burrows were found in a berm within 60 feet of the track. In the other, burrows were located within the berm supporting the track. Therefore, tortoises are not expected to be adversely affected by rail traffic-related increases in noise, and noise impacts would not be significant.

Ferruginous hawk (Buteo regalis) (USFWS: Category 2 Candidate; CDFG: CSC). The proposed project would eliminate some of the habitat that supports this transient species. Due to the post-1980 trend of increased winter sightings of this species in Blythe, and the preference of the ferruginous hawk for open ground (Rosenberg et al., 1991), the proposed site and surrounding areas may increasingly provide wintering resources for this species, especially during periods of above normal rainfall. However, impacts would not be significant in the context of the distribution of this species and availability of similar habitat.

Loggerhead shrike (Lanius ludovicianus) (USFWS: Category 2 Candidate; CDFG: CSC). The proposed project would eliminate some of the habitat that supports this transient species. However, because the loggerhead shrike is a fairly common resident in agricultural land, desert wash and desert-edge scrub, grassland, broken chaparral, or anywhere expanses of open ground for foraging are near scattered bushes or low trees, impacts would not be significant in the context of the wide distribution of this species.

California leaf-nosed bat (Macrotus californicus) (USFWS: Category 2 candidate; CDFG: CSC). Populations of the California leaf-nosed bat are known to occur in the Chocolate Mountains north of the proposed landfill site, and in the Cargo Muchacho Mountains to the southeast. The leaf-nosed bat is the most northerly representative of a neotropical family of bats. It neither hibernates nor migrates and remains active all year in the Southern California deserts. Larger populations (ten or more) have been found to use warm and humid abandoned mine shafts and adits as roosts. Roosts with appropriate temperature and humidity appear to be a limiting factor in the distribution of this species in California. In addition, appropriate foraging areas in the vicinity of the roost are necessary to support the population. In the project area, desert washes appear to support the greatest density of vegetation and associated insects that could provide forage for the bats. Bat

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foraging activity has been little studied, but data from individuals in the Cargo Muchacho Mountains appear to indicate that the bats forage further in the summer (two to three miles) when temperatures are warmer than in the winter (one to two miles) when cool air temperatures force the bats to remain close to their roost. Winter foraging areas therefore appear to be a critical factor.

The proposed project site is within the range of the California leaf-nosed bat, as well as other, more widely distributed bat species. Bats have been observed in previous baseline environmental studies for the Mesquite Mine, although the specific species were not determined. The project site does not contain abandoned mine shafts or adits that would be used as roosts by the California leaf-nosed bat.

Recent baseline environmental studies on the Chocolate Mountain Aerial Gunnery Range (CMAGR) to the north of the project site have tentatively identified a California leaf-nosed bat population comprised of 50 to 100 individuals inhabiting the abandoned Mary Lode Mine. This mine is located approximately six miles northwest of the proposed landfill. The California leaf-nosed bat population at the Mary Lode Mine is too distant from the proposed landfill site to be within typical foraging range. Also, the Mary Lode Mine is not a maternity roost for this species. Therefore, development of the proposed landfill would not have a significant impact on the California leaf-nosed bat.

Proposed Rail Spur Right-of-Way. The impact of the proposed rail spur would be related to new disturbance of approximately 78 acres of habitat and a new transport corridor along its four to five mile length. As a permanent transportation corridor, the rail spur would contribute to habitat fragmentation in the area.

Direct impacts from the rail spur could occur to tortoises that encounter rail traffic. Without special design, train tracks are considered a serious impediment to travel; tortoises could become trapped between the tracks and die of exposure. It has been found that tortoise sign was significantly less within 0.5 miles of a busy track system than it was further away (Appendix D-3). Although the frequency of train traffic on the landfill rail spur would be low to moderate (ranging from two to ten one-way trips per day), rail traffic could result in a danger to tortoises. The presence of the rail spur would create significant adverse impacts to the threatened desert tortoise.

The berm and tracks would form a barrier which, while not completely preventing crossover travel, would reduce tortoise movement and result in further segregation of the area's tortoise population. Also, the rail spur would be relatively parallel to and in proximity to SR 78, an existing barrier to north-south tortoise movement. Therefore, the proposed rail spur would be an additional hindrance to tortoise movement in the area. Water drainage crossings under the proposed rail spur would help tortoises negotiate this new barrier. Tortoises initially located between the newly constructed rail spur and SR 78 would be able to move north through these drainage crossings.

A survey of the proposed rail spur ROW for desert tortoise sign (Appendix D-3) was performed and the study concluded that tortoise habitat exists along at least a portion of the rail route. Monitoring to avoid tortoises and habitat features (e.g. den sites, drinking depressions, etc.) to the extent possible, would be necessary during construction of the proposed rail spur.

Similar to the proposed landfill site, construction, operation, and maintenance of the proposed rail spur would not significantly impact the loggerhead shrike, ferruginous hawk or the California leaf-nosed bat because these species are highly mobile. Some foraging habitat for these species would be lost.

Existing SP Main Line Right-of-Way. The following section discusses SP train accident spill response procedures and impacts to the listed desert pupfish, razorback sucker, and Yuma clapper rail. Impacts to these species are discussed because the rail-haul route traverses the Salt Creek

ACEC where these endangered species occur. Other species that occur along the rail haul route would not be directly impacted in the event of a rail accident because they occur outside the disturbed SP Main Line ROW, in which impacts would be confined.

Potential MSW Spill Along SP Main Line. In the event of an accident involving a landfill-bound train at the Salt Creek trestle, SP would employ its standard procedures for incident response in an environmentally sensitive area, and cleanup would be performed in coordination with BLM and USFWS.

The procedures that are currently used in the event of a train accident resulting in a spill of cargo are described in Section 4.1.12, Environmental Health and Safety. SP would respond to a spill of MSW residue at Salt Creek using similar procedures. Specifically, biologists familiar with the habitat and species in the vicinity of the spill would be called in to advise SP on clean-up procedures, and to coordinate with BLM, USFWS, and CDFG.

Specific procedures would vary according to site conditions and the nature of the spill. Procedures that occurred in the past included the use of:

- Temporary fencing to:
  - Prevent access to a derailment area by the public and wildlife.
  - Help prevent loose debris from blowing outside the area.
- Netting to cover loose material that has spilled.
- Trapping and removal of sensitive species until it was safe to relocate them to the affected area.

Avoidance of sensitive habitat features during clean-up operations would be a priority. Because the MSW residue bound for the Mesquite Regional Landfill would be sorted prior to rail transport, it is expected to be dry. Therefore, cleanup of any MSW residue would not pose any unusual problems. Access to the ROW would be by existing roads or rail.

Desert pupfish (Cyprinodon macularius) (USFWS: Endangered; CDFG: Endangered) and Razorback Sucker (Xyrauchen texanus) (USFWS: Endangered, CDFG: Endangered). The potential for impact to desert pupfish that inhabit Salt Creek ACEC and razorback sucker that potentially inhabit Salt Creek and do inhabit IID irrigation canals would primarily be related to the impact of spilled diesel fuel (from the train engines) or MSW residue entering the shallow, wet habitats. SP indicates that there has never been an accident or derailment at the Salt Creek trestle. While the added project-related traffic would create an increase in the chance of an accident or derailment at exactly this location involving an MSW residue train, this likelihood would be extremely small and would not pose a significant threat to the pupfish. If such an accident were to occur, cleanup would be performed in coordination with the BLM, CDFG, and USFWS to assure appropriate measures were taken to protect this species. An indirect impact could occur from trash blowing into their habitat, as a result of either breakage of an MSW container in connection with a nearby accident or derailment or failure of a trash container to remain closed during transport. The MSW Spillage Contingency Plan described in Section 4.1.12 contains instructions for train operators and response teams to take steps to prevent trash from blowing into, or onto the banks of their habitat in the event of a nearby accident or derailment. Each MSW residue container would be secured in a manner to prevent premature opening during the trip along the proposed rail-haul route to the landfill.

Impacts related to routine maintenance or reconstruction of the trestle and rails are not expected. In addition, routine activities would not significantly change as a result of the additional rail traffic for the proposed project. Further, primary pupfish habitat is about two miles upstream of the rail trestle. For these reasons, impacts would not be significant.

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Yuma Clapper Rail (Rallus longirostris yumanensis) (USFWS: Endangered; CDFG: Threatened) and California Black Rail (Caterallus jamaicensis corturniculus) (USFWS: Category 1, CDFG: Threatened). The potential impact to the Yuma clapper rail and California black rail that inhabit the Salt Creek ACEC would primarily be related to the impact of spilled diesel fuel or MSW residue entering the water of Salt Creek. Thus, impacts would be the same as those of the desert pupfish discussed previously.

Because the above safety and emergency response procedures are currently established and in place, and with implementation of mitigation measures described in Section 4.1.12, impacts to threatened and endangered species would not be significant.

Potential Gas Pipeline to Niland.

Desert Tortoise

Lawhead, et al. (1991) reported that desert tortoises are not appreciably affected by train noise and vibration because they will use areas adjacent to active rail lines. In one instance, burrows were located within the berm supporting the track, and in another instance they used a berm within 60 feet of the track.

The potential exists for desert tortoise to be using the SP Main Line ROW and proposed rail spur ROW at the time the potential gas pipeline to Niland would be constructed. Therefore, a qualified biologist would be on hand to complete a preconstruction survey and to relocate desert tortoises that could be impacted by pipeline construction. To the extent possible, pipeline construction and maintenance would occur in the desert tortoise non-active period (generally June 15 through Aug. 15, and Oct. 1 through Feb. 1). Desert tortoise relocations would be completed using USFWS approved protocol as stipulated through Endangered Species Act consultation.

Salt Creek Wildlife and Habitat Complex: Desert Pupfish, Yuma Clapper Rail, and California Black Rail.

Concerns with the potential gas pipeline crossing Salt Creek center on the possibility of the pipeline rupturing and contaminating sensitive species habitat and/or contributing to pupfish or rail mortality. Resulting repairs and clean up efforts could potentially disturb habitat and/or sensitive species as well. Maintenance related repairs of the potential gas pipeline are not expected to be significant over current maintenance practices or schedules for the existing pipeline or communication cable within the SP Main Line ROW. A biologist familiar with the habitat and species involved would be called in to advise the Applicant on clean up procedures. Specific monitoring and clean up procedures would be in accordance with term and conditions stipulated in the Section 7 consultation between BLM and the USFWS.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

Impacts to Other Special-Interest Species

Proposed Landfill Site. The following addresses special-interest animal species known to occur in the project area.

Mule deer and Nelson's bighorn sheep are game species that are known to use the proposed site. Neither are very common locally. Other more common game species include mourning and white-winged dove (*Zenaidura macroura, Zenaida asiatica*), and Gambel's quail. With installation of a wildlife guzzler to offset loss of on-site washes (a source of water for these and other species), these populations would not be significantly impacted by the loss of approximately 3,579 acres of on-site habitat.

Avian species of special concern are also known to occur on-site. These species include the Sonoran yellow warbler (*Dendroica petechia sonorana*), dark-eyed junco (*Junco hyemalis caniceps*), osprey (*Pandion haliaetus*), black-tailed gnatcatcher (*Polioptila melanura*), Bendire's thrasher (*Toxostoma bendirei*), Le Conte's thrasher (*T. lecontei*), and Virginia's warbler (*Vermivora virginiae*). The loss of 3,579 acres of habitat for these species would not be significant given the availability of large-quantities of similar habitat in the Colorado Desert and the exchange and compensation that would occur to obtain the on-site BLM-managed lands and to mitigate desert tortoise impacts.

Couch's spadefoot toad (Scaphiopus couchii) (CDFG; CSC). A population of Couch's spadefoot toad lives in an area adjacent to the Algodones Dunes (Imperial Sand Dunes) that is located north of SR 78 between the SP Railroad and the Coachella Canal (Norris, 1993) and more than three miles southwest of the proposed site. There is a concern that surface water that drains from the proposed landfill would drain into the Algodones Dunes and result in significant effects to the sensitive spadefoot toad population.

As shown in Figures 2-15 and 2-16, landfill runoff control facilities would integrate with existing mine storm water drainage. Runoff would continue to be directed to the three existing highway wash crossings (swales) that drain to the south and are designed to control flows from a 100-year storm. Use of detention basins or other design features would maintain flows within limits established for the three affected swales over SR 78. Storm water drainage facilities for the landfill would be monitored and maintained in accordance with requirements of the RWQCB to assure that water quality standards are maintained. There is a potential that detention basins could become habitat for the Couch's spadefoot toad.

Drainage from the landfill area could transport sediment that has contacted either undisturbed surface area or clean cover material. Working areas would be bermed to prevent surface flows from coming into direct contact with MSW residue. Precipitation that contacts the MSW residue would be collected as leachate and treated at the proposed on-site water reclamation facility prior to reuse on site. Therefore, water that could be contaminated from direct contact with MSW residue would not flow off-site. For these reasons, impacts to the referenced Couch's spadefoot toad population would not be significant.

Proposed Rail Spur Right-of-Way. The proposed rail spur alignment contains other special-interest species that are the same or similar to those of the proposed landfill site. Approximately 78 acres of habitat would be disturbed in the proposed rail spur ROW. Therefore, impacts to other special-interest species would be similar to those described for the the proposed landfill site.

Existing SP Main Line Right-of-Way. The SP Main Line that would serve the project site is an active track that has been in use for over 100 years. Implementation of the Proposed Action would result in an increase in the number of trains that would utilize the line between Los Angeles Transportation Center (LATC) and the proposed landfill. The SP Main Line ROW (varying between 100 and 200 feet wide) is already disturbed by rail operation, maintenance, dust, and vibration. As a result, species in this area are already disturbed. Within Imperial County, no known or probable wildlife corridors cross the rail-haul route (Imperial County, 1993). However, mule deer and potentially other species do cross the tracks to get water from the Coachella Canal and wildlife drinkers located in the vegetation "pockets" within the North Algodones Dunes Area of Critical Environmental Concern. An increase in train-related kills of animals crossing the tracks could occur. This increase would not substantially deplete local populations. Additional construction or land disturbance outside of the ROW would not be required. Therefore, the proposed addition of MSW residue train traffic would not significantly increase impacts to special interest wildlife species in the vicinity of the rail line.

Potential Gas Pipeline to Niland. Installation and maintenance of the potential gas pipeline within the SP Main Line ROW or rail spur ROW is not

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expected to significantly impact special-interest species over the existing actions within those ROWs. Water courses passing under the SP Main Line or rail spur would not be obstructed for more time than is required for installation or repair of the potential gas pipeline. This measure should preclude impacts to potential downstream Couch's spadefoot toad habitat and microphyll woodland plant communities with which many special-interest species are associated.

Offered Exchange Parcels. Actions related to the exchange of land are limited to administrative procedures necessary to enact changes of ownership of public lands. These acquired lands would be managed by the BLM for the conservation and enhancement of the natural resources that exist on the offered parcels. Impacts would not be significant.

4.1.3.3 Mitigation Measures

This section presents mitigation measures for plant and animal communities within the Proposed Action area of influence. Special emphasis is placed on species listed as threatened or endangered, having the potential to be affected by the Proposed Action. The primary species of concern that would be affected by the Proposed Action is the desert tortoise. Other threatened or endangered species that are associated with the transport of the MSW residue are the desert pupfish, California black rail, and Yuma clapper rail, all of which are known to inhabit the Salt Creek ACEC in southern Riverside County. Mitigation for these species and others are described in this section.

During the life of the project, the construction, maintenance, and other activities that have the potential to impact sensitive species will undergo environmental review by a qualified biologist and appropriate agencies. Through mitigation monitoring, the effectiveness of mitigation measures shall be evaluated throughout the life of the facility and may be modified, based on new information and/or new technology. Significant changes to project design, or activities that may affect a listed species and which effects were not considered during the Section 7 consultation, will require re-initiation of applicable Endangered Species Act consultation. Additionally, if new information becomes available on listed species or impacts to listed species, or if the incidental take limit is exceeded, re-initiation of applicable Endangered Species Act consultation will also be required.

Proposed Landfill Site

Vegetation and Sensitive Wildlife Habitat

1. The Applicant shall notify BLM 90 days prior to land clearing activities to the extent feasible. BLM and the Applicant will jointly coordinate removal of specific plants. To the extent feasible, the plant salvage shall be conducted in late winter to early spring, or in late summer. Subsequently, the Applicant may provide the public the opportunity to salvage desert vegetation.

2. The Applicant shall establish an off-site wildlife guzzler, in coordination with BLM and Imperial County, to assist in offsetting impacts to mule deer and bighorn sheep.

3. The Applicant shall implement weed control measures such that introduced plants (e.g., tumbleweed, salt cedar, and black mustard) would not become established on-site or along the proposed rail spur. Manual or mechanical means of control would be the preferred methods employed. Use of other methods (e.g. herbicides) would require approval by appropriate managing agencies.

Desert Tortoise Clearance and Relocation

1. The Applicant shall complete a 100% coverage preconstruction clearance of each part of the landfill property prior to disturbance using a desert tortoise biologist approved by the appripriate managing agency, either after or concurrent with placement of the landfill

tortoise exclusion fence. If the desert tortoise survey/removal occurs prior to the tortoise barrier being in place, an additional clearance survey shall be conducted after the exclusion barrier is completed. If the desert tortoise survey/removal occurs after the tortoise proof fencing is constructed, all tortoises shall be removed from the fenced area of the project site as soon as practicable in coordination with the supervising biologist. All desert tortoise burrows and other suitable burrows for this species shall be excavated. All tortoise that are encountered shall be removed and relocated as determined by Section 7 consultation.

2. Desert tortoise habitat clearance may occur in phases as the landfill project expands and additional tortoise proof project fencing is required. At no time shall any remaining uncleared area be less than 160 acres (1/4 of a standard survey section). These procedures shall continue throughout the remaining years of landfill operation, or until such requirements are suspended by BLM and/or USFWS.

3. The Applicant shall provide a qualified biologist to direct the capture, marking, recording, and moving off-site of all tortoises that are found, as determined appropriate by the Section 7 consultation. The qualified biologist may be assisted by other qualified biologists or field contact representatives (FCR) who are specifically trained to handle desert toroise. All FCRs shall be approved by the BLM and USFWS. Relocations will be to a site determined appropriate by the appropriate managing agency. All tortoises shall be handled in accordance with approved procedures, such as those outlined by USFWS in the *Interim Techniques Handbook for Collecting and Analyzing Data on Desert Tortoise Populations and Habitats* (Arizona Game and Fish Department, et al., 1990), Chapter III, "Protocols for Handling Live Tortoises," which identifies specific handling techniques and precautions to be employed to protect tortoises. Tortoises shall be either relocated, or otherwise handled in accordance to the requirements of the Section 7 consultation. It is preferred that the animals be relocated off-site so that they may remain part of the local breeding population. The preferred time of year to relocate tortoises is during their spring and fall activity seasons.

4. The authorized biologist on-site during the initial clearance survey(s) shall provide a full report to BLM and USFWS of all desert tortoise that are found and relocated. This information shall include: (1) the locations (narrative and maps) and dates of observations/relocations; (2) general conditions and health, any apparent injuries and state of healing and whether animals voided their bladders when handled; (3) locations moved from and locations moved to, and (4) diagnostic markings (e.g., identification numbers or previously marked lateral scutes).

Fencing

1. The Applicant shall minimize wildlife access to the site by a 6 to 8 foot chain link fence designed to BLM tortoise fence specifications to deter raven perching (e.g., topped by porcupine wire, or equivalent). The bottom of the fence shall be designed to BLM tortoise fence specifications to exclude predators such as coyotes and kit fox, and to restrict tortoise entry.

2. The Applicant shall construct a fence initially encompassing only the portion of the project area that is west of the existing mine access road. As landfill operations develop eastward, fencing shall be added to maintain enclosure of the landfill site (Figure 2-33). Existing mine fencing may be incorporated. Where necessary, the existing mine fence shall be improved to

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bring it up to BLM standards for tortoise fencing. Fencing shall be maintained or erected around the entire active landfill boundary. Any mine facilities that are used by the landfill after mine closure shall also be fenced. All new fences shall be constructed according to BLM tortoise fence specifications to preclude entry by tortoises. To minimize the potential loss of tortoise to road traffic on the landfill/mine access road, either the road shall be within the fenced area, or appropriate tortoise-proof barriers shall be installed (see Project Description, Section 2.1.13).

3. A biologist or FCR authorized by the appropriate managing agency shall monitor the construction of the perimeter fence to ensure that no occupied tortoise burrows, or tortoises, would be directly impacted by fence construction. Any tortoise encountered during construction shall be relocated in accordance with procedures established by the formal Section 7 consultation.

4. The Applicant shall monitor the fence line in conjunction with routine security patrols, and after every precipitation event, checking for breaches under or through the fence that could enable a tortoise to pass to the other side. Such breaches include cuts in the chain link, holes or tunnels, and gaps. A discovered breach shall be marked on a map and reported to supervisory personnel. Repairs shall be made immediately, generally within two days. In the event that extensive damage is discovered that requires the use of materials that are not kept on-site, temporary repairs shall be made immediately, with permanent repair initiated upon receipt of the proper materials (such as new fencing or posts). The temporarily repaired fence shall be monitored by routine security patrols until permanent repairs can be made.

Employee Instruction and Procedures

1. The Applicant shall provide a program of instruction to all employees regarding the desert tortoise. The program shall train employees in tortoise identification and proper procedures to be employed in the event a tortoise is encountered. The program shall be developed by the project Applicant prior to implementing the Proposed Action. The content of the education program shall be submitted to the BLM for review at least 30 days prior to first presentation to employees. At a minimum, the program shall include the following topics: occurrence of the desert tortoise and general ecology, sensitivity of the species to human activities, legal protection for desert tortoises, penalties for violations of federal and state laws, reporting requirements, and project features designed to reduce the impacts to desert tortoises and promote the long-term survival of the species.

2. The Applicant shall develop and distribute to all employees a Desert Tortoise Procedures Card that shall reflect the actions necessary to comply with the threatened status of the tortoise and the prohibition of take. The card shall identify person(s) authorized to handle this species. The card shall also be developed in accordance with BLM and USFWS, based on the conclusions of the formal Section 7 consultation.

3. The Applicant shall instruct and require that employees strictly limit their activities and vehicles to the landfill area or designated routes of travel. Parking and storage shall be allowed only within the perimeter fence to the extent feasible. The Applicant shall require that its employees, contractors, or agents adhere to a 30 mph maximum speed limit on the landfill's access road. If speed limits are not adhered to, the Applicant shall install speed bumps or other speed reduction

devices (with prior BLM and USFWS approval).

4. The Applicant shall require that, during project construction, employees inspect underneath parked vehicle(s) when within or adjacent to desert tortoise habitat immediately prior to moving the vehicle(s). If a desert tortoise is beneath the vehicle, the vehicle shall not be moved. An authorized biologist or FCR shall be contacted to remove the animal from harm's way if avoidance is not possible.

5. The Applicant shall require that all personal trash and food items be promptly contained within raven- and coyote-proof containers and disposed of appropriately to reduce the attractiveness of the area to tortoise predators.

6. The Applicant shall provide, install, and maintain tortoise awareness signs to remind employees and inform first time visitors of desert tortoise issues. Signs indicating the following shall be posted along the landfill access road and at main intersections on the landfill site; the area is a desert tortoise area, desert tortoises are protected by law, it is illegal for unauthorized persons to handle or remove desert tortoises.

Operation Procedures

Tortoise Handling

1. A designated FCR shall be responsible for overseeing compliance with protective measures for the desert tortoise and for coordination of compliance with BLM's stipulations. The FCR shall have the authority to halt any landfill activities that pose an imminent threat to the desert tortoise. The FCR shall receive specific instruction from a BLM- and USFWS-approved desert tortoise expert in the handling, marking, data collection, and release procedures for desert tortoise, prior to engaging in such activities.

2. The Applicant shall require that only authorized persons handle desert tortoise. Authorized persons shall be approved prior to activities that would impact desert tortoise.

3. The Applicant shall protect any desert tortoises that are found to be in harm's way along the access road between SR 78 and the landfill boundary, either by access road traffic control, relocation, or other removal from the area in accordance with USFWS protocols (See *Tortoise Clearance and Relocation*).

Landfill Activities

The Applicant shall implement landfill activities to mitigate potential impacts to tortoises. At a minimum, the following measures shall be implemented:

1. Storage of waste that could provide food for ravens and other wildlife shall be in areas that are not accessible to wildlife.

2. All trash and food items derived from project operations shall be promptly contained within raven- and coyote-proof containers and disposed of appropriately to reduce the attractiveness of the area to tortoise predators.

3. Chain link fencing shall be topped with wire that discourages perching by ravens.

4. Project facilities (e.g., fencing, lighting structures, communication and power operations and maintenance structures) shall be constructed to discourage raven perching.

5. The Applicant shall post signs on the perimeter fence, along the access road and at areas where tortoises might be encountered. These shall be similar to or

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the same as those posted at the adjacent Mesquite Mine.

6. In accordance with U.S. Environmental Protection Agency (U.S. EPA) and California Integrated Waste Management Board (CIWMB) regulations, the Applicant shall provide a minimum six inches of soil as daily cover or alternative daily cover provided the alternative cover prevents wildlife scavenging. If that is not sufficient to prevent scavenging, the Applicant shall evaluate increasing the daily cover to a thickness of nine or 12 inches. The Applicant shall monitor the effectiveness of landfill cover to ensure that wildlife do not have access to the MSW residue. The Applicant shall modify cover thickness and frequency of application, as necessary, to preclude scavenging.

7. The Applicant shall ensure that all water use on-site does not produce ponding that attracts wildlife. Storm drainage systems shall be designed in a manner that storm flows are channeled around and away from the landfill area. Surfaces shall be designed and constructed to promote free drainage. Water storage facilities and drainage systems shall be designed and maintained to minimize use by wildlife, specifically potential tortoise predators.

8. The Applicant shall close and reclaim the landfill in phases, as operating segments are completed. These activities shall be conducted in accordance with federal and state laws regarding landfill closure. Activities would include, but not be limited to:

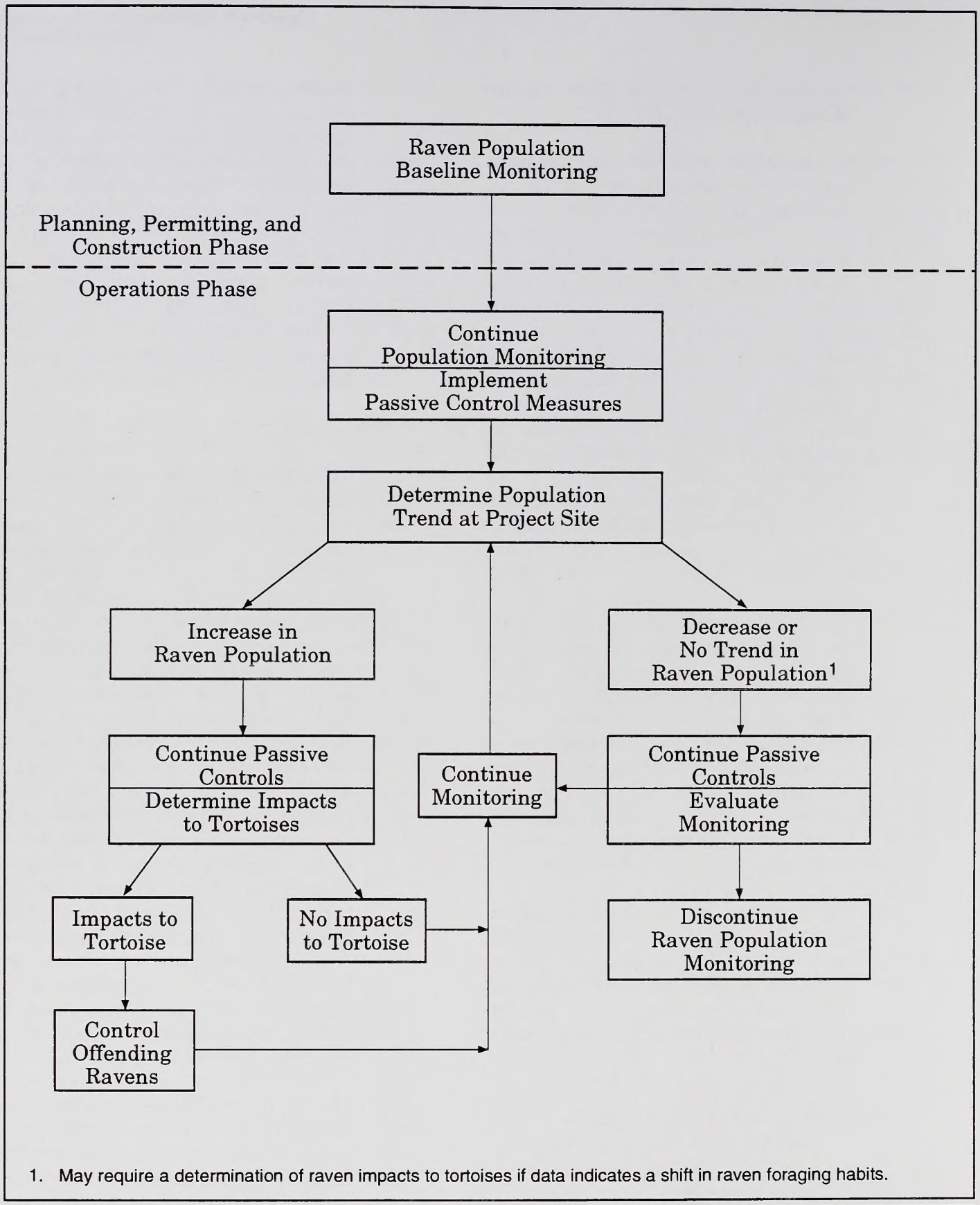
   - Drainage control
   - Slope and surface stabilization
   - Leachate collection and treatment
   - Landfill gas management and control
   - Erosion control

9. The applicant shall begin a desert tortoise monitoring program to provide data on tortoise populations in the general landfill and rail spur area, and shall conform to methodologies approved by the BLM. The population baseline monitoring shall continue for a minimum period of one year prior to the landfill operations phase. Existing impacts to tortoises will be documented during this pre-operations period. Once operations have begun, tortoise population monitoring shall continue throughout the life of the landfill, or until the appropriate managing agency determines that it is no longer necessary.

Control of Ravens

1. The Applicant began a raven monitoring program in January of 1994 to provide data on raven populations in the general landfill area. The program conforms to methodologies outlined by the BLM. The population baseline monitoring shall continue for a minimum period of one year prior to the landfill operations phase. Once operations have begun, raven population monitoring shall continue throughout the life of the landfill, or until the appropriate managing agency determines that it is no longer necessary. The Applicant shall implement a Raven Control Plan should it be determined that raven populations are increasing because of the Proposed Action. A generalized Raven Control Plan flow chart is provided in Figure 4-1. The specifics of the Raven Control Plan shall be determined during Section 7 consultation. All programs shall be undertaken in conjunction with the appropriate managing agency and the *Raven Management Plan for the California Desert Conservation Area.*

2. The Applicant shall begin a passive raven control program as soon as the landfill begins operation. Passive control shall include the placement of cover at the end of each workday (which also would control insects and rodents), and other nonlethal measures to minimize raven



1. May require a determination of raven impacts to tortoises if data indicates a shift in raven foraging habits.

SOURCE: BLM, 1993.

Proposed Mesquite Regional Landfill

Raven Control Plan Flow Chart

FIGURE 4-1

feeding at the project site. The active landfill facility shall be fenced with chain link fencing to minimize access by other wildlife species, such as coyotes and foxes that have the ability to dig and expose buried trash, thereby providing ravens with access to the previously buried materials. All project-related facilities, including fences, shall be designed and constructed to minimize raven perch sites. In addition, there shall be prompt removal of road-killed wildlife along the access road by the Applicant. If planned measures are inadequate, others shall be evaluated and implemented by the Applicant, as necessary. Potential alternatives include thicker cover, passive and active bird control measures, and alternative cover material. If necessary (as determined by the raven monitoring plan), monofilament line shall be suspended by the Applicant over one or more working faces of the landfill to discourage birds from scavenging.

3. The Applicant shall implement an active raven control plan, should monitoring indicate that the raven population is significantly increasing because of the Proposed Action, including one or more of the following: conditioned taste aversion, nest destruction, perch site reduction, and hazing. If necessary, other measures will be used, developed in consultation with the appropriate managing agency.

Proposed Rail Spur Right-of-Way

Vegetation

1. The Applicant shall minimize disturbance of vegetation to the extent possible. Storage of materials shall be in areas previously impacted to the extent feasible.

2. Desert vegetation salvage shall be provided as described for the proposed landfill site.

Desert Tortoise

1. The Applicant shall conduct rail spur construction activities in a manner that minimizes potential impacts to tortoises. Precautions shall include a preconstruction survey, removal of found tortoises, monitoring by a BLM- and USFWS-approved biologist, and establishment of temporary fencing to exclude tortoises from the active construction site. Further, the Applicant shall instruct construction personnel as to the importance of protecting tortoises and to notify a supervisor in the event a tortoise is found within the construction area. The location of such an individual shall be marked, and activity in the vicinity would cease until the animal had moved out of the area or been removed in accordance with approved procedures. To the extent feasible, the Applicant shall complete construction outside of the desert tortoise activity period.

2. The Applicant shall provide boardwalks or broad gravel "beaches" between the tracks at appropriate intervals along the rail spur. They shall also be placed outside the rails to prevent tortoises that attempt to crawl over the rails from flipping onto their backs. The Applicant shall also provide a minimum of three culverts to provide safe tortoise access under the proposed rail spur.

3. An FCR would monitor the rail spur prior to the arrival and departure of each train. Monitoring shall be only required during periods of tortoise activity. The inspection shall precede the train by no more than one-half hour or other time agreed to during Section 7 consultation. Any tortoise found on or in close proximity to the tracks, shall be marked (if unmarked) and captured by the approved inspector and the tortoise's markings, location, and activities prior to collection shall be noted. The approved inspector shall relocate the

tortoise at least 300 feet distance from the track, or as determined during Section 7 consultation.

Two years after the start of operations, the BLM, USFWS, and Applicant shall review the results of the monitoring and develop a long-term mitigation plan that protects desert tortoise. At this time, it is anticipated that the mitigation plan could include elements ranging from no mitigation required, to continued pre-train monitoring, to providing fencing and a system of additional culverts to prevent tortoise access to the tracks, but allow tortoises to safely cross under the tracks. The Applicant shall fully implement the long-term mitigation plan.

4. The Applicant shall require that, during rail spur rehabilitation and routine maintenance activities, the storage of equipment and material, parking of vehicles, and other staging activities shall be confined to currently disturbed sites. Repair and replacement of all permanent structures or features, such as railroad tracks and culverts, shall be monitored by a qualified biologist or approved FCR.

5. To prevent the take of tortoises inhabiting the 150-foot proposed rail spur ROW during significant track maintenance activities, the Applicant shall conduct a survey for occupied tortoise burrows along each section of track to be repaired. Any occupied burrows within 100 feet of the track shall be examined by a qualified biologist for the presence of tortoises and conspicuously marked for avoidance. Also, tortoise burrows that are within the railroad berm shall be located and monitored during repair and maintenance activities.

6. The Applicant shall move tortoises, that are found either above ground or in burrows north of the tracks and in jeopardy from track rehabilitation activities, to a place at least 300 feet north of the rail corridor or as determined in the Section 7 consultation. Those found on the south side of the tracks shall be moved to a place that is equidistant between the rail spur and SR 78, or as determined during Section 7 consultation.

Existing SP Main Line Right-of-Way

Potential MSW Spill Along SP Main Line

1. The proposed contingency plan for a potential spill or derailment along the SP Main Line (See Section 4.1.12, Health and Safety) shall be approved by the appropriate managing agency. The Applicant shall work in conjunction with SP to ensure that impacts to sensitive species, and their habitats, are addressed in the plan.

2. For spills or derailments in sensitive species' habitat, particularly within the Salt Creek ACEC, the Applicant shall ensure that a biologist knowledgeable with the species to be potentially affected is available, as necessary, to support the activities of SP clean up crews and environmental specialists. The Applicant will not be required to provide this biologist if SP has such an expert already on-site to assist with clean up activities. As discussed in Section 4.1.12, the Applicant will also have its own 24-hour clean-up contractor on call to assist SP's crews, as necessary, for containment of spilled MSW residue (if any). A full discussion of SP clean-up activities is contained in Section 4.1.12. The biologist shall be dispatched to the site immediately following an accident, as necessary, to the extent that a potential impact to a sensitive species exists, and shall work with clean up crews to ensure that sensitive species and their habitats are avoided to the maximum extent possible.

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Desert Pupfish/Razorback Sucker

The Applicant shall establish a MSW residue spill contingency plan, and provide a spill containment contractor. These activities supplement the procedures outlined in 4.1.12. The Applicant shall provide a biologist to respond to MSW residue spills in the event SP does not already provide one and the MSW spill proves a threat to impact listed species or its habitat. No additional mitigation measures are warranted to eliminate adverse impacts.

Yuma Clapper Rail/California Black Rail

The Applicant shall establish a MSW residue spill contingency plan, and provide a spill containment contractor. These activities supplement the procedures outlined in 4.1.12. The Applicant shall provide a biologist to respond to MSW residue spills in the event SP does not already provide one and the MSW spill proves a threat to impact listed species or its habitat. No additional mitigation measures are warranted to eliminate adverse impacts.

Potential Gas Pipeline to Niland

1. The Applicant shall construct the potential gas pipeline in a manner that minimizes the potential for impacts to the desert tortoise. Vehicles shall be restricted to existing disturbed areas. Because of the short duration required for pipeline construction in any given area, and the length of pipeline to be constructed, use of fencing to exclude tortoises from the right-of-way during construction of the pipeline is not practical. Installation of the pipeline shall be completed during the desert tortoise inactive period (as specified in the formal Section 7 Endangered Species Act consultation) to the extent feasible. Prior to disturbance, the construction area shall be surveyed by an approved biologist for the presence of tortoises, and relocation would occur, as necessary. When appropriate, burrows shall be marked for avoidance or, if occupied, temporarily fenced. An approved biologist shall be retained by the Applicant to exclude tortoises from the construction area, to move or protect any tortoise that may be in the area, and to assure compliance with BLM-designated limits of access. Incidental take limits for the potential gas pipeline to Niland shall be stated established in the formal Section 7 consultation.

2. The Applicant shall instruct construction personnel as to the importance of protecting tortoises and to notify a supervisor in the event a tortoise is encountered within the construction area. Instruction would meet objectives stipulated through formal Section 7 consultation.

Tortoise Habitat Compensation

To offset direct impacts to 3,657 acres of BLM Category III desert tortoise habitat, the project Applicant shall deed an equal (1:1 ratio) or higher number of acres of Category I habitat to the BLM, acquired in the Chuckwalla Bench ACEC. Acquisition areas will be approved by the BLM, and shall be transferred to the BLM prior to commencement of surface disturbing activities.

4.1.3.4 Level of Significance After Mitigation

Proposed Landfill Site

The mitigation measures identified above and to be developed by BLM in consultation with USFWS and CDFG, would mitigate the potential landfill site-related impacts, such that impacts would not be significant.

Proposed Rail Spur Right-of-Way

The mitigation measures identified above and to be developed by BLM in consultation with USFWS and CDFG, would mitigate the potential rail spur-related impacts, such that impacts would not be significant.

Existing SP Main Line Right-of-Way

The mitigation measures identified above and to be developed by BLM in consultation with USFWS and CDFG would mitigate potential increased train trip-related impacts to the desert pupfish, razorback sucker, Yuma clapper rail, and California black rail. Impacts would not be significant.

Potential Gas Pipeline to Niland

The mitigation measures identified above would mitigate potential impacts. Impacts would not be significant.

Offered Exchange Parcels

The transfer of the offered exchange parcels from private to federal ownership would not result in significant biological resource impacts. No mitigation would be required.

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4.1.4 CULTURAL RESOURCES

This section is based on the technical reports that are contained in Appendices E-1, E-2 and E-3 of this EIS/EIR.

4.1.4.1 Assumptions and Assessment Guidelines

Implementation of the proposed Mesquite Regional Landfill project would require local and state approvals to demonstrate compliance with CEQA. It would also require federal approval to achieve compliance with NEPA, the National Historic Preservation Act of 1966 (NHPA), and other applicable legislation, and regulations. Section 106 of NHPA requires that federal agencies take into account the effects of their undertakings on properties listed or eligible for listing in the National Register of Historic Places (NRHP) and that the Advisory Council on Historic Preservation (ACHP) be afforded a reasonable opportunity to comment on the undertaking. Undertakings include those that are federally-assisted and federally-permitted, as well as those headed by the federal agency. The regulations at 36 CFR Part 800, "Protection of Historic Properties," define the process used by federal agencies to meet these responsibilities.

Regulatory Context

The purpose of the Section 106 compliance process is to accommodate the needs of federal undertakings with the concerns of historic preservation and to resolve potential conflicts between the two in the public interest. This is accomplished through a consultation process among the federal agency, the ACHP, the State Historic Preservation Officer (SHPO), and other interested parties during the early planning stages of the undertaking. Since BLM manages its cultural resource program in accordance with a programmatic agreement (PA) among ACHP, SHPO, and BLM, ACHP consultation is not required for individual undertakings as long as the requirements of the PA are met.

The basic steps in the Section 106 process are:

- Step 1 - Identification and Evaluation of Historic Properties (Cultural Resources). Properties within a project's area of potential effect (APE) are identified and, in consultation with the SHPO, evaluated through application of NRHP criteria for eligibility for listing (found at 36 CFR Part 60.4), in conformance with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 Federal Register 44723-44726). The full content of the eligibility criteria are provided as follows:

  The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

  (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

  (b) that are associated with the lives of persons significant in our past; or

  (c) that embody the distinctive characteristics or a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

  (d) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR Part 60.4).

- Step 2 - Assessment of Effects. The project's effects on cultural resources

listed or determined eligible for listing on the NRHP are assessed through application of the Criteria of Effect found at 36 CFR Part 800.9(a).

- If no effect is found, the federal agency consults with the SHPO and provides documentation in support of the No Effect Determination. If no objection occurs during a 15-day review and comment period, the project can proceed.

- If an effect is found, the Criteria of Adverse Effect found at 36 CFR Part 800.9(b) are applied. The results could include: (1) no adverse effect where, while an effect could occur, it would not be harmful to those characteristics that qualify the cultural resource for NRHP listing; or (2) adverse effect where an effect could occur that would diminish the integrity of those characteristics that qualify the cultural resource for NRHP listing.

Three exceptions to the Criteria for Adverse Effect are cited in 36 CFR Part 800.9(c). The first exception often applies to archaeological and other types of cultural resources important solely for their information potential. For such cultural resources, of value only for their potential contribution to archaeological, historical, architectural, or scientific research, it is possible to implement a treatment program to recover and preserve such values through appropriate research conducted in accordance with applicable professional standards and guidelines. The other two exceptions address the rehabilitation, sale, lease, or transfer of buildings, structures, or other cultural resource types. If the requirements of the exceptions are met, the agency can make a Determination of No Adverse Effect.

For a No Adverse Effect finding, BLM would consult with the SHPO and seek SHPO concurrence in the finding. The SHPO has a 30-day review and comment period.

Receipt of SHPO concurrence (and incorporation of proposed changes or conditions, if needed) completes the Section 106 process for a No Adverse Effect Determination, and the project can proceed. If an adverse effect is found, two additional steps are required to complete the Section 106 process.

- Step 3 - Consultation. BLM and the SHPO consult and notify the ACHP, whose participation is optional. The purpose of the consultation is to develop a Memorandum of Agreement (MOA) or to determine that no MOA is needed.

- Step 4 - ACHP Comment. The ACHP reviews the MOA and, following the incorporation of proposed changes, accepts and signs it. In the absence of an MOA, the ACHP issues written comments, which BLM considers and then notifies the ACHP of its decision.

Current Status of the Proposed Action

Currently, relative to the proposed action, the initial task (resource identification) in Step 1 of the Section 106 process has been completed. As a result of BLM review of technical reports, the regulatory requirements of 36 CFR Part 800 will be completed by BLM in consultation with SHPO to satisfy the requirements of NHPA, NEPA, and the Federal Land Policy and Management Act (FLPMA). Consultation will address:

- Determination of resource significance, as determined by the resource's potential to meet requirements for NRHP listing.

- Determination and documentation of the potential of the Proposed Action to result in effects or adverse effects to significant

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cultural resources (including effects related to the transfer of cultural resources both out of and into federal stewardship). The full inventory of on-site cultural resources will be addressed in the documentation related to determination of project effects, but potential adverse effects are limited to significant resources.

- Preparation and implementation of a treatment plan, as needed, designed to mitigate potential adverse effects to eligible cultural resources. This plan would address the significant values contained by the resource(s), and could include the following elements:

  - Research design and statement of research goals.

  - Field work, including mapping, excavation, and surface collection.

  - Document and archival research.

  - Artifact identification, cataloging, and analysis.

  - Technical report preparation and dissemination.

  - Curation of data and reports into an established repository with retrievable storage.

In accordance with the Council on Environmental Quality (CEQ) implementing regulations (NEPA compliance), findings of the completed Section 106 process will be provided in the Final EIS/EIR for the Proposed Action. The findings will include a listing of on-site cultural resources determined eligible for NRHP listing, a review of potential adverse effects upon eligible cultural resources that could result from the proposed action, and a synopsis of proposed treatment, as necessary, to mitigate anticipated adverse effects of the Proposed Action.

Project-related impacts to cultural resources are significant if implementation of the Proposed Action would adversely affect cultural resources determined to be eligible or potentially eligible for NRHP listing. A Determination of Adverse Effect, therefore, would be the outcome of the Section 106 process if significant impacts were to occur.

4.1.4.2 Impacts of the Proposed Action

Implementation of the Proposed Action would result in the disturbance of a number of cultural resources within the APE for the proposed project. The impacts would result from driving heavy equipment over the site areas, grading activities, covering the site areas with fill, and general site disturbance.

Proposed Landfill Site

Impacts described for the proposed landfill site would also apply to the optional energy recovery facilities. These facilities could be constructed on-site, between the proposed landfill and the intermodal facility.

A total of 72 cultural resources were documented in the proposed landfill site and rail spur ROW, including 14 isolates (Schaefer and Pallette, 1993b). The total resource inventory includes rock rings or rock alignments; chipping stations, lithic scatters, or isolated lithics; prehistoric trail segments with associated pot drops and lithics; segments of a historic wagon road that overlies a prehistoric trail; and World War II training/exercise areas. Further details on the cultural resources documented within the proposed landfill site are provided in Appendix E-1. Of the 72 cultural resources recorded, ten either meet or have the potential to meet the NRHP criteria for eligibility. Nine of these resources are considered potentially eligible based on their information potential (Criteria 36 CFR Part 60.4(d)). The tenth resource (CA-1MP-4983H) was determined to be NRHP eligible on September 13, 1984. Mitigation of potential adverse effects to their significant information potential would be accomplished in conformance

with the ACHP Guidelines (36 CFR Part 800) in consultation with BLM and SHPO. Impacts to cultural resources that are not considered eligible would not be significant.

Prehistoric Trails

Ten prehistoric trail segments and associated features are recommended as significant under NRHP criterion 36 CFR 60.4(d) (CA-IMP-1881, CA-IMP-1976, CA-IMP-1978, CA-IMP-1979, CA-IMP-4637, CA-IMP-4979, CA-IMP-4983H, CA-IMP-5082, CA-IMP-6695, and CA-IMP-6696). Impacts to these resources would be significant if they were to occur, unless a treatment program to recover the information contained in the resource is implemented.

The prehistoric trail segments are a related complex of parallel and interconnected routes that Native Americans used to traverse the area between the Colorado River and Imperial Valley. Sufficient pottery drops exist along these trails to determine relative dates for the three major phases of the late prehistoric period: Patayan I-III. One expected use period is Patayan II (A.D. 900-1600), when the Colorado River flooded the Salton Trough to form Lake Cahuilla. The proposed landfill area may also have been a natural transportation corridor through the Chocolate Mountains in both earlier and later times, the chronology of which needs to be established. The fact that rock features, lithic scatters, and pottery drops were recorded in direct association with these trails increases their information potential.

Historic Wagon Road and Prehistoric Trail

Site CA-IMP-4983H is an extensive wagon road (Glamis/Blythe Road) that follows the same route as a prehistoric trail. Segments of the same trail have been assigned site numbers CA-IMP-4637 and CA-IMP-5082. Impacts to the trail would be significant unless the information contained by the resource was recovered through a treatment program.

A portion of CA-IMP-4983H was conveyed to Gold Fields via land exchange in 1986. At that time, the site had been determined eligible for inclusion on the NRHP by consensus of the BLM and California SHPO. Conveyance of the eligible property was performed with a legal covenant on the land title, which requires Gold Fields, its heirs, or assigns to consult with SHPO directly on any plans to cause any physical change, alter, impact, or destroy the site. An acknowledgment of this must be sent by Gold Fields to SHPO, indicating that BLM has been requested to assume the lead role in the consultation by benefit of having assumed the lead agency role in the Section 106 compliance process. Data recovery of the site would remove any further requirements under the covenant.

Singer Geoglyphs ACEC

The Proposed Action includes the potential use of that portion of the Singer Geoglyphs ACEC, located north of SR 78. The important cultural resources associated with this ACEC are all located south of SR 78. Therefore, the Proposed Action would not result in significant cultural resource impacts to the cultural resources contained in the Singer Geoglyphs ACEC.

Proposed Rail Spur Right-of-Way

The two cultural resources identified as being within the proposed 150-foot wide rail spur ROW are not considered as eligible for NRHP listing. Therefore, rail spur-related impacts would not be significant.

Existing SP Main Line Right-of-Way

No cultural resources were identified within this heavily disturbed ROW. Impacts of rail-haul on the SP Main Line ROW would not be significant.

Potential Gas Pipeline to Niland

This pipeline would be constructed within the proposed rail spur ROW and existing SP Main Line ROW. Since no NRHP eligible cultural

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resources occur in these ROWs, impacts would not be significant.

Offered Exchange Parcels

BLM management of the offered exchange parcels would occur with implementation of the Proposed Action. There would be no impacts to any cultural resources on the offered exchange parcels because there would not be any project-related disturbance to these parcels.

4.1.4.3 Mitigation Measures

Implementation of the proposed Mesquite Regional Landfill project has the potential to result in significant impacts to those cultural resources in the proposed landfill site that are eligible for NRHP listing. A treatment program including data recovery is recommended for those sites determined eligible for NRHP listing. This program shall involve preparation and approval of a Cultural Resources Treatment Plan, implementation of the plan through field documentation, data recovery, archival research, oral histories, Native American participation, artifact analysis, preparation of a final research report, and curation, in perpetuity, of recovered data, records, and reports.

Proposed Landfill Site

Incorporated by Regulation

There are no mitigation measures that would be incorporated by regulation.

Incorporated by Project Design

There are no mitigation measures that are incorporated by Project Design.

Incorporated to Avoid Significant Impacts

The specific mitigation measures that shall be incorporated to reduce significant cultural resource impacts at the proposed landfill site to below a level of significance are described below.

Prehistoric Trails. Ten prehistoric trails with associated artifacts or features (sites CA-IMP-1881, CA-IMP-1976, CA-IMP-1978, CA-IMP-1979, CA-IMP-4637, CA-IMP-4979, CA-IMP-4983H, CA-IMP-5082, CA-IMP-6695, and CA-IMP-6696) are recommended eligible under NRHP criterion 36 CFR 60.4(d), and potential impacts of the Proposed Action would be mitigated through implementation of a treatment program. BLM, in consultation with SHPO, would determine the appropriate elements of the treatment plan.

The trails form a complex that may represent changes in specific routes through time or a pattern of parallel or intersecting routes that were used contemporaneously. The treatment program would, at a minimum, address the specific correlation of trail segments with chronological periods, and several research approaches would be utilized. First, the trail systems would be carefully and accurately mapped on aerial photographs and topographic maps. As part of this endeavor, the trails would be traced as far as the sand dunes to the west and the Chocolate Mountains to the east to determine the extent and ultimate direction of the system. The BLM does not recommend artifact recovery beyond the project area. Breaks in the trails, patterns of overlapping routes, and associations with geomorphic surfaces would be carefully observed and recorded to establish hypothetical temporal relationships that can be tested through ceramic and varnish analyses. The late prehistoric period is best investigated by the detailed mapping, recovery, reconstruction, and analysis of pottery drops along a trail. Application of a ceramic typology can indicate the location of manufacture and time period. Aboriginal travel prior to the formation of Lake Cahuilla would be indicated by finds of Black Mesa, Colorado Red, and Colorado Beige wares. Post-Lake Cahuilla travelers would have left broken Colorado Buff or other contemporaneous pottery types on the trail.

Historic Wagon Road and Prehistoric Trail. Impacts to sites CA-IMP-4983H, CA-IMP-4637, and CA-IMP-5082 would be significant.

As stated previously, BLM, in consultation with SHPO, would determine the appropriate elements of a treatment plan to mitigate project-related impacts to the historic wagon road and prehistoric trail. Data recovery at the prehistoric trail component would be integrated into the treatment program for other prehistoric trails. The historic component involves additional types of research to mitigate impacts through data recovery.

Basic elements of a treatment plan are likely to include the following aspects. First, a detailed archival search would be undertaken to document the chronology and historical uses of the wagon road. Early maps, photographs, and documents would be examined at the Imperial Valley Historical Society, BLM, CDMG, and other sources. The wagon road would then be carefully mapped and selected profiles drawn. Historic artifact scatters along the trail would be carefully mapped and selectively collected for analysis. Most of the artifacts are expected to be items discarded by drivers and passengers, much like roadside littering today. The various functions of the road as both a passenger route and as a commercial route for both the local mines and early homesteads in the Palo Verde and Imperial valleys would be investigated. Artifact analysis would be oriented to determine the chronology, function, and range of behaviors associated with the wagon road. Artifact dates will be used to determine the time periods of use and, potentially, the intensity of use over time. Artifact types may also be associated with the gender, profession, and socioeconomic class of the users. The spatial distribution of the artifacts along the route would also help to infer the patterns of early roadside behavior. When integrated with historical documents, these data can be used to reconstruct the history of this historic transportation route.

Existing SP Main Line Right-of-Way

Since no cultural resources were found in this area, no mitigation measures would be required.

Offered Exchange Parcels

The proposed land exchange would not result in significant adverse impacts to cultural resources within the lands offered to BLM for exchange. No mitigation measures would be necessary. Implementation of the land exchange would afford the cultural resources on the exchange parcels regulatory protection under the Archaeological Resources Protection Act of 1979 (ARPA), NHPA, FLPMA, the American Antiquities Act of 1906, the American Indian Religious Freedom Act, and implementing federal regulations.

4.1.4.4 Level of Significance After Mitigation

Proposed Landfill Site

The mitigation measures for the proposed landfill site, as listed in Section 4.1.4.3 of this Chapter and further developed by BLM/SHPO consultation, would mitigate significant impacts to cultural resources at the proposed landfill site to below a level of significance.

Existing SP Main Line Right-of-Way

Since no cultural resources were found in this area, no mitigation measures would be required, and therefore, impacts would not be significant.

Offered Exchange Parcels

No significant impacts to cultural resources are identified for the exchange parcels. Protection of cultural resources on these properties would improve under BLM stewardship.

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4.1.5 PALEONTOLOGICAL RESOURCES

4.1.5.1 Impacts of the Proposed Action

Proposed Landfill Site and Rail Spur

No paleontological resources exist at the proposed site or along the proposed rail spur ROW. Therefore, no impacts to paleontology would occur as a result of the proposed project.

Existing SP Main Line Right-of-Way

No paleontological studies of the existing SP Main Line ROW were conducted for this EIS/EIR. Hauling MSW residue along the existing SP Main Line would not impact paleontological resources. Therefore, impacts would not be significant.

Potential Gas Pipeline to Niland

No paleontological resource exist along the proposed rail spur ROW. Therefore, construction of a pipeline within this ROW would not impact paleontological resources. Paleontological impacts from constructing the potential gas pipeline to Niland within the SP Main Line are not expected because the ROW has been previously disturbed by railroad track and utility line construction and maintenance. Therefore, impacts would not be significant.

Offered Exchange Parcels

No investigation of paleontological resources was conducted at the offered exchange parcels because these properties would not be disturbed by the proposed land exchange. Therefore, no impacts to paleontological resources on the offered exchange parcels would occur, should any exist.

4.1.5.2 Mitigation Measures

Development of the Proposed Action would not result in paleontological resource impacts. Therefore, no mitigation would be required. Similarly, the proposed land exchange would not adversely affect paleontological resources at the exchange properties. No mitigation is required.

4.1.6 TRANSPORTATION

4.1.6.1 Assumptions and Assessment Guidelines

Public scoping comments (Appendix A-1) for transportation were directed primarily toward potential impacts associated with transporting MSW residue on the SP Main Line rail-haul route (Figure 3-23). Particular concern was expressed about potential at-grade railroad crossing safety/delay impacts for vehicles in rural Coachella Valley communities, potential train accidents, and effects of MSW residue in enclosed containers in the desert heat during potential extended rail delays, or train accidents. The transportation-related aspects of these concerns, primarily at-grade railroad crossing and accident-related delays, are addressed below. Health and safety-related aspects of these concerns, such as potential affects of extended rail delays on MSW residue containers, are discussed in Section 4.1.12, Environmental Health and Public Safety.

Potential safety impacts from truck haulage of local MSW residue and from other pick-up/delivery truck trips through the Imperial Sand Dunes Recreation Area (ISDRA) on busy winter, recreational weekends is an important scheduling consideration.

The possibility also exists that temporary truck transfers of MSW residue from other counties could occur. This would happen in the unlikely event of an interruption of rail service to the proposed Mesquite Regional Landfill. Such truck shipments could occur only: (1) during rail service interruptions exceeding about 72 hours, the surge capacity for temporary storage of MSW residue at transfer stations and in containers at the intermodals; and (2) if temporary disposal at an alternative landfill facility were not available.

It is possible that a future on-site energy recovery plant would be constructed to convert LFG to liquefied methane gas for truck or train transportation off-site, or by train, or for use as fuel for project equipment such as trucks or locomotives should liquefied methane engines be developed in the future. The potential impact of transporting liquefied methane off-site is analyzed in this EIS/EIR.

The proposed project would be considered to have a significant transportation impact if project-related activity causes:

- The volume of traffic on a given roadway to increase substantially in relationship to its design capacity [i.e., causing the existing peak-hour level of service (LOS) to drop one level]

- Increased delays at grade-crossings, so that access to locations surrounding the project area and the rail-haul route are substantially limited.

Finally, the proposed Mesquite Regional Landfill would require a change to the existing Mesquite Mine access road intersection at SR 78. The intersection would be designed and constructed according to requirements of an Encroachment Permit obtained from California Department of Transportation (Caltrans).

4.1.6.2 Impacts of the Proposed Action

Proposed Landfill Site

Highways

Caltrans has indicated that the maximum design capacity of SR 78 exceeds 60,000 trips per day, where a trip is the passage of one vehicle in either direction across a particular location. Caltrans has also indicated that average daily traffic in 1991 and 1992 on SR 78 was 1,250 trips. Therefore, during those years, the stretch of SR 78 which passes the proposed landfill site operated at LOS A, or about 2.6 percent of its design capacity. Table 4-3 summarizes project-related traffic changes that are estimated to occur on SR 78 as a result of the proposed regional landfill construction and operations.

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TABLE 4-3

Estimated Project-Related Daily Trips on SR 78

Proposed Mesquite Regional Landfill

	Arriving From and Departing Toward West Direction				
		Delivery Vehicle (2)		Total	
Daily MSW Residue Delivery Volume (tons/day)	Employee Vehicle (1) Trips	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE
4,000	90	10/34	20/68	100/124	110/158
20,000	260	22/82	44/164	282/342	304/424

	Arriving From and Departing Toward East Direction				
		Delivery Vehicle (2)		Total	
Daily MSW Residue Delivery Volume (tons/day)	Employee Vehicle (1) Trips	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE
4,000	30	4/4	8/8	34/34	38/38
20,000	80	8/8	16/16	88/88	96/96

	Total Arriving and Departing				
		Delivery Vehicle (2)		Total	
Daily MSW Residue Delivery Volume (tons/day)	Employee Vehicle (1) Trips	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE	Without/With Imperial County MSW Trips	Without/With Imperial County MSW PCE
4,000	120	14/38	28/76	134/158	148/196
20,000	340	30/90	60/180	370/430	400/520

Notes: (1) Based on 1.5 employees per vehicle (Gold Fields, 1992).
(2) Daily Delivery Vehicles include the following:
One agricultural plant material truck and 6 other trucks plus 12 Imperial County MSW residue trucks at 4,000 tons/day of MSW residue delivery.
Four agricultural plant material trucks and 11 other trucks plus 30 Imperial County MSW residue trucks at 20,000 tons/day of MSW residue delivery.
PCE = Passenger Car Equivalents

Source: Environmental Solutions, Inc., 1993.

Table 4-3 presents the estimated project-related increases in daily traffic on SR 78. There trips would arrive and depart from the proposed landfill at various times during the day. For example, truck deliveries of agricultural plant material and other non-MSW residue deliveries would be spread evenly over eight daylight hours. If MSW residue were shipped to the site by truck from within Imperial County, these trips would be spread evenly over a 12-hour period. Employee trips would fall into five peaks over a 24-hour day (corresponding to four shifts). Two of these peaks could coincide with the Mesquite Mine-related traffic peaks (the Mesquite Mine is the largest weekday contributor to traffic on this portion of SR 78).

During the Mesquite Mine-related peak traffic hour, project-related employee trips and truck deliveries [20,000 tons per day (tpd) MSW residue delivery rate traffic generation], Mesquite Mine-related peak-hour traffic (assuming 1992 employment mine rates), and other local traffic would not exceed the LOS A flow rate threshold of 215 vehicles per hour on SR 78 for most of the year. During the Proposed Action peak traffic hour, project-related employee trips and truck deliveries (20,000 tpd MSW residue delivery rate traffic generation) and other local traffic would also not exceed the LOS A flow rate threshold of 215 vehicles per hour on SR 78 for most of the year. During these periods, traffic impacts to SR 78 would not be significant.

Some additional traffic would be generated in the future to construct and then operate the energy recovery options described in Chapter 2.0. For example, a LFG powered generator of up to 50 megawatts could result in employment, and therefore traffic, increases of up to 10 percent. This future traffic increase would not cause the LOS to drop below "A" because the Mesquite Mine would close before a large energy recovery facility is built. Impacts would not be significant.

Winter weekend traffic, beginning the Friday afternoon before and ending the Monday morning after weekends from October 1st to May 31st, on this portion of SR 78 can reach LOS F flow rates. During these periods, project-related truck deliveries would not be scheduled and project-related employee traffic would not be substantial in comparison to the traffic on SR 78. Therefore, direct impacts would not be significant. However, the Proposed Action would contribute to an already overcrowded highway, resulting in cumulatively significant impacts to SR 78.

The Applicant does not propose to haul MSW residue by truck during normal operations; however, truck-hauled MSW residue from Imperial County would be accepted at the proposed landfill. The only reasonably anticipated event that could result in truckage from outside Imperial County would be an extended interruption of service on the rail-haul route. The transfer stations that would provide the MSW residue and the rail-haul system would provide about 72 hours of surge capacity. After 72 hours, transport to alternative landfills, or alternative transport procedures to the proposed landfill, would be required. This surge period is greater than almost all interruptions that have been experienced on SP's Main Line in the last 100 years.

For the reasons described above, accidents or derailments on the SP Main Line are infrequent. When service interruptions due to an occasional accident or derailment on the rail-haul route occur, they are typically short, lasting at most 12 to 13 hours. Longer service interruptions occasionally are caused by natural events (e.g., a washed out bridge) or a substantial derailment. When these longer interruptions occur, affected trains are typically held in rail yards while SP dispatchers work with railroad schedulers to minimize impacts of the delay.

Response time for SP personnel can vary. For the proposed rail-haul route, initial personnel would be expected to arrive within one hour, make a preliminary assessment of the situation and, as necessary, contact appropriate clean-up personnel.

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If heavy equipment, that can lift and retrack overturned rail cars is required, it would be obtained from one of the permanent maintenance yards in either West Colton or Yuma. These locations are about 200 miles apart. For a hypothetical accident located the farthest distance (midway) between the two yards along the rail-haul route, it would be expected that the equipment would be assembled and travel the approximately 100-mile distance in about three hours.

SP records indicate that 17 service interruptions due to an accident or derailment have occurred on the rail-haul route since the beginning of 1987. The majority of these service interruptions have been short-term in duration, lasting only a few hours. A recent derailment in the Niland area resulted in an unusually long service interruption, which lasted approximately 43 hours. The unusual length of delay was because eight hazardous materials tanker cars were among the derailed railcars. Residents in homes within 1,500 feet of the derailed cars were evacuated. SP has indicated that a derailment resulting in service interruption of more than 24 hours is very rare.

Because the MSW residue bound for the Mesquite Regional Landfill would be sorted prior to rail transport, it is expected to be dry. Therefore, cleanup of MSW residue would not pose any unusual problems.

Closures due to accidents may decrease in the future as a result of recent legislation passed by the California Legislature. As a result of this legislation, the PUC has initiated a study to identify rail sections which pose local safety hazards and those which have high derailment rates. Based on these results, the PUC will recommend a regulatory program to eliminate or reduce safety hazards.

Trucking to the Mesquite Regional Landfill from out-of-county areas could be avoided or delayed by using alternative landfills, (e.g., in the originating jurisdiction or other potential rail-haul sites) through "bump-up" agreements, which would allow short-term increases in daily waste volumes, or by curtailing nonessential curbside pickup by a day or two. These options would further reduce the potential need for truck haulage.

If, however, trucking for a short period were required, it could consist of up to 400 trucks working two round-trips per day for the maximum 20,000 tpd conditions. The delivery route (Figure 3-23) would be south from the coastal areas on I-5 and I-805, east on I-8, north on State Route 111 (SR 111), and east on SR 78 to the proposed regional landfill. This route would avoid narrow roads in population centers. The emergency truck haul procedure could add up to 1,600 one-way trips per day along the proposed route. Truck transport of MSW residue from Southern California coastal areas to the Mesquite Regional Landfill for anything other than a short period of time would cause significant environmental impacts. The 1,600 trips per day for long-haul MSW residue delivery would cause substantially-greater air and noise emissions and would result in at least two extra one-way trips per minute along the proposed route. Inevitable bunching of trucks that would occur could also create traffic impacts in various areas along the route. If the emergency truck haul were to occur during winter weekends from October 1st through May 31st each year in the ISDRA, traffic impacts would be potentially significant. The potential emergency truck haul would not be significant, because of its remote likelihood and temporary nature. This activity may never occur during the life of the project, but in any circumstance would only occur for several days if no other alternative were available.

Railroad

Proposed Rail Spur. A four- to five-mile-long rail spur would be constructed to provide access to the proposed project area from the existing SP Main Line. Figure 2-2 shows the location of the proposed spur. The spur would be constructed at a minimum of 2,500 feet from SR 78 to avoid impacts to recreational activities in the Glamis Beach Store area. Up to three at-grade railroad

crossings would be constructed across the spur, as appropriate, to provide continued access through the area on existing unpaved roads. Appropriate crossing signs would be installed to warn vehicular traffic of the rail line. Traffic on the spur would be two trips (one train) per day in the first year, and would gradually increase to ten trips (five trains) per day by the seventh year of operation. The unpaved access roads that would use the proposed at-grade railroad crossings have very infrequent traffic (e.g., no vehicles on most days) and related impacts would be minimal and not significant.

Implementation of optional energy recovery facilities, specifically the optional liquefied methane plant, could result in the rail haul of tanker cars containing liquefied methane gas, produced on-site by these facilities. This would require the periodic pickup of full tank cars and drop-off of empty tank cars by regular SP Main Line freight trains (i.e., it is not expected the MSW trains would haul these tank cars). The periodic use of the proposed rail spur by a freight train to pick up and deliver tank cars would not substantially hinder access across the three at-grade railroad crossings that would be provided. Therefore, impacts would not be significant.

Existing SP Main Line. Impacts along the SP Main Line would occur as a result of increased train traffic to deliver MSW residue to the proposed landfill. The anticipated traffic increases would be as follows:

Year of Operation	Trains/ Day	Trips/ Day	MSW Residue/ Day (tons)*
1	1	2	4,000
2	2	4	8,000
3-6	3	6	12,000
7	4	8	16,000
Remaining Years	5	10	20,000

* Based on two-week (12-day) average, actual volumes may vary.

Under normal circumstances, trips would be scheduled throughout the day because of the working schedules and loading and unloading capacities at the LATC and proposed Mesquite Regional Landfill intermodal facilities. During the first year of operation, one train would pass each at-grade railroad crossing twice per day, at least several hours apart. At peak disposal capacity spacings between MSW residue trains going in the same direction would not be less than about two hours. The average time between all train trips at any crossing would be no less than one hour. Exceptions could occur: (1) when trains going in opposite directions pass, and (2) during short periods when abnormal operating conditions may be required to accommodate delays at the intermodals or along the existing SP Main Line ROW.

For the usual rail-haul schedules, the additional delays shown on Table 4-4 would be caused by the proposed MSW residue delivery trains at each at-grade railroad crossing along the proposed rail-haul route.

The effects of these additional at-grade railroad crossings delays would probably not be noticeable near project startup when only one or two trains (two or four trips) would occur each day. This added traffic would be less than existing normal traffic variations along the rail-haul route. At maximum operating capacity, the added trips would represent about 30 percent of the SP Main Line rail traffic and would be more noticeable. These effects would not be significant because the trains would be spaced so that the impact on any crossing in any hour would be a single additional delay of between one to three minutes. The MSW residue trains would be through-traffic, generally traveling at maximum allowable speeds, resulting in shorter delays than those associated with localized movements in areas near train yards and switching stations.

A special analysis of the impact of this additional traffic was performed for at-grade railroad crossings in the vicinity of Niland and the Hot Springs Mineral Spa shown in Figure 4-2, where

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TABLE 4-4

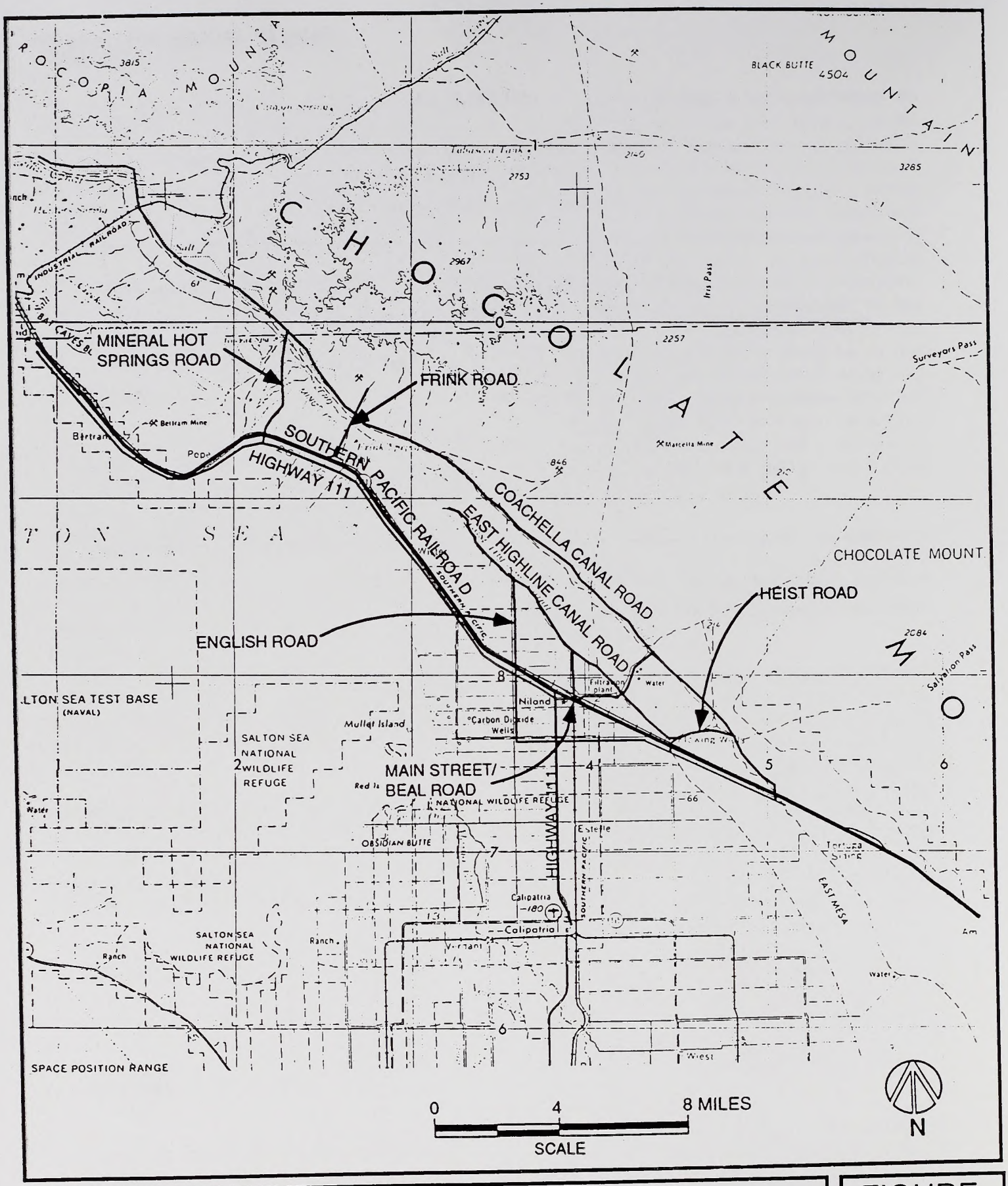
Average Additional Delays Associated with an At-Grade Railroad Crossing

Proposed Mesquite Regional Landfill

	Located Near a Rail Yard or Switching Area (minutes)		Located in Other Areas (minutes)	
Trains/Day	In Any Hour	Daily	In Any Hour	Daily
1	2 - 3	4 - 6	1 - 2	2 - 4
2	2 - 3	8 - 12	1 - 2	4 - 8
3	2 - 3	12 - 18	1 - 2	6 - 12
4	2 - 3	16 - 24	1 - 2	8 - 16
5	2 - 3	20 - 30	1 - 2	10 - 20

Note: Delays are per vehicle waiting to cross the track.

Source: Environmental Solutions, Inc., 1993.



SOURCE: Environmental Solutions, Inc. 1993.

Public Railroad Crossings in the Niland and Mineral Hot Springs Areas

FIGURE **4-2**

alternative access routes are limited. The analysis was to determine if a one-mile-long stopped train could block all reasonable routes across the railroad for emergency vehicles. Table 4-5 summarizes the crossings that exist in these two areas.

The Niland area has three main railroad crossings; English Road (Old Niland Road), Main Street (Beal Road), and Weist Road. These roads are separated by 3.5 and 2.5 miles, respectively, so that a single, mile-long train could not block any two of the crossings at the same time. Access between these crossing locations on the northeast (opposite from SR 111) is provided by the unpaved East Highline Canal Road, which approximately parallels SR 111 and the railroad ROW.

The Hot Springs Mineral Spa area is served by two public railroad crossings; Frink Road and Hot Mineral Spring Road. These crossings are 3.3 miles apart and could not be blocked by a single, mile-long train. This area also has access along the road paralleling the Coachella Canal, which intersects with SR 195 and roads leading to Niland, approximately 8 and 10 miles to the northwest and southeast, respectively.

If Imperial County chooses to transport MSW residue to the proposed Mesquite Regional Landfill, the MSW residue could be transported to the Niland area from transfer stations in the Imperial Valley. The mode of transport (truck or train) would be determined by the County of Imperial as part of selection of the site for the transfer station(s). After arrival at Niland, the MSW residue containers would be scheduled to meet a MSW residue train for delivery to the proposed landfill. Switching activity associated with adding the local MSW residue rail cars to a MSW residue train would occur in the existing switching yard in Niland. This yard provides switching activity for the Imperial Valley branch line and is little-used. The slow-down and speed-up of the train would increase delays at the English Road and Beal Road crossings for those trains stopping to pick up the local MSW residue rail cars.

The added traffic along the proposed rail-haul route could accelerate the need for at-grade railroad crossing improvements that are administered by the Public Utilities Commission (PUC) (see Section 3.1.6.3). To mitigate this impact, the Applicant has agreed to contribute:

- The local funding share (not to exceed an aggregate of $500,000 per separation) for each of two grade separations selected by the PUC and implemented according to priorities established by the PUC's Grade Separation Program. The funding for the first separation would be provided when MSW residue volume reaches 12,000 tpd and for the second when MSW residue volume reaches 20,000 tpd.

- The local funding share (10 percent of cost or $25,000, whichever is less) for each of eight at-grade railroad crossing improvements selected by the PUC and implemented according to priorities established by the U.S. Department of Transportation (U.S. DOT) Section 130 Program. The funding for two crossing improvements would be provided when MSW residue volume first reaches each of the following values: 8,000, 12,000; 16,000, and 20,00 tpd.

An additional rail transport consideration is the potential effects of accidents involving trains hauling MSW residue. SP does not currently have specific procedures for this type of situation, because existing procedures in federal and state regulations only require formal response planning in the transport of hazardous materials. SP does have general response procedures to deal with accidents related to nonhazardous materials. These general procedures would apply to MSW residue since refuse is not MSW unless it is nonhazardous. The Applicant would provide the railroad with an MSW Residue Spillage Contingency Plan as a guide for related response procedures. A detailed outline of the Plan is provided in Section 4.1.12 (Health and Safety) and sets forth the following types of information:

TABLE 4-5

Railroad Crossings within the Niland and Hot Mineral Spa Areas

Proposed Mesquite Regional Landfill

Milepost	County	Street Name	Existing Protection						
			C	S	WW	FL	FL/C	AG	AG/C
652.90	Imperial	Mineral Hot Springs Road		1				1	
656.20	Imperial	Frink Road		1				1	
665.30	Imperial	English (Old Niland) Road		1				1	
667.80	Imperial	Main Street (Beal Road)		1				1	
671.30	Imperial	Weist Road							

Legend
C = Crossbuck Sign
S = Traffic Signal
WW = Wigwag Signal
FL = Flashing Lights on Sign
FL/C = Flashing Lights on Cantilever Arm
AG = Automatic Gate
AG/C = Automatic Gate with Extra Lights on Cantilever Arm

Source: Environmental Solutions, Inc., 1993.

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- Spilled MSW residue temporary containment procedures.
- Available MSW residue removal container and landfill disposal options.
- Affected container recording procedures.
- Temporary container storage control procedures.
- Biological resources protection procedures.

Potential Gas Pipeline to Niland

Construction of this gas pipeline would occur in the proposed rail spur ROW and the existing SP Main Line ROW. It could result in short-term lane closures or detours (one or two days) around affected at-grade railroad crossing. Also, future lane-closures or detours could be required to repair or maintain the pipeline although these closures would be rare. Because impacts would be short-term and because detours would be provided if the crossing were to be completely closed down (versus only one lane being closed), impacts would not be significant.

Offered Exchange Parcels

Ownership of the offered exchange parcels in the SRMNSA and near the Chuckwalla Bench ACEC area would be transferred to the BLM and no development of these properties is planned. Therefore, impacts to transportation would not occur as a result of the proposed exchange.

4.1.6.3 Mitigation Measures

Proposed Landfill Site, Proposed Rail Spur, and Existing SP Main Line

Incorporated by Regulation

The following mitigation measures, required by local, state, or federal law, are applicable to the proposed Mesquite Regional Landfill.

- The Applicant shall design and construct the intersection of a new access road, including turning lanes, signage and pavement dimensions according to an Encroachment Permit obtained from Caltrans. Caltrans does not formally approve preliminary designs, but shall receive this EIS/EIR for comment.

- The Applicant shall follow appropriate state and federal laws in connection with the loading and off-site transfer by truck or by train of liquefied methane gas produced at a potential on-site energy recovery plant. The Applicant shall only use U.S. DOT-certified transport trucks and rail cars.

- The Applicant shall not knowingly allow the transportation of liquefied methane gas to occur except according to federal hazardous material transportation regulations contained in 49 CFR Subtitle C.

- The Applicant shall post and maintain warning signage for the dirt at-grade railroad crossings along the proposed rail spur. The signs shall be designed and constructed according to PUC General Order 75-C.

Incorporated Into the Project Design

- The Applicant shall schedule all deliveries of a non-emergency nature to avoid the period beginning on afternoons before and ending on mornings after weekends and/or holidays between October 1st and May 31st, each year.

- The Applicant shall provide the local funding share (not to exceed an aggregate of $500,000 per separation) for each of two grade separations selected by the PUC and implemented according to priorities established by the PUC's Grade Separation Program. The funding for the first separation would be provided when MSW residue volume reaches 12,000 tpd and for the second when MSW residue volume reaches 20,000 tpd.

- The Applicant shall provide the local funding share (10 percent of cost of $25,000, whichever is less) for each of eight at-grade railroad crossing improvements selected by the PUC and implemented according to priorities established by the U.S. DOT Section 130 Program. The funding for two crossing improvements would be provided when MSW residue volume first reaches each of the following values: 8,000; 12,000; 16,000; and 20,000 tpd.

- The Applicant shall develop a project-specific MSW Residue Contingency Plan to be provided to SP as guidance for response procedures. The Contingency Plan shall provide specific procedures for handling of spilled MSW residue as well as temporarily stored MSW residue containers during periods of extended rail line delays.

- The Applicant shall provide up to three grade-crossings with warning signage at existing unpaved roads along the proposed new spur. These crossings shall maintain access to the public lands north of the spur (except to allow for train traffic). Trains shall not be stopped such that these crossings are blocked during normal operations.

- The Applicant shall work with the appropriate state and local agencies to define a truck route that avoids population centers and minimizes potential environmental effects related to a temporary interruption of rail service that requires truck transport of MSW residue prior to project startup.

Incorporated to Avoid Potential Significant Impacts

There would be no potential for significant transportation impacts after mitigations required by regulations or incorporated into the project design are implemented.

Potential Gas Pipeline to Niland

- The Applicant shall design, construct, and maintain the potential pipeline to Niland according to all applicable laws.

Offered Exchange Parcels

Since there would be no transportation impacts at the offered exchange parcels from the proposed project, no mitigation measures are necessary.

4.1.6.4 Level of Significance After Mitigation

Based on regulatory requirements and mitigation measures that would be incorporated by project design, transportation-related effects of the proposed landfill would be mitigated so that no direct significant impact to transportation would occur. Employee vehicle trips on SR 78 would occur during the period beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st. These trips would be cumulatively significant because SR 78 does not provide an acceptable level of service during these periods.

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4.1.7 NOISE

4.1.7.1 Assumptions and Assessment Guidelines

Comments at the public scoping meeting in Indio included specific questions about impacts from train-related noise to communities located on the rail-haul route. Particular concern was expressed about the cumulative noise impacts that would result from the potential addition of train traffic from other proposed regional landfills on the same SP Main Line route. These cumulative impacts are considered in Section 4.8, Cumulative Impacts, of this EIS/EIR.

Noise emissions from sources subject to Imperial County zoning laws are controlled by the Noise Element portion of the Imperial County General Plan. The thresholds for significance for the noise analysis in this EIS/EIR are based on Noise Element requirements as well.

The Noise Element requires the County of Imperial to perform a formal acoustical analysis study 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.

The proposed landfilling activities would not be located in a Noise Impact Zone and, because they would generally occur one-half mile or more from the project property line, the activities would not be a threat to exceed Property Line Noise Limit thresholds. Therefore, the following analysis evaluates the potential for this project to result in significant increases in noise levels to sensitive receptors in the area.

Train noise is regulated by federal law (Noise Control Act of 1972). Maximum allowable train noise levels are set by the U.S. Environmental Protection Agency (U.S. EPA) (40 CFR Part 201). Noise from rail-haul of MSW residue to the proposed project would be considered to have a potentially significant impact if:

- U.S. EPA maximum train noise emissions levels would be exceeded by trains that would deliver MSW to the proposed project.
- A substantial increase would occur in average existing daily noise levels in areas along the track due to trains delivering MSW residue to the proposed project. An increase of less than 3 dBA Community Noise Equivalent Level (CNEL) for transportation noise would not be significant (Mestre-Greeve Associates, 1990).

Noise modeling for the proposed landfill was not performed because of the remote site location and the lack of any receptors living near the project boundary. The project area is virtually deserted, except for the Mesquite Mine. The proposed activities would be mostly buffered by stability berms on the landfill and SR 78 and with the exception of the intermodal activities, activities would not occur near the proposed fenceline. Any occasional receptors near the project fenceline (e.g., campers) would be unlikely to experience substantial noise events.

4.1.7.2 Impacts of the Proposed Action

Proposed Landfill Site

The proposed regional landfill would produce several types of noise events on-site, including the following:

- Arriving and departing MSW residue trains in the proposed landfill intermodal area.
- Loading and unloading of MSW residue containers.

- Driving MSW transfer trucks between the intermodal and the landfill working face throughout the day.
- Washing MSW containers.
- Emptying MSW residue containers with a tipper.
- Placing MSW residue on the flat working face with a dozer.
- Compacting MSW residue on the working face with a compactor.
- Ongoing construction activities such as grading and liner placement.
- Constructing and operating optional energy recovery facilities.

Potential on-site impacts to landfill employees and visitors could occur from these noise events. Federal and State laws governing worker safety, that require a safe workplace be maintained, would require the use of safety equipment and procedures to prevent noise impacts to employees and visitors. Safety equipment and procedures are discussed in Chapter 4.0, Section 4.1.12, Environmental Health and Public Safety. Because of these safety requirements, noise impacts on-site would not be significant.

Potential off-site landfill activity noise impacts would not be significant because of the distance between the proposed regional landfill and off-site receptors. Noise that does occur would be similar to that of the existing mine and similar to that normally experienced with earth moving activities.

Occasional gravel withdrawal operators are not likely to be impacted by proposed noise events because of the distance from the project site and the noise from their own equipment. The proximity of the Chocolate Mountain Aerial Gunnery Range (CMAGR) from the regional landfill site makes noise impacts to this area unlikely. As shown in Figure 1-1, the border of the aerial gunnery range would be approximately one mile from the boundary of the regional landfill. As a result, even occasional military personnel conducting ground activities in or near the aerial gunnery range likely would not be exposed to significant noise levels from the landfill area.

Traffic along SR 78 would generally be located one or more miles from the landfill site and would not experience large noise impacts from the disposal activities. Any possible noise impacts would come from the intermodal, and possibly from operations in the southeast corner of the landfill (in approximately 80 years) because these areas would be closest to the highway. These impacts would only be temporary (a few minutes) as receptors through the area on the highway in vehicles and project-related noise likely would be inaudible because of driving-related noise.

A few public receptors could also hear the landfill activities when visiting an interpretive trail that has been established along the mine access road to allow tourists to observe mining activities and historic displays for the area and that would also allow viewing of the proposed landfill and related activities in the early years of operation. This trail would be relocated in the future. This noise would be similar to that associated with the existing mining activities and would come from the landfill operating activities that would be the most suitable for observation and, therefore, would not substantially change existing conditions.

If Imperial County chooses to have local MSW residue deposited in the proposed regional landfill, it would be delivered either by truck or train. If it is delivered by truck, up to 30 MSW transfer trucks would arrive at the landfill each day from local areas. It is assumed that most or all of this traffic would come from the west along SR 78 from the populated areas of Imperial County. Other project-related traffic such as daily service deliveries, employee traffic, and potential delivery of agricultural plant material from the Imperial Valley would also travel along that route.

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Primary receptors for potential impacts from noise due to these vehicles would be campers in the area between Glamis and the proposed site, off-highway vehicle (OHV) recreationists in the ISDRA, and other recreationists in the Algodones Sand Dunes ACEC, especially during winter weekends. As discussed in the transportation sections (Chapters 3.0 and 4.0, Sections 3.1.6 and 4.1.6), traffic along that section of SR 78 was approximately 1,250 vehicles per day in 1991 and 1992. This traffic normally includes many trucks and recreational vehicles.

During normal operations, project-related truck traffic would be limited to daylight and possibly early evening hours. Employee traffic would occur at night with two shift changes likely during the evening/night-time. Noise from additional project-related vehicular traffic during normal operations would have a minimal (less than 1 dBA) impact with respect to normal noise levels along the highway and related to the OHV activities. As a result, the MSW residue deliveries and other project-related traffic would not cause significant noise impacts to the area during normal operations.

If delivery of local MSW residue occurs by train, it would be scheduled for pick up in the Niland area, six days per week, by a MSW residue train coming from the LATC. Local MSW residue containers would be placed in an articulated rail car to await pickup, which is assumed to occur at the existing switching station just north of Beal Road/Main Street. The pickup of local MSW residue would occur during daytime hours to avoid noise impacts in the quieter evening and night-time hours. Therefore, impacts would not be significant.

As discussed in Chapter 3.0, Section 3.1.6, Transportation, this EIS/EIR evaluates the potential short-term impacts that would be associated with the temporary truck transfer of out-of-county MSW residue to the Mesquite Regional Landfill in the unlikely event of substantial rail service interruption. A substantial increase in noise events would occur along the proposed temporary truck transfer route as a result of this emergency procedure. The trucking route would begin in downtown Los Angeles, extend south on I-5 and I-805, east on I-8, north on SR 111 and east on SR 78 to the proposed landfill. Approximately 400 trucks would be required to make two round-trips to deliver MSW to the landfill. This would result in an additional 1,600 vehicle trips per day along the proposed emergency truck haul route. This emergency procedure, if ever required, would only be temporary, lasting at most a few days. The change in noise levels (CNEL) attributed to emergency truck haul would be as follows:

LATC to West of El Centro	+ < 3.0 dBA
West of El Centro to SR111 (I-8)	+ 4.7 dBA
SR 111 near I-8 Intersection	+3.2 dBA
SR 111 (I-8 to SR 78)	+6.1 dBA
SR 78 (SR 111 to SR 115)	+5.5 dBA
SR 78 (SR 115 to proposed site)	+9.0 dBA

Source: The Butler Roach Group, 1993.

Long-term noise increases of 3 dBA or more would be a significant impact; therefore, noise impacts from emergency trucking would be significant if they were long-term or short-term and occurred on a frequent basis.

However, emergency trucking of MSW residue to the proposed landfill would not be expected to occur because of the surge capacity at the transfer stations/MRFs and the intermodal and on the basis of the low frequency and short duration of SP Main Line outages. Emergency trucking may never occur during the life of the project, but in any circumstance would be used only for several days if no other alternative is available. Therefore, impacts would be at most temporary and would not be significant.

Proposed Rail Spur

The proposed regional landfill would result in an average of ten additional MSW residue delivery trains noise events each day along the proposed rail-haul route. In addition, two trips per day could occur to pick-up and drop-off full and empty liquefied methane gas tank railroad cars, respectively. In the project area, trains would

move between the landfill site and the SP Main Line along a proposed four–to-five-mile rail spur that would be constructed by the Applicant. Noise impacts would occur as a result of train movements along the rail spur.

The MSW trains that would move to and from the regional landfill site along the rail spur would be operated by SP and would be the same equipment that travels along the rail-haul route. Noise from trains that make up existing traffic along the SP Main Line is regulated by the U.S. EPA. SP conducts regular inspections of its trains to maintain compliance with U.S. EPA noise emission guidelines. Testing procedures are set forth in federal noise emission regulations (49 CFR Part 201). Federal law provides for assessment of penalties to rail carriers that operate trains that do not comply with noise emission guidelines. All trains delivering MSW residue to the proposed regional landfill would be operated by SP and would be subject to the same regular inspections to maintain compliance with federal noise emission guidelines. Therefore, the additional landfill-related rail traffic would not produce substantially different noise levels than the existing rail traffic.

The rail spur would be constructed to maintain a distance of at least 2,500 feet from SR 78. No permanent residents live within a half mile of the proposed rail spur. Receptors would be limited to occasional gravel withdrawal operators, infrequent vehicular traffic, campers along SR 78, west of the proposed landfill site, and in the Glamis Beach Store area, and wildlife. Project related train noise on the proposed rail spur would not significantly impact local receptors because of the distance between the proposed spur and receptors and the time period between noise events, and the availability of similar recreational lands that could be used by recreationists who currently camp on the lands near the proposed rail spur.

Existing SP Main Line

The average time between MSW residue train passage noise events at any location along the rail-haul route would be no less than two hours (Section 4.1.6.2). Infrequent exceptions could occur: (1) when trains going in opposite directions pass, and (2) during short periods when abnormal operating schedules may be required to adjust to delays at LATC, the landfill intermodal, or along the main rail line. As discussed previously, noise emissions from MSW residue trains would be monitored by SP to maintain compliance with federal emissions standards.

The California Office of Noise Control recommends use of CNEL measurements to evaluate land use compatibility. A recent study of train noise in the Coachella Valley portion of the rail-haul route measured average daily noise levels at 100 feet from the track of 74 dBA in terms of CNEL (Mestre-Greve Associates, 1990). The CNEL is a weighted average of daily noise events that gives increased importance to noise generated at sensitive times, such as evening and nighttime. At peak operations, the Mesquite Regional Landfill would add an average of 10 additional noise events to the SP Main Line in the Coachella Valley each day. The calculated CNEL for the rail-haul route in the Coachella Valley area, using existing trains and the average number of proposed MSW residue trains for the Mesquite Regional Landfill, and allowing for appropriate dBA penalties for trips that occur during sensitive periods is 76.0 dBA. On any given day, the number of project-related train trips could vary. However, it is not expected to vary by more than four one-way train trips. Even with up to 14 project related train trips, the increase in noise levels would not exceed 3 dBA CNEL, the threshold of significance (Mestre-Greve Associates, 1990).

Potential Gas Pipeline to Niland

Construction of this pipeline would occur in compliance with all applicable noise regulations; therefore, impacts would not be significant.

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Offered Exchange Parcels

Ownership of the offered exchange parcels in the SRMNSA and in the vicinity of the Chuckwalla Bench ACEC would be transferred to the BLM. This action would allow further consolidation of BLM land and facilitate more efficient land management; therefore, no noise impacts would occur as a result of the exchange.

4.1.7.3 Mitigation Measures

Proposed Landfill Site, Proposed Rail Spur, and Existing SP Main Line

Incorporated by Regulation

The Applicant shall comply with the following noise mitigation measures that are required by law:

- 49 CFR Part 201, which sets maximum noise emission levels for trains and establishes penalties for noncompliance.
- Imperial County General Plan, which establishes noise emissions controls for the entire County.
- Applicable Occupational Safety and Health Administration (OSHA) regulations set forth in 29 CFR 1920 and 40 CFR 241 and California Occupational Safety and Health Administration (Cal OSHA) regulations set forth in 14 CCR 3 shall be implemented by the Applicant.

Incorporated by Project Design

- Landfill-related train trips shall be distributed throughout each 24-hour period to minimize disturbance, where possible based on SP scheduling.
- The Applicant shall construct the rail spur at least 2,500 feet from SR 78.
- The Applicant shall install and maintain noise suppression equipment such as mufflers on all on-site vehicles and equipment to minimize noise impacts to on-site personnel and surrounding land uses.

Incorporated to Avoid Significant Impacts

Noise impacts to sensitive receptors from the proposed project would not be significant with implementation of the above mitigation measures. As a result, the noise emissions from the proposed project would be consistent with Imperial County noise control measures. No additional noise mitigation measures beyond those identified as incorporated by regulation or as part of the project design in Section 4.1.7.2 would be required.

Potential Gas Pipeline to Niland

The Applicant shall construct this pipeline in accordance with the County Noise Element and all applicable noise regulations. No additional mitigation would be required.

Offered Exchange Parcels

No mitigation is warranted for the offered exchange parcels, because no impacts would occur as a result of the exchange.

4.1.7.4 Level of Significance after Mitigation

Based upon regulatory requirements and noise attenuating measures that would be incorporated into the project design, no significant impact due to noise would occur from the proposed project.

4.1.8 AIR QUALITY

Detailed evaluations of air quality and odor impacts of the Proposed Action and related transportation activities are provided in the technical report included in Appendix F of this EIS/EIR. This section provides a comprehensive summary of the results of that study.

4.1.8.1 Introduction

This air quality section is organized to present first the underlying assumptions and guidelines for the analysis. A detailed analysis is provided for the Proposed Action, which includes a flare station in early years, and energy recovery in later years. Differences in the analysis of emissions and impacts are described for the following approaches to energy recovery:

- Turbine/Boiler Based Power Plant
- Compressed Methane Gas Plant
- Liquefied Methane Gas Plant

The different impacts of the energy recovery approaches are compared. The air quality analysis concludes with a program of mitigation measures, and the level of significance after these mitigation measures. The analysis begins with the identification of project features that would be sources of air pollutants. Project-related mobile sources (e.g., MSW residue trains) remain the same for the different energy recovery approaches, but the stationary sources differ. Emission characteristics or factors are found in the literature or developed specifically to suit the circumstances for the Proposed Action. Emissions are estimated from emission factors and characteristics of the emission device (e.g., height, diameter, and gas velocity) to create input information needed for the Industrial Source Complex (ISC 2) dispersion model, which is then used to compute ambient air quality concentrations.

One year of meteorological data (April 1, 1991 through March 31, 1992) from the Mesquite Mine, is used in the dispersion model. The model computes ambient concentrations at specific receptor points for criteria and toxic air pollutants. The latter are used to compute carcinogenic, chronic, and acute health risks.

Project alternatives are also analyzed for their impacts relative to the Proposed Action.

Finally, mitigation measures capable of reducing project-related impacts to below a level of significance are identified.

4.1.8.2 Assumptions and Assessment Guidelines

The assumptions and assessment guidelines are explicitly described in order to make clear what is being analyzed, under what conditions and what would constitute a significant impact to air quality. For convenience, the assumptions are classified as follows: general, stationary sources, mobile sources, fugitive sources, transportation, odor, and measures of significance of impacts.

General

Air quality impacts are analyzed for the Proposed Action, which is scheduled to operate for 100 years. Emissions can most reliably be predicted for the early years of operation when air quality control technology can be accurately predicted. Longer-term projections (e.g., more than 10 years) become more speculative because air pollution control technology advances are occurring rapidly and cannot be predicted. To be conservative, assumptions for the longer-term control technologies are based only on currently foreseeable changes in technology and regulatory requirements. The amount of MSW residue is anticipated to increase in steps according to the schedule shown in Table 4-6. Because each successive disposal rate requires an increase in transportation and landfill activity, the emissions that would be caused by each have been calculated. For each alternative, impacts are calculated for the year of highest emissions, which would be the last year of landfilling.

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TABLE 4-6

Schedule for Amount of MSW Residue To Be Shipped

Proposed Mesquite Regional Landfill

Proposed Action and Alternative III			Alternative I		Alternative II		Alternative IV	
MSW Residue Disposal Rate (tpd)	First Year Number	Last Year Number	First Year Number	Last Year Number	First Year Number	Last Year Number	First Year Number	Last Year Number
4,000	1	1	1	1	1	1	1	1
8,000	2	2	2	2	2	2	2	2
12,000	3	6	3	6	3	165	3	6
16,000	7	7	7	7	NA	NA	7	7
20,000	8	100	8	85	NA	NA	8	13
24,000	NA	NA	NA	NA	NA	NA	14	17
30,000	NA	NA	NA	NA	NA	NA	18	90

NA = Not Applicable

Source: Environmental Solutions, Inc., 1993.

In addition, the 16th year of the Proposed Action is chosen as an important case for analysis because: (1) the Mesquite Mine would have closed, (2) it is just after an attainment target year in the South Coast Air Quality Management District (SCAQMD) Air Quality Management Plan (AQMP), and (3) the landfill would be operating at full capacity. The "worst-case" analysis of air quality impacts of the LFG emissions and related stationary sources are evaluated for the last year because LFG generation within the landfill would be greatest, as would its collection and destruction. To be conservative, the Alternative I footprint and project boundary are used for the analysis of the Proposed Action because the closer proximity of the Alternative I property boundary to the landfill footprint creates a maximum likelihood impact scenario.

Analysis of the environmental impacts associated with the proposed landfill are put in the context of comparison with the No Action Alternative. Unlike many industrial projects, which add emissions to an existing inventory, the Proposed Action would handle MSW residue differently than would otherwise occur. In the No Action Alternative, trucks would transport all of the MSW residue to new landfills in remote portions of the South Coast Air Basin (SOCAB) because current landfills that are closer to the most heavily populated areas would be already filled and closed. Alternatively, MSW residue would be hauled to other regional landfills.

Landfill and transportation impacts on air quality are analyzed separately because they are controlled by different owners and regulatory authorities. The Applicant for the Proposed Action would control emissions from the landfill in accordance with appropriate permits obtained from Imperial County Air Pollution Control District (ICAPCD). Transportation emissions from trains, highway trucks, and private vehicles would be determined by equipment manufacturers and suppliers of diesel fuel, in accordance with existing and future federal and state regulations, and technological advances.

Stationary Sources

It is assumed that the overall efficiency of the LFG collection system would be 80 percent. This assumption is conservative compared to the 95 percent collection efficiency assumed by the Sanitation Districts of Los Angeles County for Puente Hills Waste Management Facilities (SDLAC, 1992). The remaining 20 percent would migrate towards the surface of the proposed landfill. An impermeable liner would prevent this LFG from migrating into the soil underlying the proposed landfill. Although LFG migrating towards the landfill surface would be subject to aerobic decomposition, which would convert some methane to harmless water vapor and carbon dioxide, it is conservatively assumed that the full 20 percent of LFG escapes into the atmosphere. The composition of the MSW residue is assumed to include the effect of AB 939 on materials recovery.

Estimates of emissions from the destruction or recovery of collected LFG are based on the four energy recovery approaches, which are included as anticipated project elements. To be conservative, it is assumed that a flare station with up to three large-capacity flares would be located near the intermodal facility and used for the first 16 years. During this period, flare station oxides of nitrogen (NO_X) emissions would be less than 1,200 pounds per day, which is 88 percent of the 250 tons per year limit that would trigger a Prevention of Significant Deterioration (PSD) review. The 1,200 pounds per day maximum emission would qualify the Proposed Action for a U.S. EPA tentative determination of PSD nonapplicability. Nitrogen dioxide (NO_2) is the attainment criteria pollutant potentially subject to PSD protection because of NO_X emissions from flares. Flares emit less of other criteria pollutants and their precursors. NO_X, therefore, is subject to analysis both for PSD nonapplicability and for its role as a precursor to emissions of ozone (O_3), a nonattainment criteria pollutant.

LFG contains a variety of organic compounds, depending on the exact composition of the MSW

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residue and the anaerobic decomposition reaction products. Source tests are used to measure the destruction efficiency of flares. Usually, the concentration of only a few selected compounds are measured before and after a flare to calculate the destruction efficiencies. Pease et al. (1989) published the destruction efficiencies for six of the most common and most important compounds at the four Southern California landfills shown in Table 4-7. The arithmetic mean destruction efficiencies were calculated from source test data and usually exceeded 99 percent, except for benzene at Puente Hills and Spadra, and carbon tetrachloride at Puente Hills. Flares are assumed to destroy 99 percent of the toxic substances in LFG in this analysis.

Once it becomes economically feasible and permitted, the energy in LFG methane would be recovered. Energy recovery would be a combination of the following options:

- A gas turbine boiler or combined cycle plant to generate electricity for on-site use and sale through the grid system which presently provides power for the Mesquite Mine.
- A methane gas plant to develop commercial quality methane for shipment by pipeline to an existing Southern California Gas Company natural gas pipeline in Niland.
- A plant to liquefy the methane, similar to LNG, for transportation and sale off-site, or use with on-site equipment or locomotives delivering the MSW residue to the site.

The specific combinations of energy recovery utilized would be chosen to suit technology changes and future economic conditions. For analysis purposes only, the generation of electricity by a boiler burning LFG from "as received" MSW residue is assumed to be the energy recovery approach in order to calculate maximum-likelihood emissions for Year 100. Also, use of this technology would allow the proposed landfill to operate without exceeding PSD limits. This is a worst case air emission analysis as compared to the operation of a methane gas plant or a process plant to convert LFG to liquefied methane gas. For the LFG enhancement program analysis, energy recovery includes both a boiler/generator and a liquefied methane gas plant. The emissions and impacts of the assumed energy recovery facilities are presented after the air quality analysis of the Proposed Action.

Mobile Sources

Mobile sources are those sources which are not fixed in place. On-site mobile sources would consist primarily of off-road heavy-construction equipment. Off-road heavy-construction equipment would include dozers, compactors, tippers, end-dump trucks, water trucks, graders, loaders, fork lifts, container truck tractors, and miscellaneous medium/heavy-duty tow and maintenance trucks. Trains, highway MSW trucks, and employee (also including supply) vehicles are discussed separately below in the subsection titled "Transportation" because these mobile sources would be used primarily off-site.

The emission factors for each of these vehicle types is provided by the U.S. EPA (1985) and California Air Resources Board (CARB) (1992b). In addition, CARB will impose more stringent NO_x and carbon monoxide (CO) emission factors for off-road heavy-construction equipment in 1996, and in 2000. Because this equipment would be used so intensively, replacements would be procured every few years. New equipment would have improved emissions control and lower emissions as required by the U.S. EPA and CARB. It is assumed that all project-related equipment would be inspected and maintained regularly.

At the proposed landfill, the fleet of container and service trucks are assumed to be represented by the "Heavy-Duty Diesel Truck" category used by CARB to predict future average emission factors for vehicles in service in California.

TABLE 4-7

Flare Thermal Destruction Efficiency

Proposed Mesquite Regional Landfill

Flared Landfill Gas Nonmethane Organic Compounds	BKK Flare Destruction (percent)	Puente Hills Flare Destruction (percent)	Scholl Canyon Flare Destruction (percent)	Spadra Flare Destruction (percent)	Arithmetic Mean Flare Destruction (percent)	CAS No.	Synonyms
Benzene	99.66	76.88	99.3	98.47	93.58	71-43-2	--
Carbon Tetrachloride	99.97	96.92	99.9	99.2	99.00	56-23-6	Tetrachloromethane
Tetrachloroethene (PCE)	99.84	99.96	99.9	99.31	99.75	127-18-4	Perchloroethylene
Toluene	99.47	99.77	99.9	99.54	99.67	108-88-3	--
Trichloroethylene (TCE)	99.87	99.96	99.9	99.74	99.87	79-01-6	Trichloroethene
Vinyl Chloride	99.98	99.35	99.9	99.35	99.65	75-01-4	--
Arithmetic Mean Destruction Efficiency (%)	99.80	95.47	99.80	99.27	--	--	--

Source: Pease, Robert R., M. Nazemi, R. Millican, and S. Ebiner, 1989. Control options for landfill gas, Paper 89-155.005 presented at the Air and Waste Management Association Annual Meeting, Anaheim, California, June 26-30, 1989.

CARB provides these emission factors for each year up through 2010 and makes them available in a model called E7EPSCF2 (CARB, 1992b).

Fugitive Sources

Fugitive sources consist primarily of LFG emissions from the surface of the landfill, and fugitive dust emissions. The important sources of fugitive dust emissions would include traffic on unpaved and paved roads, heavy-construction equipment moving soil, and wind erosion of exposed soil. Additional fugitive emissions would come from the evaporation of fuel from storage tanks and from the fueling process, which would produce a small source of reactive organic gases (ROG).

It is assumed that Best Available Control Technology (BACT) would be used on each source of fugitive emissions. This evolving technology would include watering unpaved roads, water flushing and sweeping of paved roads, using dust suppressants on disturbed areas that would not be used regularly, and controlling speeds.

Transportation

Transportation would include three types of mobile sources: trains, highway trucks and employee vehicles. Each type is subject to different regulations and technology advances.

Trains

Transportation emissions would be primarily associated with common carrier trains hauling MSW residue to the proposed landfill. The distances and route for this analysis are based on the railroad intermodal facility being at the LATC near downtown Los Angeles, and using the SP Main Line that travels east to Indio and southeast to the proposed landfill (see Figure 3-23).

As with all emission sources in the SOCAB, there presently is considerable regulatory discussion regarding approaches to reduce train emissions. For example, SCAQMD has set a goal that 90 percent of locomotives in the basin would be electrified by 2010 (SCAQMD, 1991a). Locomotive manufacturers are conducting research and development regarding electrification and other technologies to reduce emissions. Through these efforts, prototype locomotives fueled by LNG are expected to be available for testing soon (General Electric, 1992). Based on these types of efforts, it is anticipated that train locomotive emissions will be reduced substantially during the operating life of the proposed regional landfill. To be conservative, the air quality analysis assumes that:

- The current fleet of SP diesel locomotives would be used at the beginning of the Proposed Action.
- The locomotives used to haul MSW residue by Year 8 would still be mostly diesel-powered, except that NO_x emissions would be reduced 30 percent by improved technology that will be implemented to comply with SCAQMD Air Quality Management Plan Measure ARB-16.

This reduction in NO_x that is expected to occur within the next several years, is based on two separate studies performed for CARB (Booz•Allen & Hamilton, 1991; Engine, Fuel, and Emissions Engineering,, 1992) and discussions with locomotive manufacturers (G.E., 1992) and railroad representatives (SP, 1992). Booz•Allen & Hamilton estimate that NO_x emission reductions due to anticipated modifications of existing locomotives will be on the order to 15 to 30 percent, while Engine, Fuel, and Emissions Engineering (1992) estimate that NO_x emission reductions due to such modifications may be as high as 40 to 50 percent. Industry and manufacturer representatives estimate 10 to 20 percent reductions. The actual improvement is likely to be that which balances increased rail costs against the use of other transportation modes. It would be counterproductive, and therefore unlikely, for regulations on locomotives to become so restrictive that trucks, which have higher

emissions are used instead of rail. The 30 percent reduction estimate was selected as a reasonable balance based on the projections that currently are available, and the intent of CARB to issue regulations requiring retrofit air pollution controls to reduce NO_X emissions from locomotives.

At the LATC intermodal facility, the containers of MSW residue would be unloaded from the trucks by cranes and loaded on the train. A train would have four diesel locomotives pulling 16 articulated rail cars, five sections to each car, and two containers held by a section. A train would carry 160 containers, and a container would hold 25 tons of MSW residue. The 16 rail cars would be kept together during the haul to and from the landfill. At the LATC, the train would be separated into two 8-car segments by line haul locomotives. Switching engines would not normally be used for these waste haul trains.

Additional train-related emission assumptions in the analysis include the following:

- A train would weigh about 3,000 tons with empty containers, but without MSW residue, and 7,000 tons with the addition of 4,000 tons of MSW residue in 160 containers.
- A train would be pulled by four diesel locomotives, each rated at about 3,600 horsepower.
- Diesel fuel used in these locomotives would have less than 0.05 percent sulfur, the same limit set by the Clean Air Act (CAA) on diesel fuel for trucks and cars effective by October 1, 1993 (SP, 1992).

Special emission estimates are not provided for switching activities at the LATC intermodal facility because substantial amounts of rail car movements are not expected.

Emissions are not analyzed for the longer-term possibilities that locomotives would be electrified or powered by LNG. In those instances, emissions would be greatly reduced from those used for this analysis.

Highway Trucks

The collection trucks (also called packer trucks) that take MSW from homes and businesses (the generators) to transfer stations/MRFs are exactly the same for the Proposed Action and No Action Alternative. Consequently, because the packer trucks would continue to collect MSW from the generators and transport it to a transfer station/MRF, this activity is not part of the Proposed Action and is, therefore, not analyzed. Differences arise after MSW is delivered by the packer trucks to the transfer stations/MRFs. Truck haul from the transfer stations/MRFs to the LATC is analyzed.

Emissions are also estimated for 25 transfer trucks that would haul approximately 500 tons per day of Imperial County MSW residue if local communities decide to use the regional landfill. These estimates are also based on 20-ton transfer trucks, because in-county transfer stations may not include compactors. The number of transfer trucks required to haul all of the MSW residue generated in Imperial County is estimated to be approximately 30 for the next few years before full implementation of source reduction and recycling. This worst case estimate is not used for analysis of air quality impacts because it is very unlikely that Imperial County would close all of its public and private landfills by the year 2000 and send all of the county's MSW residue to the proposed Mesquite Regional Landfill. 25 trucks was chosen as a conservative maximum likelihood estimate for analysis purposes.

Private Vehicles

The landfill would directly employ about 268 people, at its maximum disposal rate of 20,000 tpd. These employees would commute to the site from communities such as Brawley, El Centro, Yuma, Palo Verde, and Blythe at an average speed of 55 miles per hour the maximum speed limit on SR 78.

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Air pollutant emissions associated with these employees and up to 16 daily truck deliveries/ pickups to the proposed regional landfill are estimated and included as on-site mobile emissions. The potential air quality effects of idling vehicles due to additional at-grade railroad crossing delays have been evaluated to determine if this factor could be potentially significant with regard to either air quality conditions at an intersection or as a contribution to overall emissions, especially in the SOCAB. These emissions are included with MSW transportation-related emissions.

Odor

At the landfill, the most important odor considerations are those associated with the exposed operating face and the container washdown facility. For the rail-haul route, odor considerations are those which could occur during normal MSW residue transport and extreme conditions, which potentially could occur if trains were delayed. A maximum likelihood train delay would be 24 hours in the hot desert.

Measures of Significance of Impacts

Significance is defined in order to reach conclusions about calculated ambient air quality concentrations that would be caused by the Proposed Action. Different significance measures apply for criteria pollutants, toxic emissions and odor and hence, are discussed separately.

Criteria Air Pollutants

Criteria pollutant air quality impacts resulting from the Proposed Action would be considered significant if the following might occur:

- Violation of California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS), whichever is strictest.
- Substantial contribution to an existing or projected violation of CAAQS or NAAQS.
- Proposed emission units would cause or make worse the violation of an ambient air quality standard.
- Contribution to a delay in attainment of a CAAQS or NAAQS according to a CARB-approved Air Quality Attainment Plan (AQAP).
- Determination that the Proposed Action is inconsistent with a CARB-approved AQAP (including visibility protection).

Toxics

Toxic compounds can potentially cause three types of health risk: carcinogenic, chronic and acute. Both carcinogenic and chronic risks are long-term and are based on annual average ambient air quality concentrations, while acute risk is short-term, and based on one-hour average concentrations.

A carcinogenic health risk is assumed significant if the probability of toxics causing excess cancer over a lifetime at a receptor site where people reside exceeds one in one hundred thousand. A chronic or acute risk is assumed significant if the hazard index for either type risk exceeds 1.0 at a receptor site where people reside.

The context for health risk in this analysis is the population available for potential health effects and the guidance provided in U.S. EPA (1992), California Air Pollution Control Officers Association (CAPCOA) (1992), and SCAQMD (1992b). In this remote project location, the three following situations were assumed to represent potential population exposure:

- Long-term exposure to a population of about 10 at Glamis, approximately five miles from the center of the landfill (3.1 miles from the southwest corner of the landfill). This situation represents a worst-case exposure of recreational populations around the sand dunes near Glamis (i.e., the recreationalists would not

be subject to long-term continuous exposure).

- Individuals traveling on SR 78 exposed for 12 minutes (6 minutes each direction), five days per week for a 40-year period.
- Thirty days exposure to campers consisting of four individuals located adjacent to the landfill property boundary. (Camping in one location is allowed for only 14 consecutive days; therefore, this is a worst case assumption.)

Odor

Odor impacts would be considered potentially significant if effects of the Proposed Action were to noticeably change existing conditions at locations where odor could be noticed, including residential, commercial or recreational facilities.

4.1.8.3 Emission Sources

Criteria Pollutants

Landfill Site

Figures 4-3 and 4-4 show the approximate locations where Point and Fugitive LFG emissions of particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (Microns) (PM_{10}) would occur in Year 85 for the more constraining Alternative I facility configuration, respectively.

Table 4-8 summarizes the individual emission sources that were included with each major source category analyzed in Section 4.1.8.4, Impacts of the Proposed Action. This table also shows the types of controls that would be provided to satisfy:

- BACT for stationary sources, required by ICAPCD regulations.
- Commercially available mobile equipment which would be manufactured to satisfy U.S. EPA and/or CARB requirements.

Initial construction would be a short-term source of emissions that precedes operation. For some projects, initial construction emissions are so large that the resulting ambient concentrations exceed the regular impact of the project after initial construction. Landfills, on the other hand, are ongoing construction projects. For the Proposed Action, initial construction would create fewer emissions than the normal operation. Initial construction emissions from heavy equipment engine exhaust and fugitive dust would be less than emissions from landfill activities at an input of 12,000 tpd of MSW residue. Initial construction emissions are not modeled for property boundary concentrations because they do not represent worst-case conditions. Ongoing construction emissions are included in the emissions estimates and analysis of impacts of the Proposed Action.

Related MSW Residue Transport

The following activities would be associated with the transport of MSW residue from the SOCAB to the landfill:

- Trucks would haul the containers to an intermodal facility at the LATC in downtown Los Angeles, where 160 containers would be loaded on rail cars to create one train holding 4,000 tons of MSW residue.
- Four locomotives would haul each of these trains (up to five each day) east along the SP Main Line through Banning Pass to Indio, and then southeast along the east side of the Salton Sea to the Proposed Action site, east of Glamis.
- Increased idling of highway vehicles (e.g., cars and trucks) at railroad crossing.
- Trucking of agricultural plant material (see the discussions of offsets that follows).

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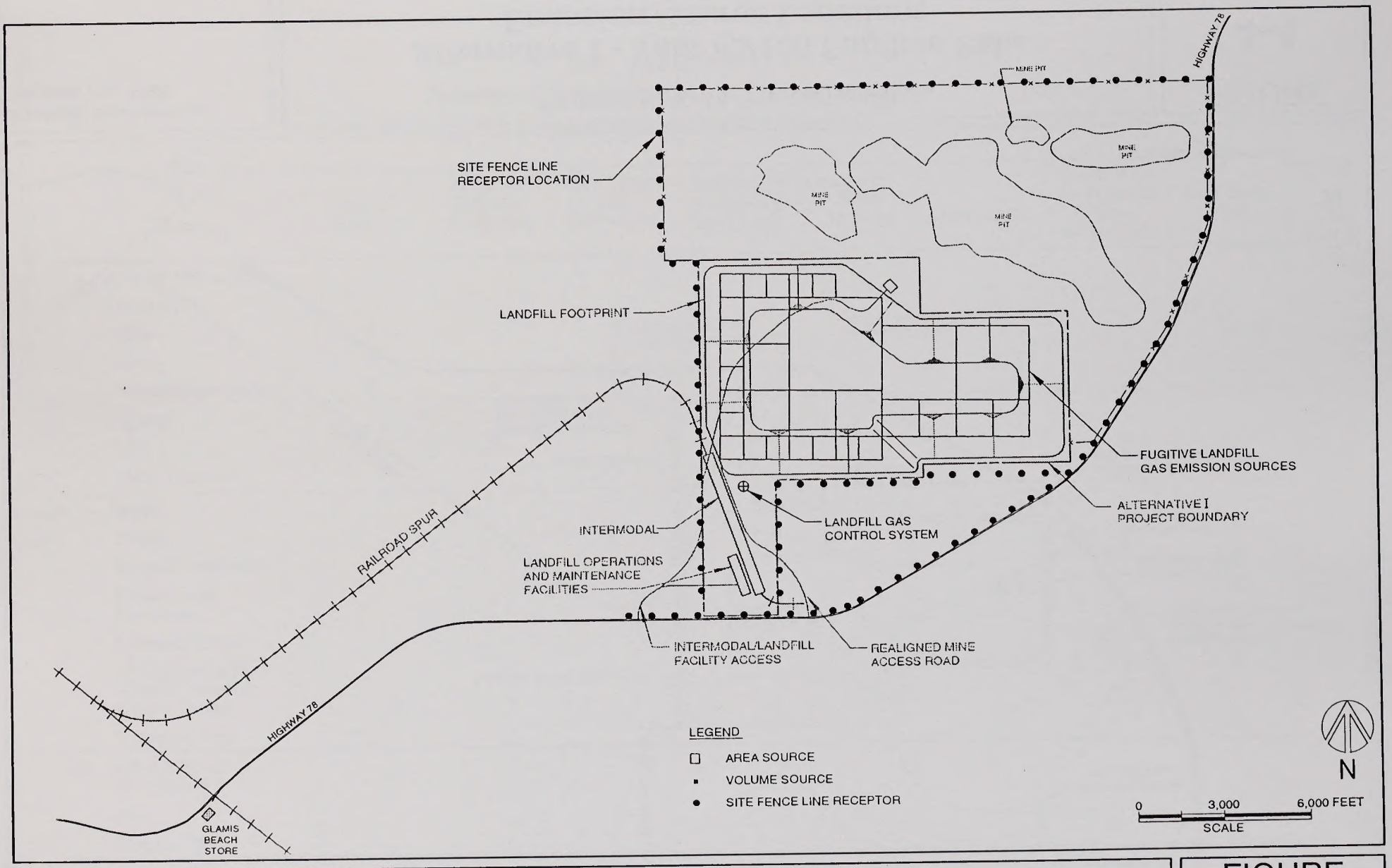
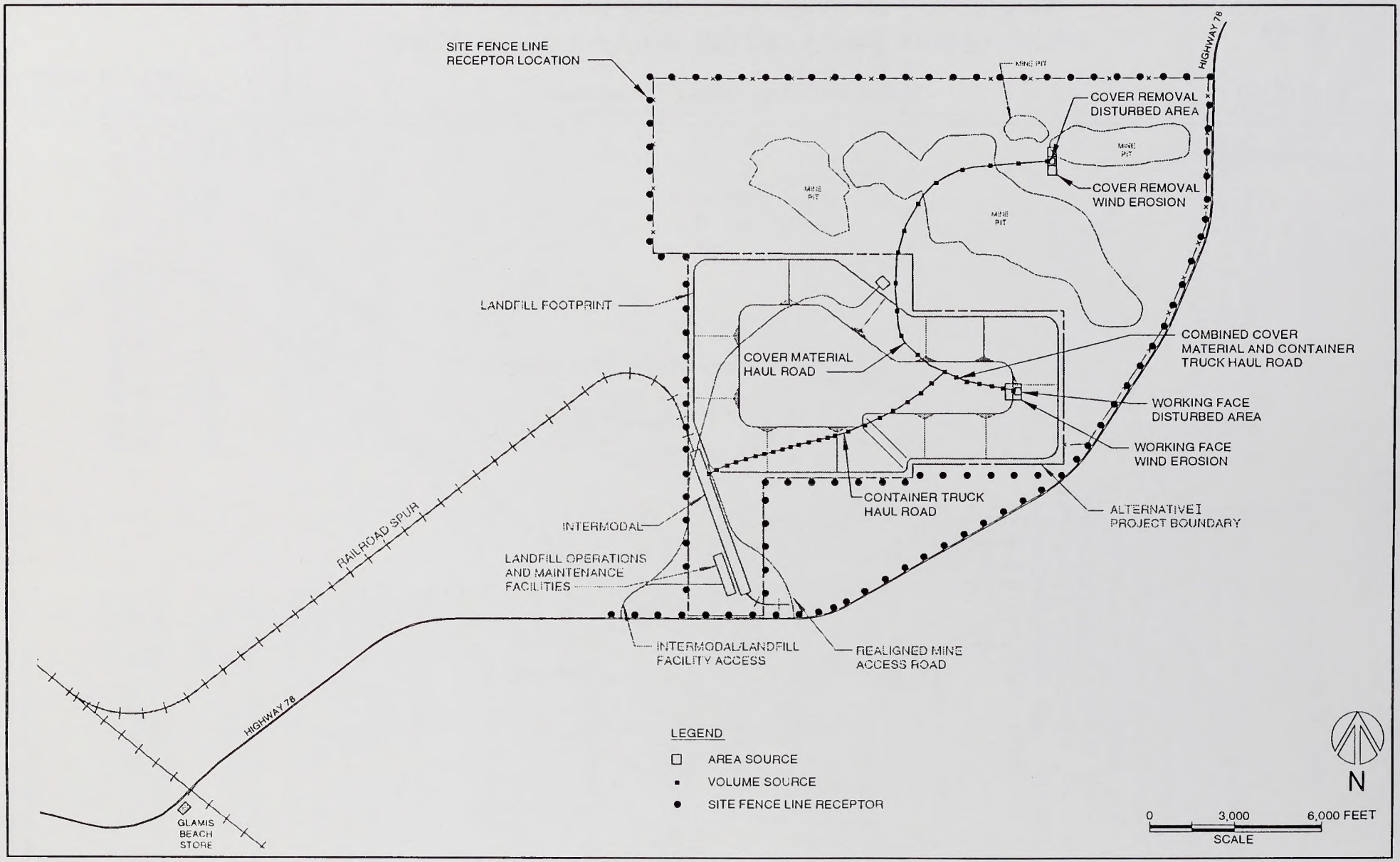


SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Alternative I - Year 85/100 Point and Fugitive Landfill Gas Emission Source Locations

FIGURE **4-3**



SOURCE: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Alternative I - Year 85/100 Fugitive PM_{10} Emission Source Locations

FIGURE

4-4

TABLE 4-8
Summary of Emission Sources and Control Assumptions
Proposed Mesquite Regional Landfill

Source	BACT Equipment	Minimum 80% LFG Collection	99% Trace Gas Destruction	Paved Roads	Water Spraying	Surfactants	CARB /EPA Air Pollution Control Assumptions	Low Sulfur Fuel
A. AT LANDFILL SITE								
• Stationary								
- Flare	X		X					
- Boiler	X		X					
- Miscellaneous Stacks	X							
• Fugitive								
- LFG		X						
- PM_{10} Emissions				X	X	X		
• Mobile								
- Cranes							X	X
- Disposal Equipment							X	X
- Construction Equipment							X	X
- Container Trucks							X	X
- Miscellaneous Site Vehicles including Supply Trucks							X	X
- Employee Trips							X	X
B. RELATED MSW TRANSPORT								
• Trains							X	X
• Transfer Trucks							X	X

Source: Environmental Solutions, Inc., 1993.

- Potential trucking of Imperial County MSW residue to the proposed Mesquite Regional Landfill would occur if Imperial County chooses to divert all or a portion of local MSW residue to the proposed landfill.

The following activities that would occur whether or not the MSW residue is disposed inside or outside of SOCAB are not included in the impact analysis:

- MSW would be collected from residences, commercial businesses and industry by packer trucks in the same way as it is now.
- The packer trucks would transport the MSW to combined transfer/compactor stations in Los Angeles County, much as happens now and will continue through the Proposed Action period.
- At the transfer stations/MRFs, the MSW would be separated into recyclable material categories such as glass, aluminum cans, green waste, tires, etc. The nonrecyclable MSW residue such as food waste would be loaded into containers, each of which would hold 25 tons of waste. The recycling that would take place at these stations would be the same as in the No Action Alternative.

Odor Sources

Potential odor sources would be those associated with:

- Emissions from MSW residue containers during normal train transport.
- Emissions from containers temporarily held in hot desert areas during infrequent railroad delays.
- Emissions at the landfill face.
- Emissions from the container washdown facility.

Energy Recovery Options Emission Sources

Chapter 2.0 of this EIS/EIR introduced the concept that, as LFG generation rates increase with growth of the landfill and/or through implementation of a full-scale LFG generation enhancement program, it may become economical to utilize the methane fraction of recovered LFG for on-site or commercial energy recovery. The location of the energy recovery plant would be approximately the same as the flare station in Figure 4-2. This could be accomplished by one or a combination of the following technologies:

- A LFG turbine or boiler to generate electricity to support power requirements of the landfill and related facilities and/or for sale off-site.
- A compressed methane plant to develop commercial or pipeline-quality compressed methane, similar to compressed natural gas (CNG). The methane would be piped to an existing natural gas transmission line located near Niland, California.
- A system to convert gaseous methane to liquid methane (similar to LNG). A portion could potentially be used for on-site fuel requirements, and the remainder would be transported off-site by truck or rail car.

The specific combinations of energy recovery would be chosen to suit technology changes and future economic conditions. For analysis purposes only, the generation of electricity by a boiler burning LFG from "as received" MSW residue is assumed to be the energy recovery approach in order to calculate maximum likely emissions for Year 100, and not exceed PSD limits. For the analysis of MSW residue conditioned to increase LFG production, energy recovery is assumed to include a boiler/generator and a liquefied methane plant. The separate emissions of the proposed energy recovery facilities are presented in a separate section after the analysis of the Proposed Action. The

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following sources would be associated with each energy recovery system.

LFG Turbine or Boiler. Figures 2-23 and 2-24 show a schematic diagram for an energy recovery system based on use of a gas turbine and a boiler and generator to burn LFG and produce electricity. As noted above, boiler emissions have been calculated for this EIR/EIS analyses. Contaminants would be generated by the combustion of LFG and emitted from a stack adjacent to the boiler. Boilers and their accompanying air pollution control systems have been well developed over the last century, so that boilers have much lower emission factors than flares for ROG, PM_{10}, and CO, and half as much for NO_x.

Compressed Methane Gas Plant. Figure 2-25 shows a schematic diagram for a pipeline-quality compressed methane gas plant. The operation of this plant is described in Section 2.1.6.2. of this EIS/EIR. Contaminants may be emitted to the atmosphere by the following sources:

- Volatile organic compound (VOC) Incinerator: The VOC incinerator shown in Figure 2-25 would typically consist of three separate incinerators which are assumed for analysis of potential exhaust emissions. The following is a general description of emission sources from these incinerators.

- VOC Incinerator No. 1: This device would control the emission of VOCs stripped from condensate which has been separated from the LFG entering the compressed methane plant. This incinerator would be started with natural gas or propane, and fired with some of the compressed methane produced by the plant.

- VOC Incinerator No. 2: This device would control the emission of VOCs stripped from the cleansing solvent used to remove impurities from the LFG. This incinerator would also be fired with some of the compressed methane produced by the plant.

- VOC Incinerator No. 3: This device would control the emission of VOCs from the CO_2 adsorber and flash drums, which strip CO_2 and small quantities of VOCs from the cleansing solvent used to remove impurities from the LFG. This incinerator would also be fired with some of the compressed methane produced by the plant.

- Condensate Tank Vent: The condensate tank shown in Figure 2-25 would store condensate that has been separated from the LFG entering the compressed methane plant. VOCs vaporized from the condensate would be released uncontrolled to the atmosphere through the tank vent.

- Compressor Seals: The two-stage compression and cooling activities shown in Figure 2-25 would produce fugitive VOCs that would be released to the atmosphere from compressor seals.

- Miscellaneous Valves, Flanges, and Fittings: Fugitive VOCs from these devices would be emitted to the atmosphere.

Liquefied Methane Gas Plant - Figure 2-26 shows a schematic diagram for a liquefied methane gas plant. The operation of this plant is described in Section 2.1.6.2 of this EIS/EIR. The liquefied methane gas plant is fed with compressed methane gas which has been purified as described above for the compressed methane gas plant. The liquefied methane gas plant then compresses the gas further prior to production of liquefied methane gas. Therefore, each of the air contaminant emission sources listed above for the compressed methane gas plant also would be included at a liquefied methane gas plant. In addition, air contaminants would be emitted from the following source:

- CO_2 Vent; Small quantities of CO_2 and VOCs would be released uncontrolled to the atmosphere by the CO_2 separator.

4.1.8.4 Impacts of Proposed Action

Appendix F provides detailed calculations performed to evaluate air quality and odor impacts which would occur due to, or be related to the Proposed Action. These impact estimates are summarized in the following sections:

- Criteria pollutants:
  - Proposed landfill site
  - Transportation-related impacts
  - Consistency with air quality attainment plans
- Toxics
  - Landfill site
  - Transportation-related impacts
  - Consistency with air quality attainment plans
- Odor impacts
  - Landfill site
  - Transportation-related impacts
  - Consistency with air quality attainment plans

The emissions of the No Action Alternative are compared with emissions from the Proposed Action to evaluate: (1) the importance of potential project-related impacts, and (2) the manner in which compliance with attainment plans would be accomplished.

Criteria Pollutants

Proposed Landfill Site

Estimated Emissions

Table 4-9 summarizes estimated project emissions at Years 16 and 100, based on the LFG generation rates associated with "as received" MSW residue. Flares are assumed to destroy LFG in Year 16, while a boiler generator is assumed to reduce emissions in Year 100. Table 4-10 summarizes estimated project emissions at Years 16 and 100, with water added to the MSW residue for LFG augmentation. The emissions shown are for a boiler/generator in Year 16 and a boiler/generator together with a liquefied methane gas plant in Year 100. The waste characteristics, natural moisture content and rainfall assumptions used to predict LFG generation rates are provided in Appendix F. Because none of the stationary source emission rates in Tables 4-9 and 4-10 exceed 250 tons per year (1,370 pounds per day), PSD review and impact analysis is not required (U.S. EPA, 1994).

Boundary Concentrations

Table 4-11 summarizes the maximum off-site ground-level concentrations determined for NO_2, PM_{10}, sulfur dioxide (SO_2), and CO, where the property boundary (on-site Alternative I configuration) is closest to the landfill. These concentrations were calculated using U.S. EPA's ISC2 model for the Year 16 with a flare station, and Year 100 with a boiler/generator. The use of a flare station for Year 16 would produce maximum emissions of NO_x, PM_{10} and CO because flare emission factors are higher than boiler emission factors as shown in Table 4-12.

The results show that ambient air quality standards would be met for Years 16 and 100. The estimated maximum concentrations of the gaseous criteria pollutants (NO_2, SO_2, and CO) are almost negligible compared to AAQS. The maximum project concentrations combined with the indicated background concentrations do not cause the total concentrations of these pollutants to exceed AAQS. Even the emissions shown in the bottom half of Table 4-10 for MSW residue conditioning at Year 100 would not cause exceedances of the AAQS. The expected effects of MSW conditioning can be seen by comparing the bottom halves of Tables 4-9 and 4-10. MSW residue conditioning with a boiler/generator and liquefied methane gas plant would cause emissions decrease for NO_x, (7.7%) and oxides of sulfur (SO_x) (41.5%), and emission increase for ROG (56.1%), PM_{10} (5.0%), and CO (2.3%).

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TABLE 4-9

Estimated Project Site Emissions At Year 16 and Year 100 With "As Received" MSW Residue

Proposed Mesquite Regional Landfill

I. YEAR 16 USING A FLARE

Source	Emissions (lbs/day)				
	NO_X	ROG	PM_{10}	SO_X	CO
Stationary Sources	650	100	260	130	100
Fugitive Sources	0	50	90	0	0
Mobile Sources	1,570	290	50	40	1,310
TOTAL	2,220	530	400	170	1,410

II. YEAR 100 USING A BOILER/GENERATOR

Source	Emissions (lbs/day)				
	NO_X	ROG	PM_{10}	SO_X	CO
Stationary Source (Boiler/Generator)	630	30	10	360	10
Fugitive Sources	0	250	140	0	0
Mobile Sources	1,590	290	50	50	1,320
TOTAL	2,220	570	200	410	1,320

Note: Please see Table 4-8 for a listing of the various project components included as stationary, fugitive, and mobile sources.

Source: Environmental Solutions, Inc., 1993.

TABLE 4-10

Estimated Project Site Emissions at Year 16 and Year 100 With Water Added to the MSW Residue Conditioning

Proposed Mesquite Regional Landfill

I. YEAR 16 USING A BOILER/GENERATOR

Source	Emissions (lbs/day)				
	NO_X	ROG	PM_{10}	SO_X	CO
Stationary Sources	190	30	10	400	10
Fugitive Sources	0	270	90	0	0
Mobile Sources	1,570	290	50	40	1,300
TOTAL	2,260	590	150	440	1,310

II. YEAR 100 USING A BOILER/GENERATOR AND A LIQUEFIED METHANE PLANT

Source	Emissions (lbs/day)				
	NO_X	ROG	PM_{10}	SO_X	CO
Stationary Sources					
Boiler/Generator	340	20	10	200	10
Liquefied Methane	120	120	10	0	20
Total Stationary Sources	460	140	20	200	30
Fugitive Sources	0	460	230	0	0
Mobile Sources	1,590	290	50	40	1,320
TOTAL	2,050	890	210	240	1,350

Source: Environmental Solutions, Inc., 1993.

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Applying the increases to the maximum project concentrations in Table 4-11 causes the total concentrations shown in Table 4-11, which do not exceed AAQS. The NO_2 and SO_2 estimates are based on the conservative assumption that all of the emitted NO_x and SO_x is in the form of these specific criteria pollutants.

The PM_{10} emissions would be below standards because of the planned application of BACT to fugitive emissions. Unpaved roads would be watered or treated with dust suppressants, similar to the watering/use of dust suppressants proven at the Mesquite Mine. Each day, paved roads would be water-flushed clean of dust deposits. Exposed areas would be watered or treated with dust suppressants, if needed. The following tiered fugitive dust monitoring and control program would be implemented by the Applicant to assure that PM_{10} concentrations would not exceed the model estimates.

- Tier I - Meteorological and Particulate Monitoring Program: The Mesquite Mine continuous recording meteorological station, which measures wind speed and direction, would continue to be operated after the mine is closed. When wind speeds exceed 25 miles per hour, landfill operators would be instructed to curtail dust generating activities such as site clearing; stability berm and other dust generating construction; unnecessary vehicle trips; and excavation, hauling (unless covered), and placement of cover material. It may not be feasible to curtail activities associated with placement of daily cover because of permit requirements, but activities associated with intermediate cover would be curtailed until winds subside.

  Ambient particulate monitoring devices would continue to be operated at their current or new locations approved by ICAPCD. Particulate and meteorological monitoring data would be reviewed periodically, as required by ICAPCD permits, to determine whether landfill activities were responsible for causing PM_{10} concentrations higher than model estimates. The PM_{10} concentration increase that would trigger Tier II measures would be determined in consultation with ICAPCD.

- Tier II - Additional Watering or Use of Dust Suppressants: Watering would be increased to the maximum practical extent that would not cause mud or slippery conditions. If a specific increase in PM_{10} concentration above model estimates (based on consultation with ICAPCD) were to be attributable to the landfill, use of chemical dust suppressants on unpaved roads would be implemented if such suppressants are required by the ICAPCD.

- Tier III - Enhanced Dust Control Measures: If Tier II control measures were not sufficient to prevent the specified increases in PM_{10} above model estimates, the Applicant would evaluate for implementation one or more of the following potential dust control technologies:

  - Application of dust suppressants, gravel, or placement of geotextile fabrics on wind eroding areas.
  - Installation of temporary and permanent wind breaks along paved roads and around the active face working areas.
  - Alternate methods for application of daily cover material to the active working face.

  Tier III controls would be implemented individually on a case-by-case basis, as required by ICAPCD.

Transportation-Related Impacts

MSW Residue Transportation-Related Impacts

Table 4-13 summarizes estimated emissions associated with transport of MSW residue to the proposed landfill site for maximum disposal rate

TABLE 4-11

Estimated Maximum Off-Site, Ground-Level Air Pollutant Concentrations With Conditioned MSW Residue

Proposed Mesquite Regional Landfill

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	Maximum Project Concentration ($\mu g/m^3$)		Total Concentration ($\mu g/m^3$)		California Ambient Air Quality Standards ($\mu g/m^3$)	National Ambient Air Quality Standards ($\mu g/m^3$)
			Year 16	Year 100	Year 16	Year 100		
NO_2	1-hour	73.3 (1)	8.8	11.4	82.1	84.7	470	--
	Annual Arithmetic Mean	5.6 (2)	0.1	0.2	5.7	5.8	--	100
SO_2	1-hour	Negligible	4.2	6.4	4.2	6.4	655	--
	3-hour	Negligible	3.8 (3)	5.8 (3)	3.8	5.8	--	1,300
	24-hour	Negligible	0.8	1.5	0.8	1.5	131	365
	Annual Arithmetic Mean	Negligible	0.05	0.08	0.05	0.08	--	80
CO	1-hour	Negligible	1.3	0.06	1.3	0.06	23,000	40,000
	8-hour	Negligible	0.9 (4)	0.04 (4)	0.9	0.04	10,000	10,000
PM_{10}	24-hour	19.9 (5)	8	23.3	28.0	43.2	50	150
	Annual Arithmetic Mean	19.9	0.8	4.6	20.7	24.5	--	50
	Annual Geometric Mean	18.1	0.8	4.6	18.9	22.7	30	--

(1) Highest 1-hour concentration measured at Mesquite Mtn well field during a sampling program conducted from May, 1992 through May, 1993 occurred on October 6, 1993.
(2) Annual arithmetic mean measured at Mesquite Mine well field during the period May, 1992 through May, 1993.
(3) Estimated as 90 percent of the 1-hour mean SO_2 concentration computed with ISC2, where 0.9 scaling factor approved by CARB and U.S. EPA (CAPCOA, 1987).
(4) Estimated as 70 percent of the 1-hour mean CO concentration computed with ISC2, where 0.7 is scaling factor approved by CARB and U.S. EPA (CAPCOA, 1987)
(5) Annual arithmetic mean is an appropriate background concentration to add to 24-hour maximum project concentration because the latter occurs under low wind speeds of 0.4 to 2.4 miles per hour., while high 24-hour background levels occur only under high wind speeds.

Source: Environmental Solutions, Inc., 1993.

TABLE 4-12

Emissions Factors for Landfill Gas Thermal Destruction Devices

Proposed Mesquite Regional Landfill

Device	Emission Factor (Lb/Million BTU)				
	NO_X	ROG	PM_{10}	SO_X	CO
Flare(1)	0.062	0.01	0.025	0.012	0.01
Boiler(2)	0.035	0.0017	0.0006	0.02	0.0002

Notes:

(1) Carnot. Emissions tests on the Puente Hills Energy Recovery from Landfill Gas (PERG) Facility - Unit 400, report prepared for County Sanitation Districts of Los Angeles County, September 1991.

(2) Carnot. SCAQMD Performance Tests on the SPADRA Energy Recovery from Landfill Gas (SPERG) Facility, October 1991.

Source: Environmental Solutions, Inc., 1993.

TABLE 4-13

**Estimated MSW Residue Transport-Related Emissions
At 20,000 Tons Per Day (lb/day)
For Year 100**

Proposed Mesquite Regional Landfill

Location/Source	NO_X	ROG	PM_{10}	SO_X	CO
SOCAB					
Trucks	540	110	60	20	420
Trains	2,610	120	80	60	370
LATC	330	30	30	10	140
Total SOCAB	3,480	260	170	90	930
Coachella Valley (trains)	2,680	120	80	60	380
Imperial County (trains)	1,940	90	60	40	270
TOTAL	8,100	470	310	190	1,580

Note: Does not include at-grade railroad crossing vehicle delay emissions.

Source: Environmental Solutions, Inc., 1993.

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of 20,000 tpd, which is expected to be reached in about eight years. Truck emissions from the transfer of MSW residue to the intermodal facility would enter only the SOCAB atmosphere, while the trains' emissions would occur along the entire route.

Additional transport-related emissions, which have also been estimated, are associated with idling of highway vehicles due to delays at rail grade crossings. Using the total magnitude of these delays estimated by Southern California Association of Governments (SCAG) (1988) and CARB (1988) EMFAC idle emission factors, the emissions associated with this total delay would amount to six pounds per day of NO_x, seven pounds per day of ROG, and 68 pounds per day of CO. These emissions are inconsequential in comparison to the total emissions at the rail crossings caused by highway vehicle traffic each day.

To summarize project-related MSW residue transport emissions in the SOCAB, Table 4-14 shows total emissions in the SOCAB of the five criteria pollutants of concern, emissions from all trains in the SOCAB, emissions from the five project-related trains, and total project-related transport emissions in the SOCAB (trains, container trucks and LATC activities). Although small, compared to total emissions in SOCAB, the Proposed Action would decrease the emissions of all five criteria pollutants compared to the emissions associated with a No Action Alternative that continued to landfill in SOCAB. If the MSW residue were instead hauled to a different regional landfill outside of the SOCAB, air quality benefits similar to those associated with the Proposed Action would occur.

The analysis of the impacts of transportation-related emissions begins with a review of the regional aspects of the existing environment. SOCAB is classified as extreme nonattainment for O_3, which is the primary pollutant targeted for improvement in the 1991 SCAQMD AQMP. The Coachella Valley and Imperial County areas are both classified as state nonattainment for O_3. Exceedances of the standard are mostly due to transport of ozone from outside of the area. In Coachella Valley, this transport appears to be entirely from the SOCAB. In Imperial County, the transport origin appears to be a combination of Mexicali, Mexico; the SOCAB; and possibly San Diego, while local emissions also contribute to the nonattainment.

Figure 4-5 illustrates how the reduction in NO_x and ROG emissions in the SOCAB would result in ozone improvements in each area. Part A of this figure illustrates why NO_x and ROG emissions in SOCAB are much more important than the same emissions in the Coachella Valley and Imperial County. The low inversion layer elevation in SOCAB (generally below the elevation of Banning Pass) traps these ozone precursor emissions during the night and early morning. The thin mixing layer increases the concentrations of NO_x, ROG, and other molecules that photochemically form O_3 during sunlight hours. O_3 levels in the two desert areas are much less because precursor emissions (NO_x and ROG) and O_3 are mixed through the deep desert mixing layer, and some of the nighttime emissions of O_3 precursors are dispersed before daytime O_3 creation occurs.

Part B of Figure 4-5 illustrates the number of days O_3 state standards are exceeded. The most frequent exceedances occur in the basin portions of San Bernardino and Riverside counties, as the pollutants are blown eastward by ocean breezes and become trapped below the inversion layer before Banning Pass. The exceedances of ozone east of the pass are primarily the result of leakage that occurs from SOCAB. The exceedances decrease with distance due to dilution and destruction of ozone molecules.

Part C of Figure 4-5 shows the changes in NO_x and ROG that would occur as a result of the Proposed Action in the 100th year. The most important changes are the decreases that would occur in the SOCAB.

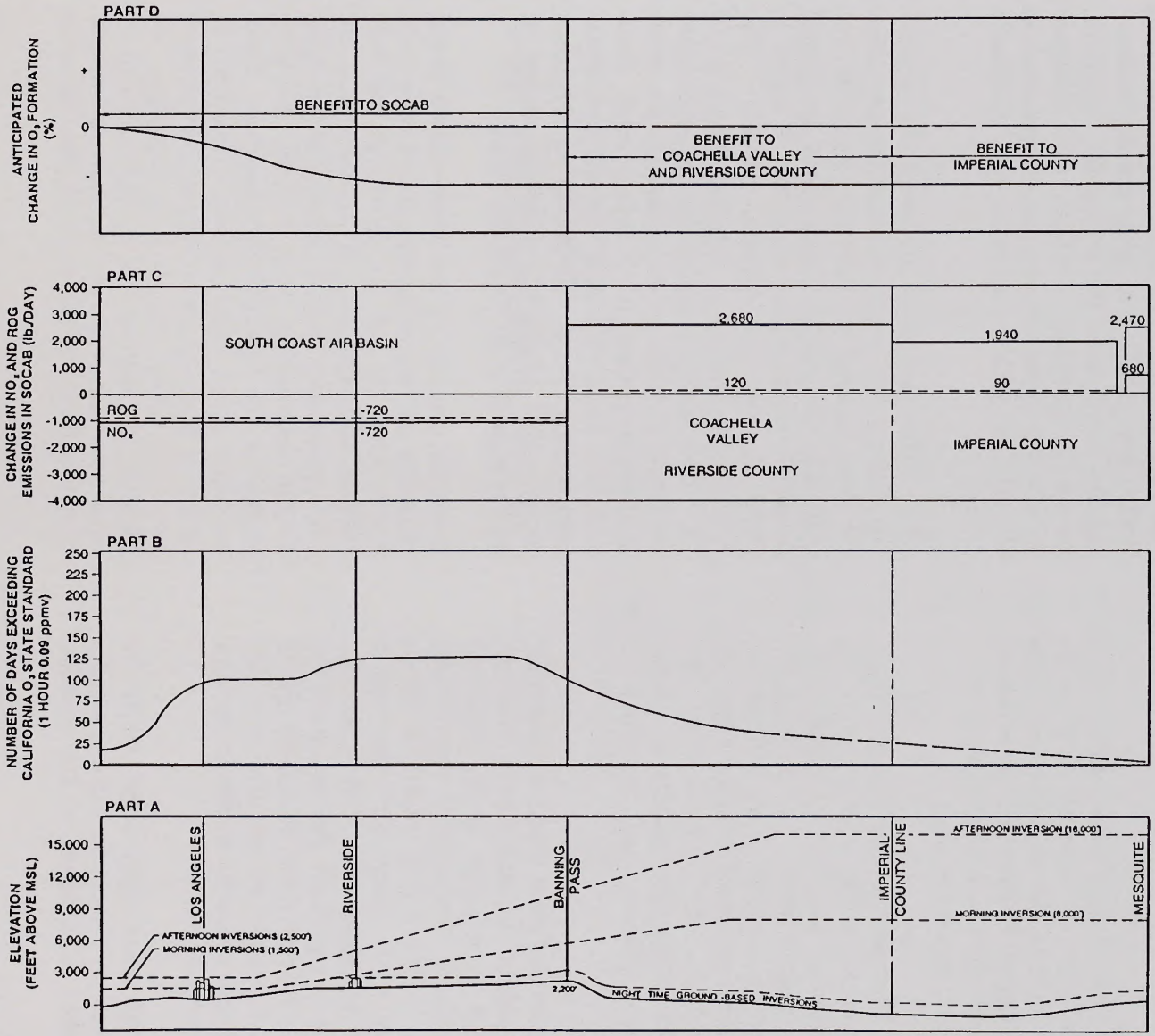
The added O_3 concentration that would occur in the Coachella Valley due to the NO_x and ROG emissions along the rail line in that area was

TABLE 4-14

Project-Related
MSW Residue Transport Emissions in
Years 85/100 Compared to SOCAB Emissions in 1987
Proposed Mesquite Regional Landfill

	NO_x		ROG		PM_{10}		SO_x		CO	
Emission Source	Lb/Day	% of Total	Lb/Day	% of Total	Lb/Day	% of Total	Lb/Day	% of Total	Lb/Day	% of Total
All Sources in SOCAB	2,420,000	100	2,750,000	100	2,200,000	100	2,700,000	100	9,970,000	100
All Trains in SOCAB	63,000	2.6	3,000	0.1	1,400	0.06	4,400	0.16	9,400	0.09
Project-Related Trains	2,600	0.1	120	0.004	80	0.004	60	0.002	370	0.004
Project-Related Container Trucks	540	0.02	110	0.004	60	0.003	20	0.001	420	0.004
Project-Related Activity at LATC	330	0.01	30	0.001	30	0.001	10	0.0004	140	0.001
Project-Related Total in SOCAB	3,480	0.14	260	0.01	160	0.008	80	0.003	920	0.009

Source: Environmental Solutions, Inc., 1993.



EMISSIONS IN SOCAB FOR YEAR 100 WITH BOILER/GENERATOR MESQUITE REGIONAL LANDFILL (pounds/day)

ACTIVITY	PROPOSED ACTION EMISSIONS IN SOCAB		
	NO_x	ROG	BOTH
TRANSFER TRUCKS AND LATC	870	140	1,010
TRAINS	2,610	120	2,730
LANDFILL BOILER AND FUGITIVES	0	0	0
LANDFILL EQUIPMENT EXHAUST AND FUGITIVES	0	0	0
TOTAL	3,480	260	3,740

ACTIVITY	NO ACTION EMISSIONS IN SOCAB		
	NO_x	ROG	BOTH
TRANSFER TRUCKS	1,910	370	2,280
TRAINS	0	0	0
LANDFILL BOILER AND FUGITIVES	830	360	1,190
LANDFILL EQUIPMENT EXHAUST AND FUGITIVES	1,460	250	1,710
TOTAL	4,200	980	5,180

SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Emissions and Effect on Ozone of Landfill vs. No Action Alternative

FIGURE **4-5**

estimated with a "box" model, and the results are shown in Table 4-15. These estimates indicate that the average O_3 concentration increase due to the maximum added train activity would be on the order of 1 part per billion by volume (ppbv). This concentration is much lower than background and hence, would not noticeably contribute to exceedances caused by SOCAB transport that frequently reach concentrations of 180 ppbv. Also, when conditions in SOCAB are improved so that transport no longer causes exceedances, the additionally derived train emissions in Coachella Valley would not cause local exceedances.

A similar analysis for train-related emissions in Imperial County shows comparable or lower O_3 concentrations because the dominant west winds (discussed in Chapter 3.1.8) effectively widen the box and transport the lower concentration of O_3 to the eastern low population area.

Finally, Part D illustrates how the changes in NO_x and ROG emissions would tend to reduce O_3 concentrations along the entire rail-haul route. The relative improvement would gradually increase toward the east side of the SOCAB and then would remain essentially constant within the areas of transport. The dilution effect with distance would affect the magnitude of the transported O_3 problem and its reduction equally.

Table 4-16 shows that there would be substantial reductions in each of the other criteria pollutants in the SOCAB as a result of the Proposed Action's replacement of existing or new landfills in the basin. This would result in direct improvements for each of the other nonattainment pollutants: NO_2, PM_{10}, and CO. Based on these comparisons and the above O_3 evaluation, it is concluded that air quality effects in the SOCAB would be positive (i.e., no significant adverse impacts would occur as a result of the Proposed Action).

Table 4-16 also shows that there would be increases for each of the criteria pollutants in the Coachella Valley as a result of the common carrier trains that would transport MSW residue to the regional landfill. The increases associated with the NO_x, ROG, PM_{10}, SO_x and CO would be 2, 0.04, 0.01 - 0.02, 0.3 and 0.04 percent, respectively, of the 1987 total emissions of these pollutants in that area. The small increase in NO_x emissions would cause an ambient concentration of about 1.6 $\mu g/m^3$ of NO_2, (Table 4-15) which is much lower than the NO_2 CAAQS of 470 $\mu g/m^3$ and background concentration of 39 $\mu g/m^3$. The small increases in NO_x and ROG emissions from trains would not cause the production of significant O_3, as discussed above. The O_3 concentrations that could cause exceedances might actually decrease, despite these small project-related emissions, because the decreases in NO_x and ROG emissions in SOCAB would decrease the O_3 generated in the SOCAB and transported into Coachella Valley.

The PM_{10} increase of about 0.1 $\mu g/m^3$ (see Table 4-14) would not substantially affect the time required to reach attainment for that pollutant in Coachella Valley where the annual geometric mean concentration was 37 $\mu g/m^3$ in Palm Springs (SCAQMD, 1992). The 0.07 $\mu g/m^3$ increase of SO_x and 0.5 $\mu g/m^3$ of CO concentrations would be far below the 655 and 23,000 $\mu g/m^3$ CAAQS for these attainment pollutants. Based upon these relatively small increases and the anticipated improvement in O_3 transport, the Proposed Action would not result in significant adverse air quality impacts in the Coachella Valley.

A similar analysis of the transportation (train) emissions in Imperial County shows them to be 3, 0.1, 0.001, 1, and 0.1 percent of the 1987 baseline inventory of NO_x, ROG, PM_{10}, SO_x, and CO, respectively. These train emissions would be a small contribution to the baseline inventory, except for the 3 percent NO_x increase. These increases would cause ambient concentrations similar to those for the Coachella Valley, which would be small compared to CAAQS. In addition, the railroad line is located 10 to 30 miles northeast of the communities in Imperial County, and the prevailing wind is from the west.

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TABLE 4-15

Train Emissions and Ambient Air Quality Impacts in Coachella Valley

Proposed Mesquite Regional Landfill

Air Pollutant	Emissions (lb/hr)			Resulting Increase in Ambient Concentration(1) (micrograms per cubic meter [$\mu g/m^3$])	Background Concentration(2) ($\mu g/m^3$)	CAAQS Concentration and Averaging Time ($\mu g/m^3$)
	Per Locomotive	Per Train	Box (6 Trains)			
NO_x	91	364	2,184	1.6 (0.8 ppbv)	39(3)	470 (1 hour)
ROG	2.6	10.4	62.4	0.1	No Data	NA
PM_{10}	2	8	48	0.1	37(4)	50 (24 hours)
SO_x	1.4	5.6	33.6	0.07	No Data	131 (24 hours, as SO_2)
CO	9	36	216	0.5	No Data	23,000
O_3	0	0	0	2 (1 ppbv)	80(5)	180 (1 hour)

Notes:

(1) Concentrations calculated with "box" model for 24 hours.
(2) Annual Mean Concentrations.
(3) Annual Arithmetic Mean NO2 in 1991 for Palm Springs = 20.8 ppbv (SCAQMD, 1992a)
(4) Palm Springs Annual Geometric Mean (SCAQMD, 1992a).
(5) Annual Arithmetic Mean O3 in 1991 for Palm Springs (CARB, 1992a).
NA = Not Applicable.

Source: Environmental Solutions, Inc., 1993.

TABLE 4-16

Comparison[1] of Proposed Action and "No Action" Alternative
Maximum Anticipated Emissions
For Year 100 (2093) With Boiler/Generator (lb/day)

Proposed Mesquite Regional Landfill

I. SOCAB	NO_x	ROG	PM_{10}	SO_x	CO
Proposed Action	3,480	260	160	80	920
No Action Alternative	4,190	990	430	570	2,660
All Sources in SOCAB[2] (1987)	2,400,000	2,800,000	2,150,000	270,000	10,000,000

II. COACHELLA VALLEY	NO_x	ROG	PM_{10}	SO_x	CO
Proposed Action	2,680	120	80	60	380
No Action Alternative	0	0	0	0	0
All Sources in Coachella Valley (1987)[3]	134,000	336,000	915,000	17,000	1,170,000

III. IMPERIAL COUNTY	NO_x	ROG	PM_{10}	SO_x	CO
Proposed Action					
Site	2,220	570	200	410	1,330
Employee/Service Vehicles	50	0	0	0	140
Trains	1,940	90	60	40	270
Total	4,410	770	260	450	1,740
No Action Alternative	0	0	0	0	0
All Sources in Imperial County (1987)[4]	61,600	57,000	3,700,000	3,600	250,000

Note: A "No Action" Alternative that rail hauls MSW to landfills ourside of the SOCAB would have effects similar to those described for the Proposed Action.

"No Action" Alternative information is for a "No Action" Alternative that continues to dispose of SOCAB MSW in landfills located in the SOCAB.

(1) Emissions between MSW generators and transfer/compactor stations are identical for Proposed Action and No Action alternatives. After the trucks leave these stations, the emissions are summed to provide the values in this table.
(2) SCAQMD Air Quality Management Plan, 1991.
(3) CM #90A-F-5, p. F-16 (Control of Dust Emissions from Wind Erosion).
(4) Imperial County Air Quality Attainment Plan, 1992.

Source: Environmental Solutions, Inc., 1993.

Therefore, NO_x emitted by trains would not noticeably contribute to existing O_3 exceedances in the populated portion of Imperial County.

The final rail transportation-related air quality impact evaluation is to determine if idling highway vehicles at railroad crossings could cause ambient concentrations that exceed CAAQS. The intersection at Ramona Avenue was selected for this analysis because of the large volume of road traffic and relatively slow train speeds at that location. Idling emissions of delayed vehicles at this intersection would cause a maximum of 188 and 1,600 $\mu g/m^3$ of NO_2 and CO, respectively, which are well below the one-hour standards of 470 and 23,000 $\mu g/m^3$. As a result, this effect would not be significant.

Should Imperial County truck MSW residue to the proposed landfill, additional transportation-related air quality impacts would occur in Imperial County. The addition of up to 30 MSW residue trucks would produce incremental impacts that would not change the conclusion that with proposed offsets and emission controls, air quality impacts would be below a level of significance.

Private Trip Emissions

Employee transportation impact is based on about 268 people commuting from local communities about 90 miles each day. The emissions from their personal vehicles are highest in Year 8 when the landfill first reaches its maximum input rate and when their vehicles have the highest emission factors. Project-related non-MSW residue deliveries and pickups by up to 16 trips per day would also occur. Round trip distances are assumed to average 60 miles. These vehicle emissions would be only 1.2, 1.2, 1.1, 0.7, 7.1 percent of the NO_x, ROG, PM_{10}, SO_x, and CO emissions from both the project site and project-related transport emissions in Imperial County. Further, these emissions would occur over rural roads with almost no residences or commerce located between their home communities and the site. Therefore, the impact of these vehicles would be negligible, and would decrease beyond Year 8 because of lower emitting vehicles joining the car/light truck population.

Proposed Offsets

The APCD New and Modified Stationary Source Review rule, approved in September 1993, requires that emissions of nonattainment pollutants and precursors be "offset" by equal or greater reductions of each emitted pollutant such that no net increase occurs. Up to 137 lbs/day of a nonattainment pollutant or precursor may be emitted without triggering the offset requirement. Any emissions above this threshold will not be permitted without an approved emission offset plan. For the Proposed Action, this threshold would be exceeded beginning in the fifth year of operations. Therefore, the Proposed Action would have an emission offset program, in which nearby sources would reduce emissions of nonattainment pollutants to offset project-related stationary source emissions. These pollutants include PM_{10} and its precursors, and ozone and its precursors. The proposed program is discussed below.

The Mesquite Mine will continue to operate at its current level until 1997. Current plans are to start reducing mining operations in 1997, which would create a source of offsets for landfill emissions. The burning of agricultural plant material in Imperial County is another source of emissions that would provide the rest of the required offsets for the Proposed Action. The offset would result from gathering the agricultural plant material that would otherwise be burned in the fields. The plant material would be hauled to the landfill and either used as cover amendment or landfilled.

Agricultural burning in Imperial County is primarily a source of PM_{10}, ROG, NO_x and CO. SO_x is also emitted by date palm frond burning. Records of acres and tons of waste burned in Imperial County are kept by ICAPD. The recorded amount of these wastes burned each quarter from 1985 to 1992 is presented in

Appendix F, Air Quality Technical Report, of this EIS/EIR.

The arithmetic mean, maximum, and minimum emissions of NO_x, ROG, ozone precursors (NO_x + ROG), and PM_{10} for the burning of agricultural plant material during each calendar quarter from the period 1985 to 1992 are shown in Figures 4-6 through 4-9 as the annually cyclic curves. The diversion of agricultural plant material from burning would provide a sufficient reduction in emissions to offset the landfill stationary source emissions during the period when the mine cannot provide the necessary offsets.

The landfill emissions would continue to increase during the same period of time emissions from the adjoining Mesquite Mine decrease. The mine is permitted to move a maximum of 40 million tons of ore, protore and overburden in a year (Environmental Solutions, Inc., 1989). The associated permitted total suspended particulate (TSP) emissions are 1,630 tons per year. The fugitive particulate emissions are approximately 22 percent PM_{10} (TRC Environmental Consultants, 1987; and U.S. EPA, 1985) and the particulate in the diesel exhaust of the mobile equipment is considered to be PM_{10}. Other criteria pollutants (NO_x, ROG, SO_x, and CO) are emitted by the mobile equipment at permitted rates consistent with the fuel use needed for heavy equipment to move the maximum 40 million tons of material a year.

Actual mine emissions are expected to remain constant over the time interval of 1991 through 1997. After 1997, the mine emissions are expected to decrease and hence begin to provide an offset for project emissions. The offset in any given year would be equal to the difference between the historic actual emissions at the mine during the previous three years and the actual mine emissions for the given year.

This reduction in mine emissions is shown along with the projected increase in landfill emissions of NO_x, ROG, PM_{10}, SO_x, and CO from start of the Proposed Action through closure in Figures 4-10 through 4-14. For estimating purposes, it is assumed that the decrease would occur linearly to zero in 2007.

As illustrated in the figures, the overall mine emission decreases of NO_x and PM_{10} will be larger than the same emissions from the Proposed Action, and even larger than those from projected stationary sources. For CO, the mine decreases will be larger than the projected stationary source CO emissions of the Proposed Action. For ROG and SO_x, the stationary source increases will eventually exceed the mine decreases. The transition of mining to landfilling at the proposed site during the next 10 to 15 years would reduce NO_x emissions by 4,170 pounds per day, more than the project-related transportation emissions of NO_x (1,940 pounds per day) and almost equal to the total project site emissions of NO_x in Imperial County (4,460 pounds per day).

Because NO_x and ROG are companion precursors, CARB (1993) combines them in producing O_3 (CARB, 1993a). Figure 4-15 shows that the sum of NO_x and ROG emissions associated with the Proposed Action would be less than the emission decrease available from the mine closure.

Offset requirements of the ICAPCD Rule 207 would be administered in accordance with ICAPCD Rule 207.1 (Emission Reduction Credit Banking) by the Imperial County Air Pollution Control Officer.

The on-site air emissions from the Proposed Action would be less than the current on-site air emissions from the Mesquite Mine. The difference between these emissions are shown on Table 4-17. Even with MSW residue conditioning, the net emissions would decrease as shown in Table 4-18.

Consistency with Attainment Plans

CEQA and NEPA require that the Proposed Action be analyzed for its consistency with air quality attainment plans. The proposed project

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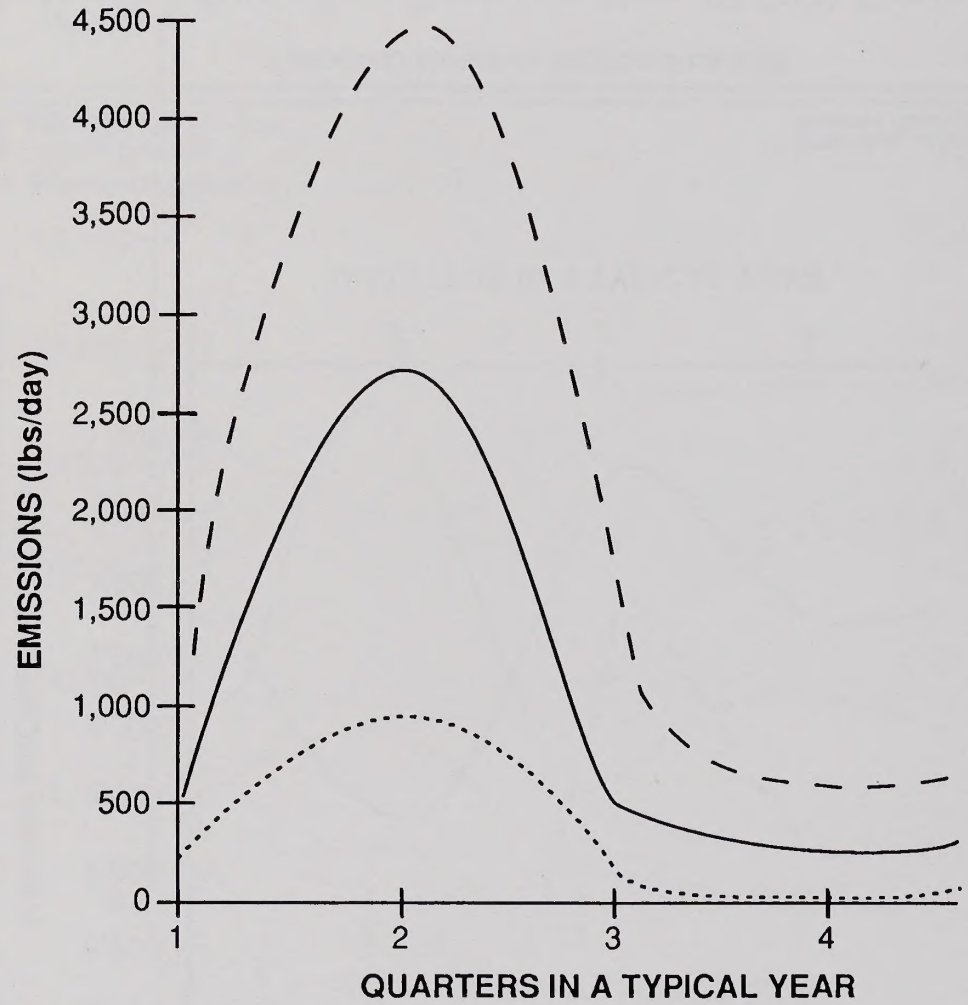

LEGEND

- – – – Maximum NO_x Emissions from Agricultural Burning (1)
- ——— Mean NO_x Emissions from Agricultural Burning (1)
- ····· Minimum NO_x Emissions from Agricultural Burning (1)

(1) Emissions estimated from records of agricultural burning in Imperial County during period 1985-1992.

SOURCE: ICAPCD, 1993.

Proposed Mesquite Regional Landfill

Potential NO_X Emissions Offset Available from Agricultural Burning

FIGURE **4-6**

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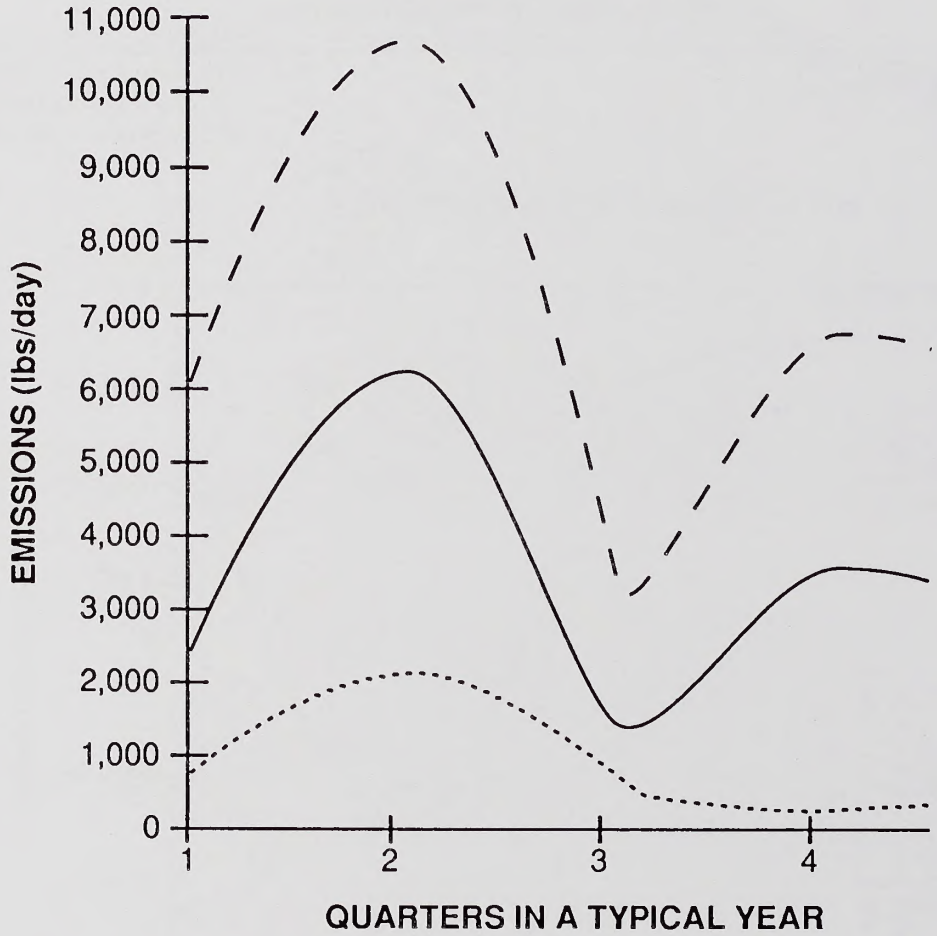


LEGEND

- - - - Maximum ROG Emissions from Agricultural Burning (1)

——— Mean ROG Emissions from Agricultural Burning (1)

..... Minimum ROG Emissions from Agricultural Burning (1)

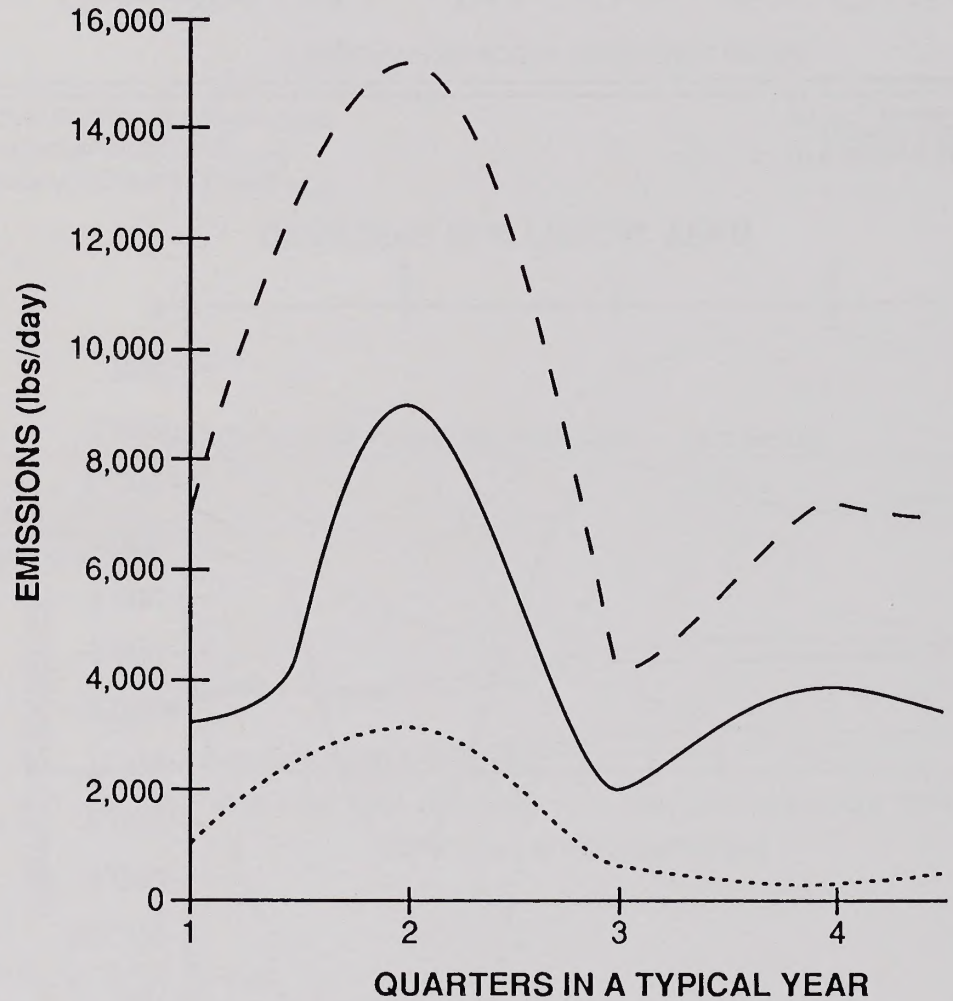
(1) Emissions estimated from records of agricultural burning in Imperial County during period 1985-1992.

SOURCE: ICAPCD, 1993.

Proposed Mesquite Regional Landfill

Potential Reactive Organic Gas (ROG) Emissions Offset Available from Agricultural Burning

FIGURE **4-7**



LEGEND

- - - Maximum Ozone Precursor Emissions from Agricultural Burning (1)

——— Mean Ozone Precursor Emissions from Agricultural Burning (1)

····· Minimum Ozone Precursor Emissions from Agricultural Burning (1)

(1) Emissions estimated from records of agricultural burning in Imperial County during period 1985-1992.

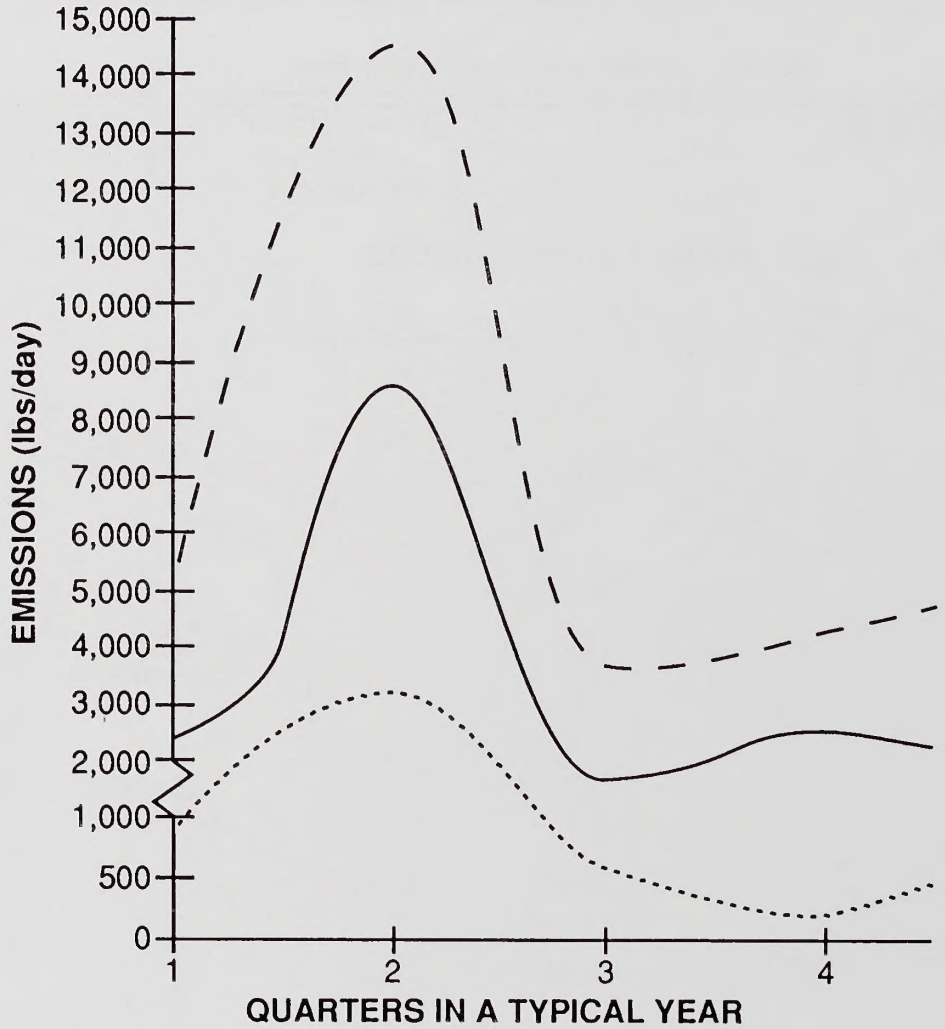
SOURCE: ICAPCD, 1993.

Proposed Mesquite Regional Landfill

Potential Ozone Precursor Emissions Offset Available from Agricultural Burning

FIGURE **4-8**

91-296EIS-31 REV.11/29/93



LEGEND

- - - Maximum PM_{10} Emissions from Agricultural Burning (1)(2)
——— Mean PM_{10} Emissions from Agricultural Burning (1)(2)
····· Minimum PM_{10} Emissions from Agricultural Burning (1)(2)

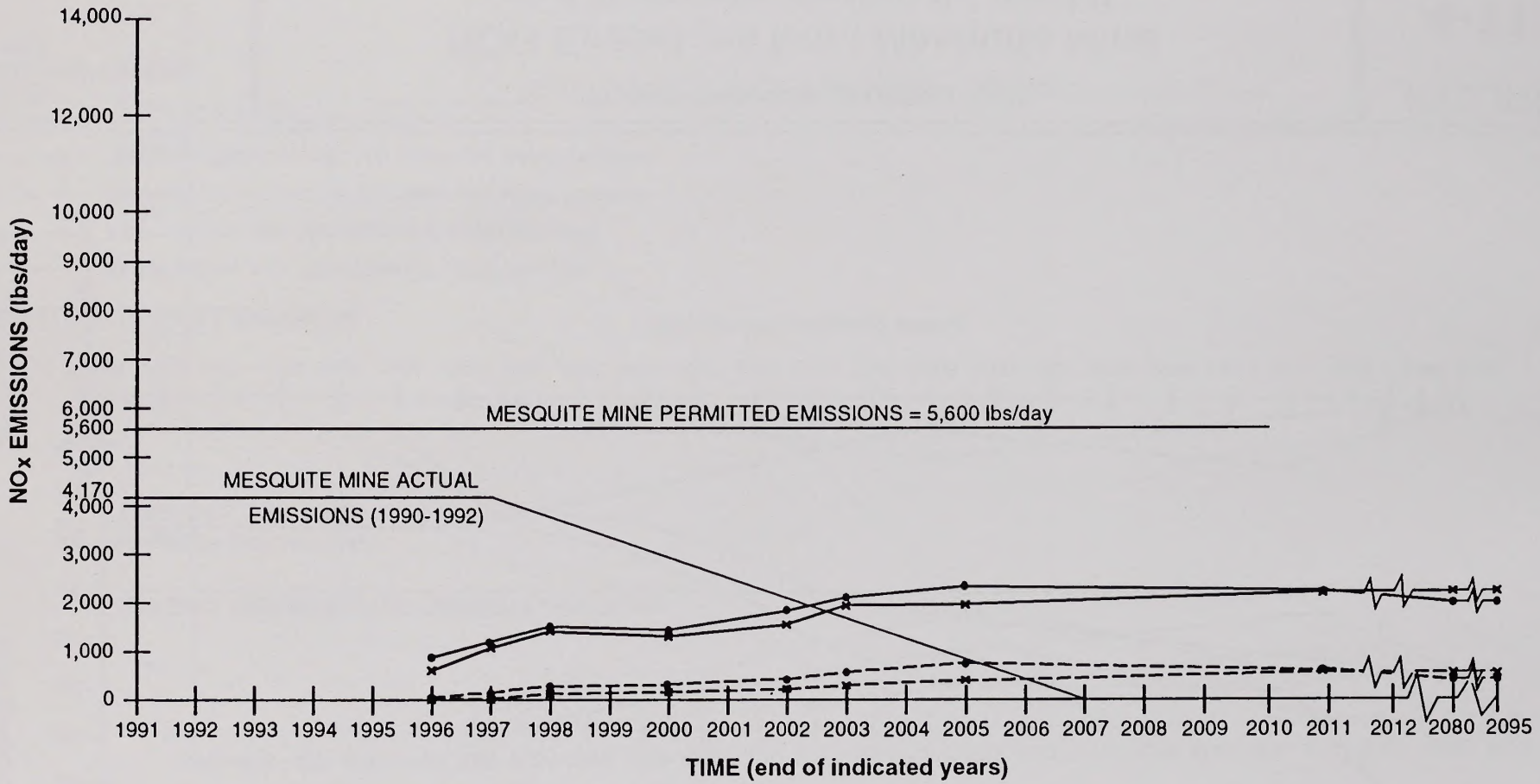
(1) Emissions estimated from records of agricultural burning in Imperial County during period 1985-1992.
(2) SO_x emissions from agricultural burning are negligible.

SOURCE: ICAPCD, 1993.

Proposed Mesquite Regional Landfill

Potential PM_{10} + PM_{10} Precursor Emissions Offset Available from Agricultural Burning

FIGURE **4-9**



LEGEND FOR LANDFILL EMISSIONS

- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

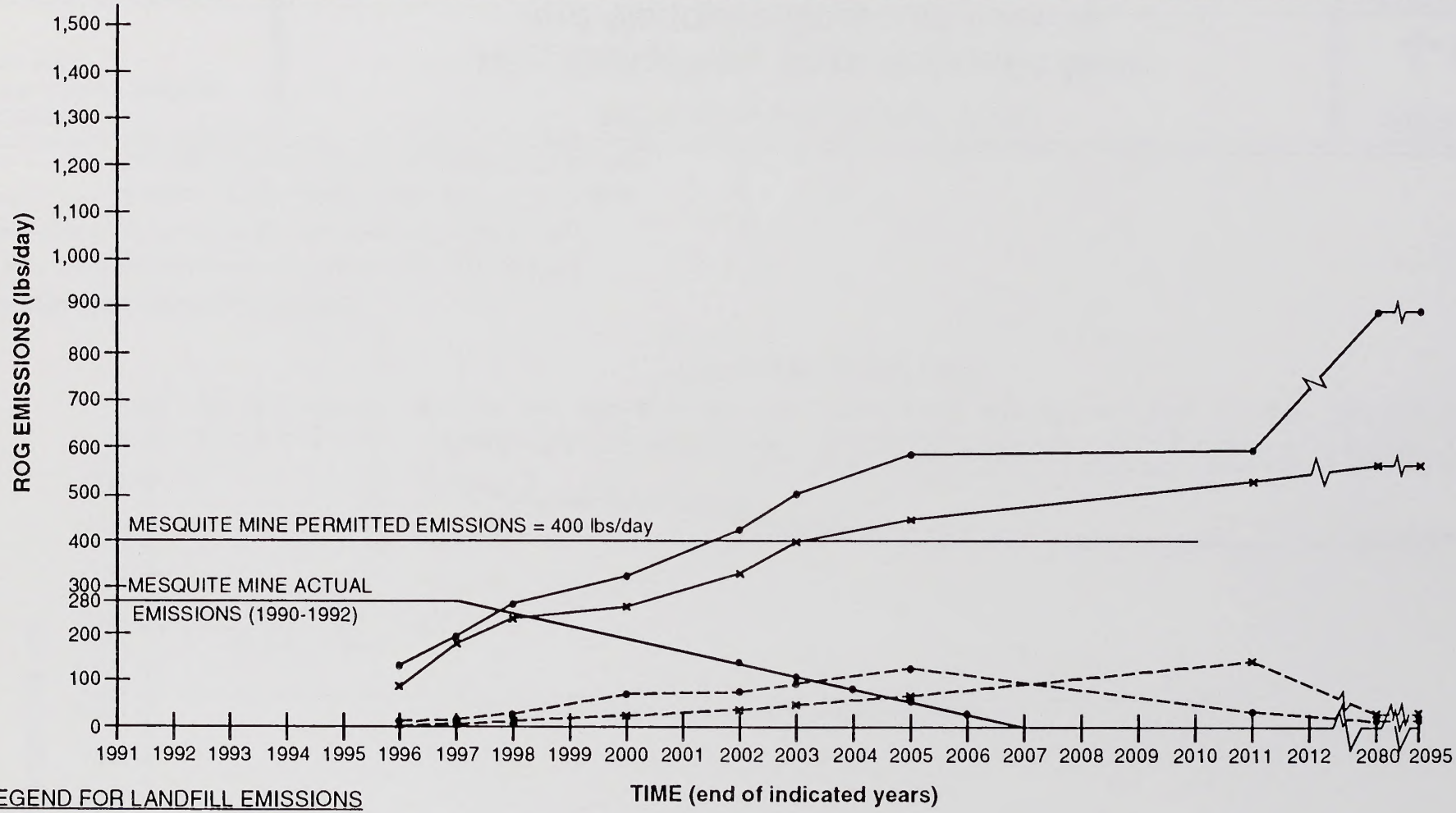
SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

NO_X Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE
4-10

91-296EIS-100 REV.01/31/94



LEGEND FOR LANDFILL EMISSIONS

- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

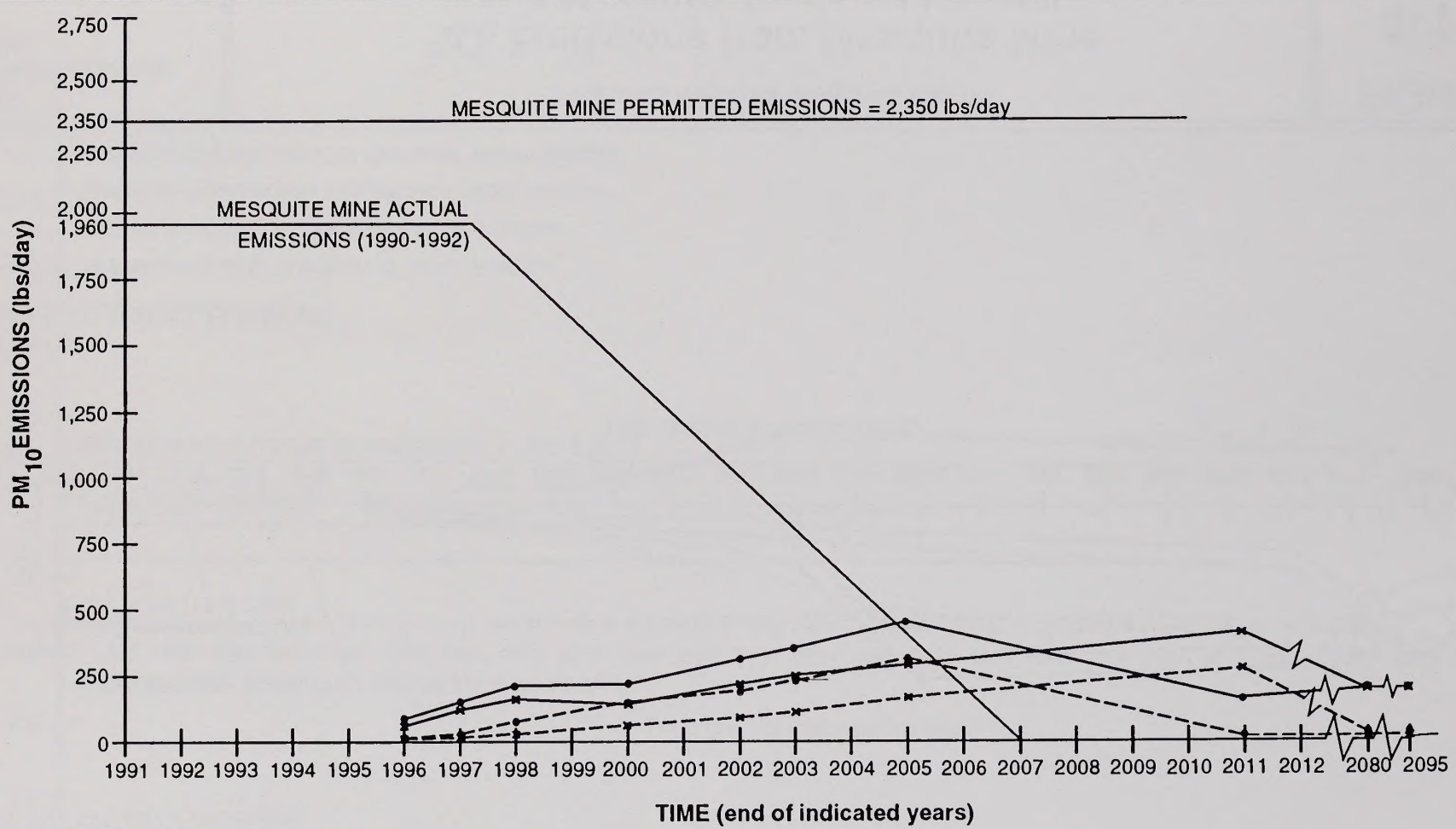
SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

ROG Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE

4-11



LEGEND FOR LANDFILL EMISSIONS

- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

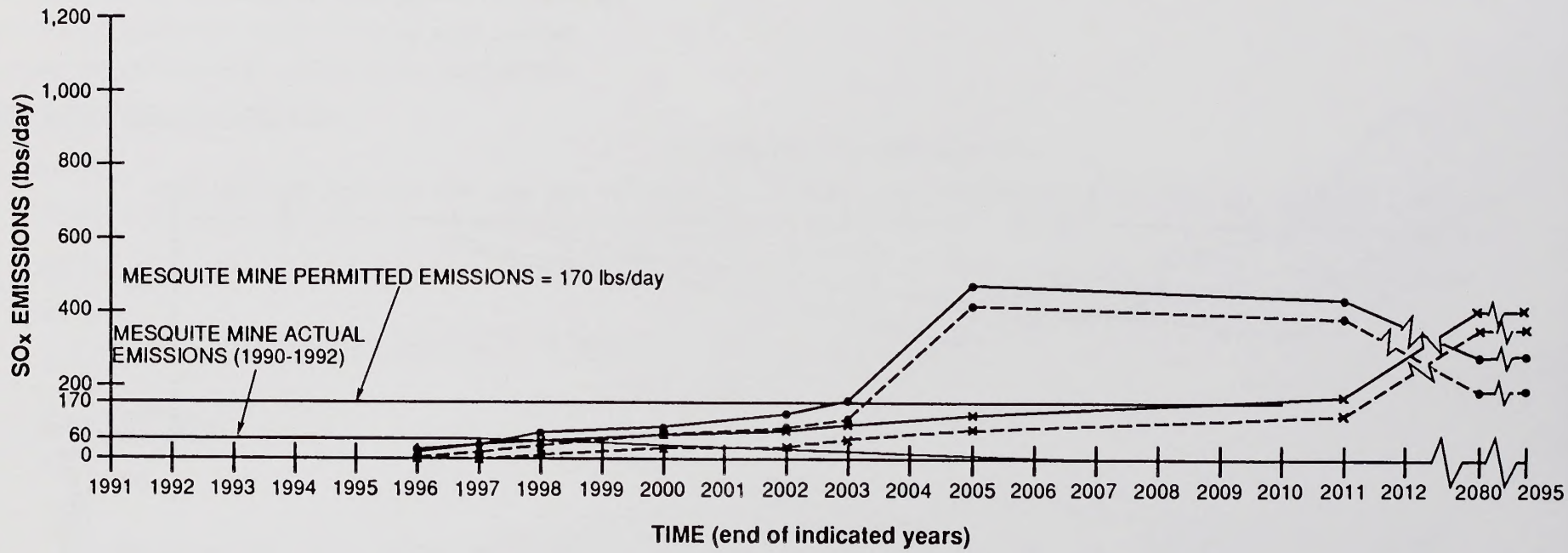
SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

PM_{10} Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE **4-12**

91-296EIS-34 REV.11/05/93



LEGEND FOR LANDFILL EMISSIONS

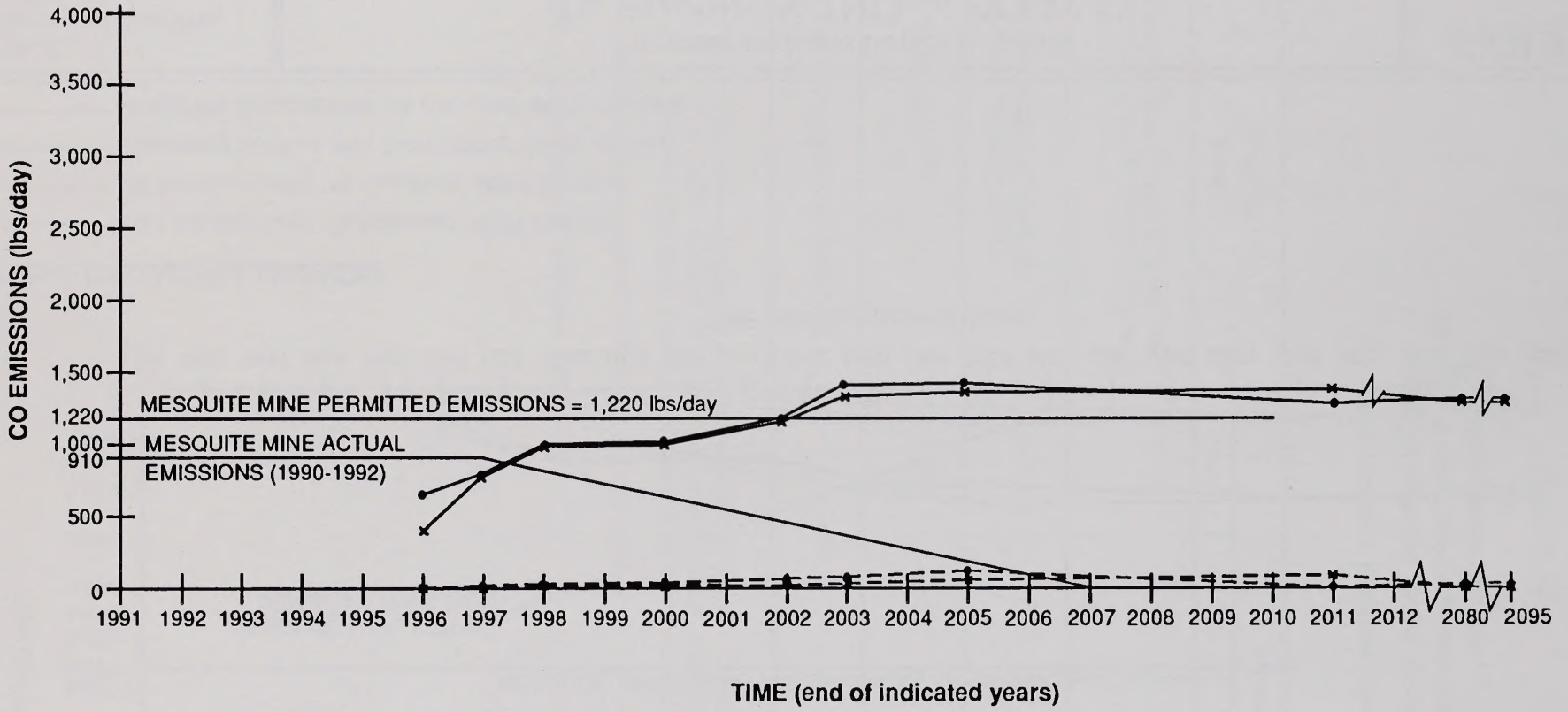
- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

SO_x Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE **4-13**



LEGEND FOR LANDFILL EMISSIONS

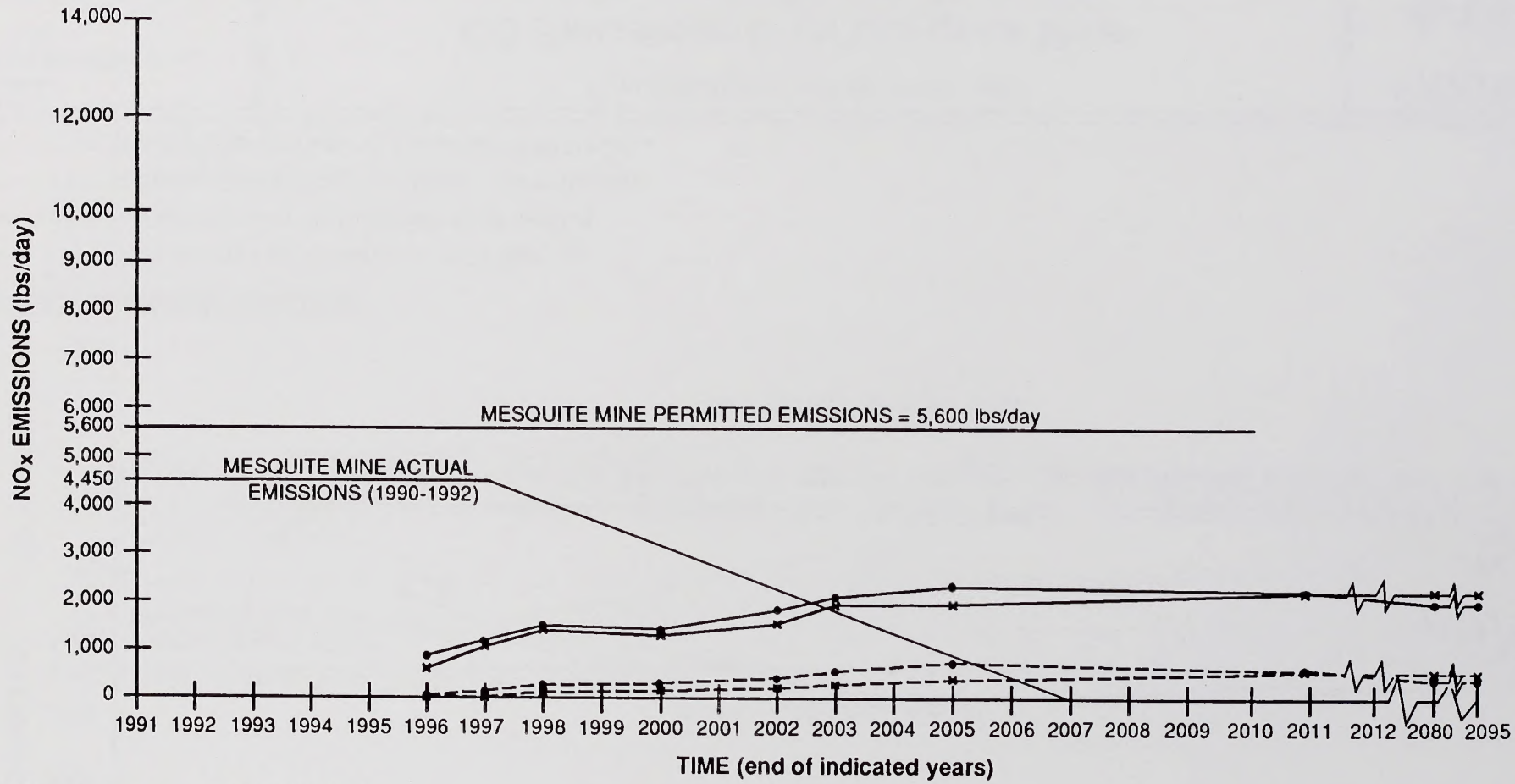
- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

CO Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE **4-14**



LEGEND FOR LANDFILL EMISSIONS

- All Emissions with "Conditioned" MSW Residue
- All Emissions with "As Received" MSW Residue
- Stationary Sources with "Conditioned" MSW Residue
- Stationary Sources with "As Received" MSW Residue

SOURCE:
Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

O_3 Precursor (NO_x + ROG) Emissions from Mesquite Mine and Mesquite Regional Landfill

FIGURE **4-15**

TABLE 4-17

Site Emission Changes (1)
Proposed Action Using a Boiler Generator
With "As Received" MSW Residue

Proposed Mesquite Regional Landfill

Change/ Benefit	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Mesquite Mine Decrease from 1990-1992 Actual to No Emissions after 2007	4,170	280	1,960	60	910
Mesquite Regional Landfill Maximum Increase at Site	2,220	570	200	410	1,300
Net Difference (2)	1,950	-290	1,760	-350	-420
O_3 and PM_{10} Benefits (including Precursors)	1,660		1,410		--

Note: (1) This table compares emissions at different times. The mine emissions will decrease until the year 2007. Offsets from these decreases will be available only to the year 2010, when actual historic emissions over the previous three years become zero.

(2) A positive number indicates a net decrease.

Source: Environmental Solutions, Inc., 1993.

TABLE 4-18

Site Emission Changes (1)
Proposed Action Using a Boiler Generator and a Liquefied Methane Gas Plant With MSW Residue Conditioning

Proposed Mesquite Regional Landfill

Change/ Benefit	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Mesquite Mine Decrease from 1990-1992 Actual to No Emissions after 2007	4,170	280	1,960	60	910
Mesquite Regional Landfill Maximum Increase at Site	2,050	890	200	240	1,350
Net Difference (2)	2,120	-610	1,760	-180	-440
O_3 and PM_{10} Benefit (2) (including Precursors)	1,510		1,580		--

Note: (1) This table compares emissions at different times. The mine emissions will decrease during the period 1997-2007. Offsets from these decreases will be available only to the year 2010, when actual historic emissions over the previous three years becomes zero.

(2) A positive number indicates a net decrease.

Source: Environmental Solutions, Inc., 1993.

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would be constructed and operated to comply with all applicable rules and regulations and therefore, would be consistent with the Imperial County AQAP.

The SCAQMD 1991 AQMP is not directly applicable to the Proposed Action because new source review responsibility and permitting authority reside with ICAPCD. The overall project objective of transporting MSW residue out of SOCAB is consistent with the 1991 AQMP and fulfills AQMP Measure No. A-D-1, Out-of-Basin Transport of Biodegradable Solid Waste. The implementing agencies proposed an implementation date of 1997. The Proposed Action would implement this measure earlier and begin the process of reducing criteria pollutants and toxics in the SOCAB compared to a No Action Alternative of continued landfilling of all MSW generated in the SOCAB at landfills located in the SOCAB.

The SCAQMD AQMP contains two measures aimed at reducing locomotive emissions. Measure ARB-16, Retrofit/Operational Requirements for Locomotive (all pollutants) is proposed for implementation over the period 1992 to 1997. Example retrofit/operational requirements include retarded ignition timing to reduce NO_x emissions and reduced idling time. A 30 percent reduction of NO_x emissions can be achieved by retrofit techniques and is included in the analysis of the 16th and 100th year cases.

SCAQMD AQMP Measure No. 14 addresses railroad electrification. The implementing agencies are the U.S. EPA and the Federal Railroad Administration, and the implementation date for 90 percent electrification is the year 2010. The environmental analysis for the Proposed Action does not assume electrification. If electrification occurs, air emissions from MSW residue hauling trains would be substantially reduced as compared to the train emissions presented in this EIS/EIR; however, additional air emissions would occur to produce the electricity required to run the electrified trains. A portion of this electricity could be supplied by the optional on-site turbine/boiler based power plant.

According to Booz•Allen & Hamilton, Inc. (1991) and Engine, Fuel, and Emissions Engineering (1992), NO_x emissions after electrification would be about 20 percent of uncontrolled diesel emissions, while the emissions of ROG, PM_{10}, SO_x, and CO would be about 30 percent of uncontrolled diesel emissions. Emissions in the SOCAB would be reduced even further below those in the No Action Alternative, thereby decreasing O_3 generation further. As a result, even less O_3 would be transported into the Salton Trough. The rail-haul route in the Salton Trough areas would receive no direct emissions of criteria pollutants with electrification, while the site emissions would not change.

Odor Impacts

Each container that would be used to transport the MSW residue would be water tight, though a vent would be included at one end to allow air to enter the container during tipping at the landfill to facilitate container unloading. This vent would be closed during transit to the landfill so that substantial amounts of air would not be able to flow through the containers. However, changes in atmospheric pressure and container temperature as well as MSW residue decomposition would either pressurize or depressurize the containers. A pressure vent would also be included on each container to allow the pressure inside the container to mirror the outside air pressure. The following five mechanisms would cause venting:

- Increases in temperature in the container would cause the air to expand.
- Decreases in the container internal pressure caused by decreases in external pressure when the train gains elevation
- Diffusion of air from inside the container to the atmosphere.
- Gas generation caused by aerobic decomposition.
- Gas generation caused by anaerobic decomposition.

Each of these mechanisms was analyzed to quantify the relative order of magnitude of the emissions. The potential use of containers with removable tops (see Figure 2-30) does not change this analysis. A container with a removable top (not a tarpaulin) would be constructed to control odor and LFG with substantially the same level of performance as the permanent top containers (May Fabricating Company, 1993).

Applying the Ideal Gas Law to the container air volume as the temperature increases from 64° F to 120° F results in an increased volume of about 200 actual cubic feet (acf), or about 11 percent of the total void air volume of approximately 1800 acf. This volume increase would escape through the louvered vent during the ten-hour trip, and carry with it 11 percent of the LFG amount calculated below.

Some components of MSW residue would begin to decompose prior to collection. MSW residue would continue to decompose during the ten-hour trip. During this early period, decomposition would proceed mostly by aerobic processes that produce carbon dioxide and water vapor, rather than by anaerobic processes that produce carbon dioxide, methane, and odorous VOCs. For the worst-case assumption that the decomposition is anaerobic, the volume of LFG generated in one container in ten hours would be about 7.5 acf. This volume would be mixed in the total void air volume as the 200 acf expansion volume is escaping during the trip. Therefore, the concentration of LFG in the escaping air would be a maximum of approximately 0.4 percent, but probably much lower.

Although several odorous organic compounds exist in LFG, rotten-egg smelling hydrogen sulfide (H_2S) is assumed to be the dominant compound. H_2S is detected by humans at a concentration of about 700 ppbv (Montgomery, 1985). Assuming the concentration of H_2S in the LFG in the container is the same 10 ppmv maximum concentration measured at a Southern California landfill, the concentration of the H_2S in the air escaping through the container vent would be about 37 ppbv.

While in motion, the train would displace approximately 15 million acf of air per hour while leaking out about 3,200 acf of expanded air and LFG per hour, which would dilute the leaked H_2S concentration by a factor of about 4,650. The resulting H_2S concentration behind the train would be about 8 parts per trillion by volume (pptv).

The concentration would dilute further before the wake air disperses off the railroad ROW to neighboring property. If this lateral dispersion is assumed to dilute the H_2S by a factor of 10, then the concentration of H_2S at the railroad boundary would be about 8 pptv, which is approximately 900,000 times less than the human detection odor threshold for H_2S.

The train would climb from near sea level pressure at the LATC to about 2,200 feet at Banning Pass causing the void space gas volume to increase by about four percent or about 85 acf. If this pressure drop effect were added to the expansion caused by increasing temperature, the final H_2S concentration at the railroad boundary would decrease slightly, making it more difficult to detect H_2S odor.

If a train were delayed for 24 hours in a hot desert environment (due to derailment or other delays), the MSW residue could potentially generate a maximum of about 18 acf of LFG in each container. The concentration of LFG in the air escaping through the vent would increase from 0.4 to about 0.9 percent, and the concentration of H_2S would be potentially 90 ppbv at the vent. This concentration is almost 8 times less than the 700 ppbv human odor threshold for H_2S. Dispersion would reduce the concentration further as distance from the pressure vent increased. As an extra precaution, the Applicant would store a sufficient number of carbon filter covers at the proposed landfill or West Colton rail yard to cover the pressure vents for two train loads of containers. If a delay was expected to exceed 48 hours, then these filters

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would be transported by truck to the site of the delayed train and placed over the container pressure vents. The filters would remove the odorous VOCs and still allow pressure venting to occur. The most likely case would be that CO_2 and H_2O would be released instead of the odorous LFG.

The maximum delay for containers to sit after arrival at the landfill intermodal and prior to transportation to the landfill working face for emptying would be approximately 12 hours. During this time, the MSW residue could potentially generate a maximum of about 9 cubic feet of LFG in each container, assuming the train has been delayed 24 hours in the desert. The resulting H2S concentration that could leak out of the pressure vent would be approximately 50 ppbv. This is about 14 times less than the odor threshold. The actual concentration at SR 78 would be lower because of atmospheric dispersion along the path from the intermodal. If any noticeable odor did occur, the carbon filter covers stored at the landfill would be immediately placed over the container pressure vents to control odors.

Odors at the landfill face would be controlled by compacting the MSW residue within minutes of it being emptied from the containers and covering the material as soon as practicable and not less than once each day. Also, LFG would be collected and destroyed or used for energy recovery. Because of these operating procedures and the remote location, odors at the landfill face are not expected to be noticeable to the public.

The containers would be washed at a washdown facility on the project site. High-pressure water spray would clean residual MSW off the inside walls and carry this material out to grated drains along the length of the floor. The water would flow through the grates and into a holding tank, for subsequent treatment and reuse. The residual MSW retained on the grate would be placed in a covered dumpster, and periodically taken to the active face of the landfill for disposal. This material would be heavily soaked, and hence, would not emit appreciable odor before it is placed in the covered dumpster.

Toxics

Health risk estimates associated with operation of the proposed landfill were calculated for the toxic air contaminant emissions at the 16th and 100th years with: (1) "as received" MSW residue and conditioned MSW residue, (2) 80 percent collection of generated LFG, and (3) a flare or boiler with 99 percent trace gas destruction. The 20 percent of LFG not collected is assumed to escape into the air and its effect is included in this health risk assessment. The extreme case of living 70 years on the property boundary is not considered to be reasonable because of the remoteness and federal ownership of the land bordering the proposed site. Instead, the following three exposure conditions were analyzed as more reasonable cases:

- Long-term (70-year) exposure to a population of about 10 residing at Glamis, approximately five miles from the center of the landfill (3.1 miles from the southwest landfill corner). This situation also covers recreation populations around the sand dunes near Glamis.
- Fourteen days exposure to campers consisting of four individuals located adjacent to the landfill property boundary. An OHV event might lead to people camping near the proposed landfill for several days.
- Individuals traveling on SR 78 exposed for 12 minutes (6 minutes each direction), 5 days per week for a 40-year period.

Table 4-19 summarizes the health risk and indicates that:

- The maximum carcinogenic risk estimate of 7×10^{-8} is less than the 10^{-6} limit suggested by SCAQMD (1993). This risk of less than 10^{-6} means that if the

TABLE 4-19

Summary of Health Risk(1)

Proposed Mesquite Regional Landfill

Based on Year 16 Emissions

Exposure Conditions	Carcinogenic Risk	Acute Risk Hazard Index	Chronic Risk Hazard Index
Long-Term (70-year) Exposure at Glamis Beach Store	5×10^{-8}	0.002	0.0002
14-Day Exposure at Property Boundary	5×10^{-10}	0.01	0.000002
12-Minute Daily SR 78 Exposure for 40 Years	8×10^{-10}	0.003	0.000003
Acceptable Limit	10^{-5}	1.0	1.0

Based on Year 100 Emissions

Exposure Conditions	Carcinogenic Risk	Acute Risk Hazard Index	Chronic Risk Hazard Index
Long-Term (70-year) Exposure at Glamis Beach Store	7×10^{-8}	0.0003	0.0002
14-Day Exposure at Property Boundary	9×10^{-10}	0.003	0.009
12-Minute Daily SR 78 Exposure for 40 Years	1×10^{-9}	0.001	0.003
Acceptable Limit	10^{-5}	1.0	1.0

Note:

(1) Risk estimated for exposure by inhalation pathway. See Table 4-9 for list of primary contaminants analyzed. Full analysis is contained in the Air Quality Technical Report contained in Appendix F. Units are dimensionless.

Source: Environmental Solutions, Inc., 1993.

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exposed persons were to breathe this air, the probability that they would get cancer is less than 10 in 1 million. For comparison, the risk of death from all cancers is approximately 10^{-3} or 1 in 1 thousand. (NTS Engineering, 1986).

- Both the maximum acute and chronic health risk hazard indices (0.01 and 0.009, respectively) are less than 1.0, the limit suggested by U.S. EPA (1992) at which no adverse health effect is expected. Acute health effects are short-term noncancer effects, and hence, the calculation is based on 1-hour mean concentrations. Chronic health effects are long-term noncancer effects, and hence, the calculation is based on annual mean concentrations.

If the MSW residue were conditioned, the LFG fugitives from the landfill surface would increase by a factor of about 2.3 in the 16th year and 2.0 in 100th year as seen by comparing Tables 4-10 and 4-9, and the risks shown in the bottom half of Table 4-19 would increase a like amount. The resulting health risks would not be significant.

4.1.8.5 Emissions and Impacts of Energy Recovery Options

LFG Boiler/Generator

The top of Table 4-20 lists the estimated air contaminant emissions from a LFG boiler and electrical generator with LFG collected from landfilling "as received" MSW residue. The bottom portion of Table 4-20 provides similar information if LFG generation was augmented. For comparison, the top portion of Table 4-9 shows project emissions using a flare only.

As has been demonstrated throughout the Air Quality analyses, implementation of the boiler/generator would reduce emissions of NO_x, ROG, PM_{10} and CO as compared to a flare. The higher SO_x emissions estimates are not due to actual sulfur that would be available in the LFG from the Proposed Action, but instead, are due to differences in the emission factors that were developed from other landfills with site-specific differences.

Compressed Methane Gas Plant

Table 4-21 lists the air contaminant emissions from the compressed methane gas plant with the LFG collected from landfilling "as received" MSW residue. Emissions associated with the Proposed Action are shown at the bottom of the table for comparison. Table 4-22 provides similar information if LFG generation was augmented. For comparison, the top portion of Table 4-9 shows project emissions using a flare only.

Implementation of the compressed methane option for energy recovery would result in the following:

- NO_x and SO_x impacts associated with the compressed methane gas plant option would be lower than the boiler/generator impacts. Downwind impact of CO, PM_{10}, and ROG associated with this option would be less than the boiler/generator impacts. Emission of ozone precursors would be considerably lower for the compressed methane option.

- Health risk impacts associated with the compressed methane gas plant option are expected to be similar to the boiler/generator option impacts.

Liquefied Methane Gas Plant

Table 4-23 lists the air contaminant emissions from the liquefied methane gas plant for "as received" MSW residue, and Table 4-24 lists the emissions with augmented LFG generation. For comparison, the top portion of Figure 4-9 shows project emissions using the flare only. Implementation of the liquefied methane gas plant option for energy recovery would result in the following:

- NO_x and SO_x impacts associated with the liquefied methane gas plant option would

TABLE 4-20

A. Estimated Boiler/Generator Emissions at Year 100 with "As Received" MSW Residue

Proposed Mesquite Regional Landfill

SOURCE	EMISSIONS (lbs/day)				
	NO_X	ROG	PM10	SO_X	CO
Boiler/Generator					
• Boiler Stack	880	40	20	500	10

B. Estimated Boiler/Generator Emissions at Year 100 with MSW Conditioning to Enhance LFG Generation(1)

Proposed Mesquite Regional Landfill

SOURCE	EMISSIONS (lbs/day)				
	NO_X	ROG	PM10	SO_X	CO
Boiler/Generator					
• Boiler Stack	1,220	90	20	700	10

(1) As shown in Table 4-10, this facility would likely be combined with a liquefied Methane Plant. The emissions shown are based on this assumption. Otherwise, they would be no different than for Part A above.

Source: Environmental Systems, Inc., 1993.

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TABLE 4-21

Estimated Compressed Methane Gas Plant Emissions at Year 100 with "As Received" MSW Residue

Proposed Mesquite Regional Landfill

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Compressed Methane Plant					
• VOC Incinerator No. 1	1.7	0.094	0.086	0.010	0.36
• VOC Incinerator No. 2	75	46	3.8	0.44	16
• VOC Incinerator No. 3	45	4.3	2.2	0.29	9.0
• Condensate Tank Vent	0	15	0	0	0
• Compressor Seals	0	0.86	0	0	0
• Valves, Flanges and Fittings	0	30	0	0	0
TOTAL	122	96	6	1	25

Source: Environmental Solutions, Inc., 1993.

TABLE 4-22

Estimated Compressed Methane Gas Plant Emissions at Year 100 with "Conditioned" MSW Residue

Proposed Mesquite Regional Landfill

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Compressed Methane Plant					
• VOC Incinerator No. 1	3.4	0.19	0.17	0.028	0.73
• VOC Incinerator No. 2	154	92	7.5	1.2	32
• VOC Incinerator No. 3	91	8.8	4.3	0.78	18
• Condensate Tank Vent	0	31	0	0	0
• Compressor Seals	0	1.8	0	0	0
• Valves, Flanges and Fittings	0	61	0	0	0
TOTAL	248	195	12	2	51

Source: Environmental Solutions, Inc., 1993.

TABLE 4-23

Estimated Liquefied Methane Gas Plant Emissions at Year 100 with "As Received" MSW Residue

Proposed Mesquite Regional Landfill

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Liquefied Methane Gas Plant					
• Compressed Methane Plant Sources	122	96	6	1	25
• CO_2 Vent	0	30	0	0	0
TOTAL	122	126	6	1	25

Source: Environmental Solutions, Inc., 1993.

TABLE 4-24

Estimated Liquefied Methane Gas Plant Emissions at Year 100 with "Conditioned" MSW Residue

Proposed Mesquite Regional Landfill

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Liquefied Methane Gas Plant					
• Compressed Methane Plant Sources	248	195	12	2	51
• CO_2 Vent	0	61	0	0	0
TOTAL	248	256	12	2	51

Source: Environmental Solutions, Inc., 1993.

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be lower than the boiler/generator impacts. Downwind impact of CO, PM_{10}, ROG, and ozone percursors associated with this option would be similar to the boiler/generator impacts.

- Health risk impacts associated with the liquefied methane gas plant would be similar to the boiler/generator and compressed methane gas option impacts.

emissions with augmented LFG generation. For comparison, the top portion of Figure 4-9 shows project emissions using the flare only. Implementation of the liquefied methane gas plant option for energy recovery would result in the following:

- NO_x and SO_x impacts associated with the liquefied methane gas plant option would be lower than the boiler/generator impacts. Downwind impact of CO, PM_{10}, ROG, and ozone percursors associated with this option would be similar to the boiler/generator impacts.

- Health risk impacts associated with the liquefied methane gas plant would be similar to the boiler/generator and compressed methane gas option impacts.

4.1.8.6 Mitigation Measures

The Applicant shall incorporate the following air quality and odor mitigation measures into the landfill design, construction and operation.

- Stationary Sources
  - Provide emission controls indicated in Table 4-8.
  - Obtain offsets described previously or other offsets acceptable to the ICAPCD. Offsets shall be consistent with the Imperial County AQAP.
  - Construct fuel storage tanks with submerged fill pipes to control formation of vapors during filling.
- Fugitive LFG
  - The LFG collection system shall be designed and operated to collect at least 80 percent of the generated LFG at locations where the waste is deep enough (i.e., 20 feet over collector) to avoid excess air infiltration.
- Mobile Sources
  - Maintain on-site vehicles routinely.
  - Have available carbon filters for two train loads of containers for covering vents within 12 hours during any prolonged rail delay.
  - Periodically wash empty containers with high-pressure water hoses to remove residual MSW and thereby reduce odor. The wash water shall be treated to remove organics before reuse on-site. Solid material that remains on the grate shall be transferred to a covered dumpster and periodically taken to a landfill face for disposal.
  - Provide emission controls as described previously in Table 4-8.
- Fugitive Dust
  - Install and operate PM_{10} monitoring stations and an on-site meteorological station as agreed upon with the ICAPCD.
  - Implement Fugitive Dust Control Program as follows: The three tiered fugitive dust control plan described earlier in this section shall be implemented. Fugitive dust emissions from paved roads shall be controlled by constructing two-lane roads with wide paved shoulders, and constructing an apron at the transition between the paved and unpaved roads.

    In addition to the design features presented above, a street cleaning program shall be implemented

consisting of flushing the paved road with water once or twice a week. The water shall be applied either by truck or by a roadside sprinkler system. The frequency of flushing shall depend on ambient conditions. During particularly windy periods, or when an excessive amount of dust is accumulating on the road, the frequency shall be increased.

The apron, which is considered part of the paved road, shall be cleaned more frequently. The apron shall be flushed with water approximately one time per day or more frequently during periods when excessive trackout is observed. The apron shall also be swept or vacuumed between water flushing should this prove to be a feasible method for reducing dust loading associated with trackout. According to U.S. EPA (1985), a water flushing program such as the one described above should provide an overall dust emission control efficiency of 50 percent. Higher efficiency of 75 to 80 percent would be achieved with higher flushing frequencies.

Fugitive dust emissions from unpaved roads shall be controlled using separate strategies. As with the paved roads, the design features of the semipermanent unpaved segment shall assist in reducing emissions. Dust-suppressing stabilizers such as resins shall be used during the construction of the road. Roads constructed in such a manner have essentially all the qualities of a paved road. Therefore, as with the paved road, the best alternatives to further reduce emissions are alternatives that reduce the surface loading of dust. Weekly water flushing shall be used with periodic reapplication of resin material to achieve an overall control efficiency of 75 percent when the emissions rate is estimated based on paved road emissions. If the selected road base material is not resistant to water flushing, the road shall be maintained according to the manufacturer's recommendations. As an alternative to weekly water flushing, periodic watering of the road (once or twice per day) or more frequent reapplication of road base material may be used.

For the impermanent segment of the road, the selected control strategy shall be watering of the road for the low-speed segment, and use of dust suppressant on the high-speed portion. Additional treatment shall include the resin-type stabilizers or other dust-suppressing treatments such as lignin sulfonate.

The road watering program shall entail frequent application throughout the day, with the exact frequency dependent on specific conditions such as previous weather, temperature, humidity, etc. This type of control program provides a dust control efficiency of 90 percent (U.S. EPA, 1985). The additional treatment of the high speed segment is meant to achieve an overall control efficiency of 95 percent.

- Control Working Face and Cover Storage Area Emissions: Fugitive dust emissions from the operations areas of the working face and the cover borrow areas shall be controlled using a combined strategy of limiting the area of operations and by using traditional dust-suppression techniques such as area watering.

4.1.8.7 Level of Significance After Mitigation Measures

Based upon the changes in MSW residue disposal locations that would result from the Proposed Action, regulatory requirements that must be

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satisfied (including offsets to be provided for site stationary emission sources), and measures that would be incorporated into the project design, the net effects of the Proposed Action would be mitigated so that no significant adverse air quality or odor impacts would occur (Table 4-25), considering each of the measures of significance. Air quality in SOCAB would improve because of decreased emissions. The Proposed Action would not cause significant adverse air quality impacts in Coachella Valley and might reduce the potential for O_3 exceedances to occur in the Coachella Valley and Imperial County. The diversion of agricultural plant material that is currently burned and the transition in economic activity at the site from mining to landfilling would locally reduce both emissions and ambient concentrations, thereby preventing the occurrence of significant adverse air quality impacts.

TABLE 4-25

Summary of Significance of Potential Air Quality Impacts

Proposed Mesquite Regional Landfill

Pollution Type	Measure of Significance	Level of Significance After Mitigation
Criteria Air Pollutants	Violation of NAAQS.	None
	Violation of CAAQS including visibility-reducing particles.	None
	Substantial contribution to existing or projected violation of AAQS.	No
	Proposed emission units would cause or make worse the violation of AAQS.	Cumulative (PM_{10})
	Substantial contribution to a delay in attaining an AAQS.	No
Toxic Air Pollutants	Carcinogenic health risk.	Less than 10^{-6}
	Chronic health risk.	Chronic risk hazard index <1.0.
	Acute health risk.	Acute risk hazard index <1.0.
Odor	Noticeable at residential/commercial facilities.	No
All	Determination that Proposed Action is inconsistent with a CARB-approved AQAP, including visibility protection.	No

Source: The Butler Roach Group, 1994.

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4.1.9 LAND USE

4.1.9.1 Assumptions and Assessment Guidelines

This land use impact analysis considers the potential effects of the Proposed Action on existing and planned land uses in the vicinity of the landfill site. The Proposed Action's effect on surrounding land uses would be significant if the proposed landfill would be incompatible with existing land uses. The proposed project's effect on planned land uses would be considered significant if the proposed landfill would be not in conformance with the applicable land use plans and policies described in Section 3.1.9, of this EIS/EIR. Other potential impacts of the proposed landfill include aesthetics, noise, traffic, air and ground water quality, and other issues that are analyzed in more detail elsewhere in this EIS/EIR.

4.1.9.2 Impacts of the Proposed Action

The following discussion considers the effects of all proposed and optional facilities on the proposed site and the effects of the proposed rail spur. The use of the existing SP Main Line would be in conformance with all adopted plans and policies, as described in the Noise, Transportation, and Public Health and Safety, with existing land uses. The potential gas pipeline to Niland is a consistent use in a utility corridor. However, as described in the Geology (Soils) Mineral Resources Section, the potential seismic effects of the East Highline Canal Lineament would need to be fully considered before that pipeline were to be approved.

Compatibility with Existing and Surrounding Land Uses

Mesquite Mine

The proposed Mesquite Regional Landfill would be compatible with the existing Mesquite Mine. The landfill would not be located in the existing mine pits, which are currently in operation and will still contain mineralization at the time of the mine's closure in approximately 10 to 15 years. Landfill activities would occur to the west of the existing mine access road and would not interfere with mine operations. The proposed landfill would use the existing overburden and ore residue from the mine for landfill cover, and could reduce and eventually eliminate some of these piles. The proposed landfill would not encroach on the mine access road and leach pad area until after the mine has closed. In addition, the proposed landfill would not restrict or preclude the continued operations of the mine. The proposed landfill would ultimately cover the area currently used for the Mesquite Mine heap leach pads and portions of one overburden pile. The proposed landfill would allow a portion of the mine property to be converted to a productive second use. Therefore, impacts would not be significant.

The Mesquite Mine Overlook Trail was a voluntary project undertaken by Gold Fields and the BLM. The Proposed Action's impact on the overlook trail is discussed in the Recreational Resources section of this EIS/EIR (Section 4.1.10).

Surrounding Community

Land uses surrounding the proposed project site include residential and commercial uses at the Boardmanville and Glamis Beach Store areas, the ISDRA, Algodones Sand Dunes ACEC, and large open space areas used for OHV riding, target shooting, hunting, and prospecting. The proposed landfill would be located at least three miles from these uses. Due to the distances between the proposed landfill and these residential, commercial, and recreational uses, the proposed landfill would not be an incompatible land use and impacts would not be significant.

BLM Public Lands

A portion of the project area has been designated by the BLM as a gravel resource withdrawal area. Impacts associated with this gravel resource area are discussed in the

Geology/ Soils/Mineral Resources section of this EIS/EIR (Section 4.1.1).

The landfill would occupy approximately 1,750 acres of federal land presently managed by the BLM. For the landfill to be constructed as proposed, the Applicant would be required to execute a land exchange to obtain ownership of the BLM properties. As discussed in Section 2.1.2.1, the Applicant proposes to purchase lands in the SRMNSA and near the Chuckwalla Bench ACEC. The offered exchange parcels have resource values similar to or of higher value than the BLM's land within the proposed project area. Prior to the Record of Decision, the appraised values of the BLM lands and offered exchange parcels will be determined.

The Singer Geoglyphs ACEC is located southeast of the proposed landfill site. The area was established by the BLM to protect cultural and historical sites, including the Singer Geoglyphs. The geoglyphs would not be affected by the proposed project because all of the cultural resources associated with the ACEC are located south of SR 78, outside of the project boundaries. The Proposed Action includes an amendment to the California Desert Conservation Area (CDCA) Plan to revise the boundaries of the Singer Geoglyph ACEC to remove the area north of SR 78 from the ACEC. This amendment would change the land use designation from "ACEC" to "Multiple-Use Class M." Once this process is completed, a land exchange could be allowed. Because the cultural resources associated with the ACEC are not within the proposed CDCA Plan Amendment Area, the Proposed Action would not impact the resources for which the ACEC was established.

Chocolate Mountains Aerial Gunnery Range

The proposed landfill would be compatible with the CMAGR. Existing uses of the CMAGR include military aircraft training and testing. Potential landfill-related impacts, such as birds being attracted to the landfill area, are evaluated in the Environmental Health and Public Safety and Biology sections of the EIS/EIR and found to be not significant.

Potential lighting impacts to the CMAGR are discussed in the Visual Resources section of this EIS/EIR (Section 4.1.11). A letter from the U.S. Marine Corps states that the proposed 475-foot height of the landfill would not be an operational problem (USMC, 1992). The proposed landfill would be compatible with CMAGR and impacts would not be significant.

Compatibility with Adopted Land Use Plans and Policies

The conformance of the Proposed Action with the Imperial County General Plan, Imperial County Zoning Regulations, and the BLM CDCA Plan is evaluated below.

Imperial County General Plan

Land use planning and development in Imperial County is guided by the County's 1993 General Plan. Those elements of the General Plan that address land use goals and objectives applicable to the Mesquite Regional Landfill include the Land Use Element, and the Conservation and Open Space Element. The Land Use Element has designated the area for "recreation" (Imperial County, 1993b). The Proposed Action would not be in conformance with this designation. A general plan amendment would be required to bring the project into conformance with the Land Use Element. The Open Space Element has identified the project site as Conservation and Open Space for the managed production of resources. This category would allow for extraction of natural resources such as metals, sand and gravel and clay (Imperial County, 1993b).

The Land Use Element includes a "Special Purpose Facility" special land use designation in which solid and liquid waste disposal facilities would be allowed and identifies the development standards for such facilities. It is the intent of this designation that existing and proposed liquid and solid waste facilities be protected from

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encroachment by development or incompatible land uses. The plan requires all new solid waste facilities, including all classes of landfills, to be placed within the "special purpose facility" category through a General Plan Amendment, if not already so designated. A one-quarter mile buffer would be required around any area proposed for the permanent placement of solid waste (i.e., the actual landfill portion of the facility) to separate the landfill from existing or future land uses that would not be compatible with a landfill. Public lands can serve as a buffer around the special purpose facility with an agreement from the managing public agency.

The "Special Purpose Facility" designation also requires all solid waste facilities to conform to the County Integrated Waste Management Plan (CIWMP). Additional review and approval are required from the California Integrated Waste Management Board (CIWMB) and the Imperial County Department of Health Services, Division of Environmental Health, the designated LEA.

Each element of the General Plan includes specific goals and objectives to be used as guidelines for implementation of development policies in Imperial County. Four elements of the General Plan relate directly to the proposed project. They are the Land Use, Noise, Seismic and Public Safety, and the Conservation and Open Space Elements. The following section lists specific objectives identified in the Land Use, Seismic and Public Safety, and the Conservation and Open Space Elements, and discusses the Proposed Action's conformance. If implementation of the Proposed Action would result in a significant unmitigable impact to an element of the human environment addressed in this EIS/EIR, then the Proposed Action would not be in conformance with the corresponding General Plan Element objective. However, if impacts to an element of the human environment addressed in this EIS/EIR from implementation of the Proposed Action would not be significant or would be mitigated such that the impact would not be significant, then the Proposed Action would be in conformance with the corresponding General Plan Element objective. The analysis in the Noise section of this EIS/EIR (Section 4.1.7) was based on the criteria developed in the Noise Element of the General Plan. Therefore, conformance with the specific objectives of the Noise Element was based on conformance with the criteria.

Land Use Objectives

Objective 4.3 of the Land Use element states:

> "Continue to evaluate economic development strategies, including new industrial, commercial, and tourist-oriented land uses."

The Proposed Action would be an economic development. The Socioeconomic section of this EIS/EIR (Section 4.1.13) evaluates the economic issues associated with the Proposed Action and finds that the Proposed Action would provide economic benefits to the County. The Proposed Action would be consistent with this goal.

Objective 8.5 of the Land Use element states:

> "Provide adequate sites for solid/liquid and hazardous waste facilities to meet the current and projected demands of the County population, consistent with the County Solid Waste and Hazardous Waste Management Plans."

The Proposed Action would provide a solid waste facility in Imperial County that would be capable of accepting Imperial County-generated MSW residue should the County and local communities choose to use the proposed landfill. The project would have to be consistent with the County Solid Waste Management Plan (CoSWMP) in order to be permitted. The Proposed Action would be consistent with this goal.

Objective 8.6 of the Land Use element states:

> "Ensure that land uses adjacent to or near existing waste disposal or storage facilities are compatible with those facilities."

Land uses adjacent to or near the proposed landfill site are designated for open space and are minimally used for recreational purposes. More distant areas are heavily used for recreational purposes. Some nearby areas are also used for gravel extraction. As described in Sections 4.1.7 (Noise), 4.1.8 (Air Quality), 4.1.11 (Visual Resources), and 4.1.14 (Environmental Health and Public Safety), these uses would not be significantly impacted by the Proposed Action. Also, public land and industrial private land occur within the 1/4-mile buffer such that the Proposed Action would be compatible with the "special purpose facility" designation. Therefore, the Proposed Action would be consistent with this objective.

Seismic and Public Safety Element

Objective 1.1 of the Seismic and Public Safety Element states:

> "Ensure that data on geological hazards is incorporated into the land use review process, and future development process."

The Geology/Soils/Mineral Resources section of this EIS/EIR (Section 4.1.1) discusses the potential for geological hazards to affect the proposed project. The nearest active fault is approximately nine miles from the proposed project site and settlement of the underlying conglomerate is not expected to occur. As discussed in Section 4.1.1, with mitigation no significant geological impacts would occur. The proposed project would be consistent with this objective.

Objective 1.3 of the Seismic and Public Safety Element states:

> "Regulate development adjacent to or near all mineral deposits and geothermal operations."

The proposed project would be located adjacent to a mineral deposit (i.e., gold). However, the proposed project would not prohibit the future extraction of the mineral deposits. The proposed project would not fill in the mining pits, which would remain open even after the mine is closed. Existing sand and gravel resources on the site would be used for construction of the proposed facility. Other sand an gravel resources in the project area would not be affected. Therefore, the proposed project would be consistent with this objective.

Objective 1.6 of the Seismic and Public Safety Element states:

> "Ensure environmental hazards are considered when siting critical facilities."

The Geology/Soils/Mineral Resources and Environmental Health and Public Safety section of this EIS/EIR (Sections 4.1.1 and 4.1.12, respectively) discusses potential impacts associated with siting and operating a landfill at the proposed site. Mitigation measures are identified such that impacts would not be significant. Therefore, the Proposed Action would be consistent with this objective.

Objective 1.7 of the Seismic and Public Safety Element states:

> "Require developers to provide information related to geologic and seismic hazards when siting a proposed project."

See objective 1.6.

Objective 1.9 of the Seismic and Public Safety Element states:

> "Encourage the reclamation of lands where mining, irrigation, landfills, solid waste, hazardous materials/waste storage or disposal, and natural soil erosion have occurred."

The Proposed Action would put to productive use much of the existing mine overburden and leached-ore residue and would not inhibit reclamation of the Mesquite Mine. A landfill reclamation plan would be prepared prior to landfill closure and implemented once the

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landfill is closed. Therefore, the proposed project would be consistent with this objective.

Conservation and Open Space Element

Objective 2.1 of the Conservation and Open Space Element states:

> "Encourage the preservation and enhancement of the natural beauty of the desert and mountain landscape."

The Proposed Action would use much of the material in the existing overburden and leached-ore residue piles for landfill cover, replacing these existing man-made visual features with the more natural-looking landform that would be specifically constructed by the Applicant to reduce the visual contrast the existing man-made earthen landforms exhibit. As discussed in Section 4.1.11, visual impacts would be significant. Therefore, the Proposed Action would not be fully consistent with this objective.

Objective 3.9 of the Conservation and Open Space Element states:

> "Prohibit the inappropriate siting of solid or hazardous waste facilities next to water bodies or over sources of potable ground water or recharge basins."

The proposed project is not located near any surface water bodies. The proposed project would overlie a subbasin of the Amos-Ogilby Basin. The subbasin is not a ground water recharge basin and water within the subbasin and within the Amos-Ogilby Basin is not suitable for use as potable water without prior treatment.

The Water Resources section of this EIS/EIR (Section 4.1.2) finds that there would be no potential for significant water resource impacts after mitigations required by regulations or incorporated into the project design are implemented. Therefore, the proposed project would be consistent with this objective.

Objective 4.3 of the Conservation and Open Space Element states:

> "Protect unique, rare, and endangered plants and animals and their habitats."

The Proposed Action would include the transfer of designated desert tortoise critical habitat to BLM at a 1:1 ratio as compensation for the Class III desert tortoise habitat on-site. The Proposed Action would also transfer up to 1,920.48 acres of additional desert tortoise critical habitat as an exchange for a portion of the federal lands on-site. Also, the Applicant shall salvage desert vegetation prior to construction of the landfill. The Applicant shall make salvaged plants available for rehabilitation of habitats on the adjacent Mesquite Mine and/or public uses. The Proposed Action would result in a net gain (both in quantity and quality) in federally-owned and managed habitat for the threatened desert tortoise, and would be consistent with this objective.

Objective 5.1 of the Conservation and Open Space Element states:

> "Protect and preserve sites of archeological, ecological, historical, and scientific value, and/or cultural significance."

The significant cultural resources on-site would be lost with the development of the Proposed Action. Prior to the construction of the Proposed Action, a treatment plan to research, collect, and otherwise preserve the important information contained in these resources would be implemented. The information collected would be preserved and made available to the public. Therefore the Proposed Action would be consistent with this objective. Ecological resources would be protected as described in Objective 4.3, above. No other resources of known scientific value occur on site. Therefore, the Proposed Action would be consistent with this objective.

Objective 6.2 of the Conservation and Open Space Element states:

> "Recognize the regional significance of the development and conservation of recreational opportunities in Imperial County."

The regional significance of the development and conservation of recreational opportunities in Imperial County are recognized and fully addressed in Section 3.1.10 and 4.1.10 of this EIS/EIR. Section 4.1.10 finds that no significant impacts to recreational resources would occur. Therefore, the proposed project would be consistent with this objective.

Objective 6.9 of the Conservation and Open Space Element states:

> "Conserve desert lands, within the County's jurisdiction for wildlife protection, recreation, and aesthetic purposes."

The Proposed Action would disturb up to 3,657 acres of desert habitat in Imperial County for purposes other than wildlife protection, recreation, and aesthetics. The Proposed Action would transfer desert tortoise Critical Habitat located in Imperial County at a 1:1 ratio from private ownership to federal ownership and BLM management as compensation for project-related habitat impacts. The Proposed Action would also transfer up to 1,920.48 acres of additional desert tortoise critical habitat located in Imperial County as an exchange for a portion of the federal lands on-site. Also, the Applicant would conduct raven population monitoring that would assist BLM develop and implement a long-term raven control plan for the desert and would establish guzzlers off-site to enhance the local wildlife habitat. Therefore, the loss of wildlife habitat on-site would not be a significant biological impact.

The affected recreational lands on-site are of marginal value and do not provide unique value compared to the expansive neighboring public lands designated for recreation. The exception to this is the Mesquite Mine Overlook Trail, a voluntary joint effort of Gold Fields and BLM. Under the BLM/Gold Fields agreement that established this trail, either party may "walk away" from the agreement, thereby terminating the trails existence with 30 days notice. This trail would eventually be displaced by the Proposed Action. However, the applicant would provide a relocated overlook trail, subject to the same "walk away" provision that would provide similar recreational benefits. Therefore, impacts to recreational resources would not be significant.

The proposed project site and neighboring lands presently contain large man-made leached-ore residue piles. These landforms are unnatural looking and do not blend in with the existing natural landforms. The proposed landfill would use much of the overburden and leached-ore residue from these man-made landforms for cover material. As the proposed landfill gradually replaced the existing landforms, a more natural landform would be created. Resulting visual impacts would be significant. Nevertheless, the Proposed Action would be mostly consistent with this objective.

Objective 8.4 of the Conservation and Open Space Element states:

> "Safeguard the use and full development of all mineral deposits."

To allow for future recovery of marginal mineral resources should the technology become available or the mineral prices increase, the Applicant does not propose filling the mine pits. Borings were conducted at the landfill site and valuable mineral resources in project area do not exist beneath the proposed site. Therefore, the Proposed Action would be consistent with this objective.

Objective 8.5 of the Conservation and Open Space Element states:

> "Regulate the development adjacent to or near all mineral deposits and geothermal operations."

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See objective 1.3 in Seismic and Public Safety Element.

Objective 10.1 of the Conservation and Open Space Element states:

> "Ensure that all facilities shall comply with current federal and state requirements for attainment of air quality objectives."

The Air Quality Section of this EIS/EIR (Section 4.1.8) addresses current federal and state requirements for attainment of air quality objectives. This section finds that the Proposed Action would be consistent with the Imperial County Air Quality Attainment Plan and would implement one of the measures identified in the SCAQMP. Therefore, the Proposed Action would be consistent with this objective.

Zoning

The County has zoned the project site and surrounding area S-Open Space. The S-Open space classification permits multiple uses consistent with the objectives of the Open Space Element of the General Plan. Solid waste disposal is not a permitted use in an S-Open space zone, but is a permitted use in an M-2 Heavy Manufacturing zone with a Conditional Use Permit (CUP). Therefore, a change of zone would be required from the existing S-Open Space designation to the Proposed M-2 designation, as well as a CUP.

BLM California Desert Conservation Area Plan

Because the Proposed Action includes a land exchange, it conforms with BLM's Multiple Use Class M Policy and the 1985 CDCA Amendment that prohibits the establishment of new waste disposal sites on public lands, etc. In addition, the disposal of the public lands through a land exchange conforms with the multiple use classification of "M" because "M" lands can be disposed of whereas, for example, "L" lands cannot be disposed of unless the CDCA Plan is amended.

A CDCA Plan Amendment to change the boundary of the Singer Geoglyph ACEC and designate the area north of SR 78 as "Class M" is part of the Proposed Action. This action would be consistent with the CDCA Plan because that portion of the Singer Geoglyphs ACEC located north of SR 78 does not contain cultural resources (i.e., geoglyphs) and should not have been included in the ACEC originally. In addition, the proposed land exchange would transfer the ownership of federally owned lands in the project area for lands of at least equivalent resource value within the SRMNSA and near the Chuckwalla Bench ACEC. Prior to the Record of Decision, the appraised values of the BLM lands and the offered exchange parcels will be determined. The offered exchange parcels will have to be of at least equal appraised value as the BLM lands.

Offered Exchange Parcels

Placing the offered exchange parcels in federal ownership under BLM management would not result in any land use conflicts. Therefore, impacts would not be significant.

4.1.9.3 Mitigation Measures

Landfill Site

Impacts from the Proposed Action would not be significant. The proposed General Plan Amendment, zone change, CUP, CDCA Plan Amendment, and BLM land exchange would bring the proposed landfill into conformance with the Imperial County General Plan, Imperial County Zoning Ordinance, and the BLM CDCA Plan.

4.1.9.4 Level of Significance After Mitigation

Landfill Site

No mitigation would be required and land use impacts would not be significant.

4.1.10 RECREATIONAL RESOURCES

4.1.10.1 Assumptions and Assessment Guidelines

The following impact analysis considers the effects of the Proposed Action on recreational resources in the vicinity of the landfill site. Potential impacts of the proposed landfill include aesthetics, noise, traffic, air and ground water quality, and other issues that are analyzed in more detail elsewhere in this EIS/EIR.

For this analysis, recreational resource impacts would be considered significant if the proposed project would substantially degrade or reduce the quality or quantity of the area available for existing or future recreational opportunities. An unmitigated loss of a unique recreational resource would be a significant impact. Non-conformance with the Wilderness Act of 1964 or the BLM Interim Management Policy would be a significant impact.

4.1.10.2 Impacts of the Proposed Action

Proposed Landfill Site

Impacts described for facilities at the proposed landfill site would also apply to the optional energy recovery facilities. These facilities could be constructed on-site, between the proposed landfill and the intermodal.

The Proposed Action would result in the conversion of approximately 1,750 acres of federally-owned land within the project area. These lands are currently designated for recreational uses. A portion of the Mesquite Mine Overlook Trail would also be lost. The land owned by Gold Fields has been fenced and closed to OHV traffic and the general public since 1985. The area surrounding the project site is used by approximately 4,000 visitors a year. However, the majority of recreational users counted in this survey used lands located closer to Glamis than to the proposed site. Only minimal camping and other recreational uses occur at the proposed site.

There are approximately 280,000 acres of BLM Class M and Class I desert lands available for recreation in the CDCA in Imperial County. The loss of 1,750 acres would amount to 0.6% of the total BLM Class M and Class I land available for recreation. This loss would be minimal, and not large enough to substantially degrade or reduce the quality of or area available for existing or future recreational opportunities.

The Mesquite Mine Overlook Trail was a voluntary project undertaken by Gold Fields and the BLM. The joint BLM/Gold Fields agreement that created this unique recreational resource allows either party to "walk away" from the agreement with 30-days notice. The self-guided trail would be maintained in its existing location until the trail site or public access to it is prevented by landfill development. At that time, portions or all of the trail would be relocated to maintain the recreational and visitation opportunities for the public. The trail would be subject to a joint BLM/Arid Operations agreement that would be similar to the existing Mesquite Mine Overlook Trail agreement. The mitigated loss of a portion of the overlook trail would not be a significant recreational resource impact.

Potential impacts to air quality from criteria pollutants, toxic air contaminants, fugitive LFG, or fugitive dust emissions may affect recreational users. However, the mitigation measures described in the Air Quality Section of this EIS/EIR would mitigate impacts such that they would not be significant. As a minimum, a LFG collection system and a flare would be used at the landfill site to collect and destroy odorous emissions. Impacts to recreational resources would not be significant.

Visual impacts to recreational resources near the proposed project would be significant. The proposed project would introduce high degrees of contrast, as described in Section 4.1.11, Visual Resources. However, the existing overburden and leached-ore residue piles create a similar contrast. Therefore recreational impacts would not be significant.

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The landfill and associated facilities (e.g., intermodal and optional energy recovery facilities) are located a sufficient distance from the ISDRA that it would not significantly impact recreational uses at the sand dunes. The proposed landfill is far enough away that on-site noises would not be heard in the ISDRA or the more heavily used camping areas. Impacts associated with project-related traffic on SR 78, including the potential delivery of Imperial County MSW residue, agricultural plant material for air quality offsets, and the trucking off-site of hazardous materials and methane gas, would not be significant.

Wilderness Areas

There are no wilderness areas in close proximity to the proposed landfill site, rail spur, or the existing SP Main Line. Therefore, impacts to wilderness areas would not be significant. The wilderness study areas identified in Section 3.1.10 are located far enough away from the proposed landfill site that impacts would not be significant.

Proposed Rail Spur

The proposed rail spur would affect approximately 78 acres of federal lands that are available for camping and other recreational uses, but that are little used. Access to the federal lands located north of the proposed rail spur would be provided by at least three at-grade railroad crossings. Potential health and safety impacts associated with recreational users crossing railroad tracks as trains approach would be mitigated by appropriate at-grade railroad crossing signs at the railroad spur. Also, the proposed rail spur would be constructed on a railroad berm similar to the existing SP Main Line railroad berm. Therefore, recreational users would be aware of the rail spur and associated train-related hazards. Vectors would be controlled as described in the Environmental Health and Public Safety Section (4.1.12) of this EIS/EIR. Vector-related impacts to recreationalists would not be significant. Project-related noise impacts to the ISDRA would not be a significant impact because the proposed rail spur would be located at least 2,500 feet from SR 78, and landfill-related train trips would be distributed throughout each 24 hour period.

Existing SP Main Line

Covered containers would be used exclusively along the rail-haul route to reduce odor impacts. In addition, during any prolonged rail delay, carbon filters for two train loads of containers would be available within 12 hours to cover vents to reduce potential odor impacts. Use of the existing SP Main Line would not significantly impact recreational resources.

Optional Gas Pipeline to Niland

Construction and operation of the optional gas pipeline to Niland would not result in significant impacts to recreational resources. The pipeline would be constructed in the proposed rail spur ROW and existing SP Main Line ROW. Construction would be accomplished according to all applicable noise regulations. Air quality, visual, and other impacts would be negligible.

Offered Exchange Parcels

The offered exchange parcels currently support varying degrees of recreational uses. Implementation of the Proposed Action would allow public use of these lands.

4.1.10.3 Mitigation Measures

The Applicant shall implement the mitigation measures described in the Transportation (4.1.6), Noise (4.1.7), Air Quality (4.1.8), and Environmental Health and Public Safety (4.1.12) sections of this EIS/EIR to mitigate impacts to recreational resources.

Proposed Landfill Site

Incorporated by Regulation

There would be no additional mitigation measures required by regulation to mitigate

recreational resource impacts beside those described in Sections 4.1.6, 4.1.7, 4.1.8, and 4.1.12.

Incorporated by Project Design

In addition to the mitigation measures incorporated by project design described in Sections 4.1.6, 4.1.7,4.1.8, and 4.1.12, the applicant shall maintain public access to the existing Mesquite Mine Overlook Trail as long as practicable. The Applicant shall establish a new (relocated) interpretive trail once public access to the trail is impacted, or once the landfill impacts the existing Mesquite Mine Overlook Trail. The applicant shall enter into an agreement with BLM similar to the existing Mesquite Mine Overlook Trail Agreement, regarding the relocated trail.

Incorporated to Avoid Potentially Significant Impacts

The above mitigation measures would fully mitigate impacts associated with on-site activities to recreational resources. Therefore, additional mitigation would not be required.

Proposed Rail Spur, Existing SP Main Line and Optional Gas Pipeline to Niland

No additional mitigation, beyond those identified in the Transportation, Noise, Air Quality, and Environmental Health and Public Safety sections of this EIS/EIR would be required to mitigate impacts to recreational resources.

4.1.10.4 Level of Significance After Mitigation

Impacts to recreational resources would be fully mitigated by the measures described above. Therefore, with mitigation, impacts would not be significant.

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4.1.11 VISUAL RESOURCES

4.1.11.1 Assumptions and Assessment Guidelines

In order to assess the potential visual impacts of the Proposed Action, existing views of the proposed project site were photographed from viewpoints along SR 78. A reference map providing the location, direction, and reference number for each of these four viewpoints is shown in Figure 3-33. Photo-simulations were made representing views to the project site at the closure of mining activities. These were then used to assess existing conditions, as discussed in Section 3.1.11 of this EIS/EIR. Computerized, scaled, photo-simulations were then made to depict future views with the project in place, as it would be seen at closure of the landfill, from each viewpoint. The photo-simulations were prepared by Environmental Solutions, Inc., using a Computer-aided Drafting and Design (CADD) system. Information on existing site topography and project development plans was digitized by computer to obtain accurate physical configurations and elevation.

The BLM Visual Resource Management (VRM) System Guidelines (BLM 1986a and 1986b) provide a system of analysis to determine the potential visual impacts that would occur with project implementation. The BLM Visual Contrast Rating system is used in this analysis to assess the potential visual impacts of the Proposed Action. The project site is located in a Multiple-Use Class M (Moderate Use) designated area within the CDCA. The objectives of Multiple-Use Class M, based on a controlled balance between higher intensity use and protection of public lands, can be paralleled with VRM Class III as described by the BLM VRM System Guidelines. VRM Class III allows for moderate levels of change to the characteristic landscape. The BLM provides guidelines and worksheets for the VRM system (see Appendix G). For the purposes of this analysis, a significant impact is defined as project-related change that would be considered substantial in a VRM Class III area as follows:

- A strong degree of contrast (i.e., where the project-related element contrast demands attention, will not be overlooked, and is dominant in the landscape).

- Light and glare conditions that would adversely and substantially affect a sensitive receptor.

4.1.11.2 Impacts of the Proposed Action

Visibility

The project site could potentially be viewed from far away, such as from within the Imperial Valley or from as far south as the United States/Republic of Mexico International Border by an observer specifically searching for the proposed landform. The significance of these views would be increasingly diminished at such distances because the landfill form would barely be distinguishable from surrounding topography.

In general, the most obvious visual features of the proposed Mesquite Regional Landfill would be the landform alterations. Some existing overburden and leached-ore residue piles associated with the Mesquite Mine would be gradually reduced, as the material is used for cover material at the proposed landfill. The proposed landfill would be developed with more gradual slopes, designed to better conform to the surrounding topography than the existing overburden and leached-ore residue piles. The existing flat-topped overburden piles extend to heights of approximately 280 feet. The landfill height would vary between 375 and 475 feet. The landfill slope would be varied from 3:1 at the bottom, to 5:1 near the top. The resultant form would be that of a large, contoured hill somewhat similar in texture but lighter in color than natural topographic features in the project vicinity (e.g., Brownie Hill). The landfill would cover an area of approximately three miles by one and one-half miles and would be a long-term, permanent change to the local visual environment. The working faces of the proposed landfill would not normally be visible to ground-

level viewers because of the stability berms that would be constructed around each landfill segment. Some views of the working face from the ground would be afforded where access roads would interrupt the visual screening provided by the stability berms.

The visual analysis for this EIS/EIR considers viewers in an area around the site that is bounded to the north by the Chocolate Mountains; bounded to the south by the intersection of Ted Kipf Road and Ogilby Road; bounded to the west by the sand dunes; and bounded to the east by Ogilby Road. Views from farther distances would hardly be changed with implementation of the Proposed Action. For westbound travelers, visibility of the project would begin as far east as the intersection of SR 78 and Ogilby Road. However, unobstructed views would not occur until westbound travelers were within approximately three miles of the project. Westbound travelers would have potential views until past the western boundary of the site. For eastbound traffic, visibility would begin at the Osborne Overlook and would continue until passing the eastern boundary of the proposed project site.

During the operational phase, facilities and equipment associated with landfilling operations (e.g., intermodal, MSW containers, container handling crane, and optional energy recovery facilities) would also be visible, and would provide a contrast to the surrounding environment. The increase in activity and movement associated with these facilities/equipment would be moderate in contrast to existing activities at the site (mining operations and occasional gravel extraction) and would not strongly contrast the existing setting.

If some other material were to be used as an alternative for daily cover in the future, its application would be limited to the working face at the end of each working day. Visibility from outside of this area would be limited by the stability berms that would be placed around each landfill segment. Therefore, any visual impacts resulting from the use of foam or other daily cover materials would be minimal, limited to momentary views through openings in the stability berms, as seen from SR 78 or surrounding areas. The use of foam is not currently a feasible option for intermediate or final cover. However, the use of alternative cover material would reduce the amount of overburden and leached-ore residue that would otherwise have been used for cover material. Therefore, the use of alternative cover would result in larger overburden and leached-ore residue piles once the landfill were closed.

The following discussions assess visual impacts of the proposed Mesquite Regional Landfill at each of the four viewpoints identified in Section 3.1.11.

Viewpoint #1

With construction of the proposed landfill, distant views toward the proposed site area from viewpoint #1 would change (Figure 4-16). The existing, light-colored line seen just below the horizon, created by the existing mine overburden piles, would be replaced by a larger, light-colored form seen at the horizon line (in this simulation, the proposed landfill was slightly darkened to provide contrast with the existing overburden piles). The variable landfill shape would blend with the rugged topography of the Chocolate Mountains backdrop more readily than the existing straight lines of the overburden piles. The length of the band of lighter color that would be attributable to the proposed landfill and existing overburden piles (Figure 4-16 lower picture) would be shorter than the band of lighter color attributable to the overburden piles alone (Figure 4-16 upper picture). The height of the band of lighter color would be slightly taller.

The view from viewpoint #1 would still be dominated by the light-colored, rolling topography of the Algodones Dunes (foreground) and the dark, rugged topography of the Chocolate Mountains (background). At this distance (approximately seven to eight miles), the landfill form would occupy a smaller portion of the overall panorama than the present

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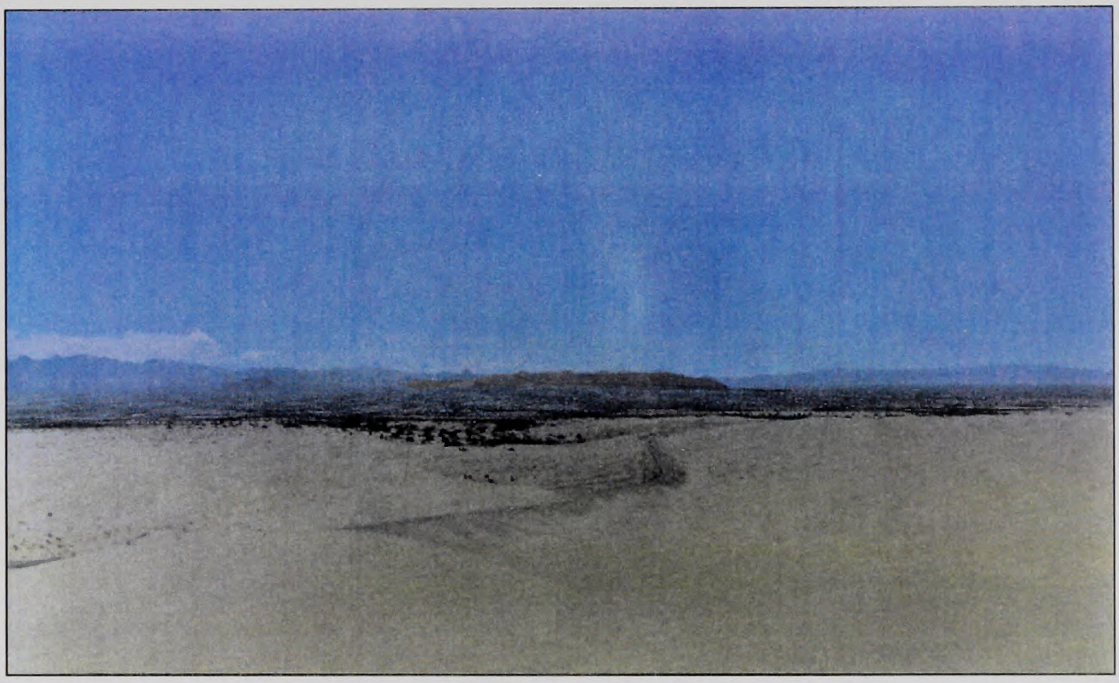
MESQUITE MINE ONLY: View eastward from Osborne Overlook, about eight miles from the proposed regional landfill site. After approximately the year 2005, when mining activities have been completed, the remaining overburden piles would be visible as a light line (center) against the dark backdrop of the Chocolate Mountains.



WITH PROPOSED REGIONAL LANDFILL: In approximately the year 2095, when landfilling activities would be completed, the landfill would appear as a light brown hill (center) with a shape similar to the Chocolate Mountains behind. The landfill is darkened slightly in this photograph to allow the remaining small portion of a Mesquite Mine overburden pile on the left to be seen.

Source: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Viewpoint #1

FIGURE

4-16

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overburden piles and the degree of contrast would be negligible.

Viewpoint #2

Construction of the proposed landfill and supporting facilities would change background views from viewpoint #2 (Figure 4-17). The existing series of overburden piles associated with mining operations would gradually be reduced as they are used for cover material at the landfill. Concurrently, the landfill would be developed as a single, prominent form. The height of the proposed landfill would be greater than that of the mine overburden piles and would form a silhouette along the horizon line of views. The more gradual slopes that would be incorporated into landfill construction would help the landfill to blend with the surrounding visual environment. From this distance (approximately two miles), the overall texture of the landfill would be more noticeable. Horizontal access benches, located at approximately 50 foot vertical intervals, would begin to be visible encircling the landfill form. Haul roads extending diagonally from the desert floor to the upper surface of the proposed landfill would also begin to be seen. These features would result in a high contrast to the irregular patterns of the natural desert landscape and the existing overburden piles. The overall contrast of the proposed landfill from this viewpoint would be seen as high . The degree of contrast would increase as the traveler on SR 78 continued east towards the proposed landfill.

It is anticipated that proposed landfill support facilities and equipment would be partially screened by existing vegetation in middleground views during operations. Also, landfill facilities would be painted desert tan, further reducing their visibility. These features would not be visually prominent due to their scale within the overall panorama viewed from this location. From this viewpoint, the contrast for these facilities and equipment would be low.

Viewpoint #3

As seen in Figure 4-18, the proposed landfill would be visible at a distance of approximately one mile from viewpoint #3. From this close-range vantage point, the landfill would be seen as a more prominent form relative to the visible expanse of the landscape that forms its setting. Natural vegetation would partially screen the lower elevations of the landfill. However, with its lighter color, patterned texture, and prominent height, the landfill viewed from this viewpoint would result in a high contrast to the surrounding environment.

Proposed landfill support facilities and equipment painted desert tan would be seen in foreground-middleground views during operations and would be partially screened by vegetation. From this viewpoint, the industrial appearance of the landfill-related equipment would result in a moderate contrast to the surrounding desert landscape and the existing mine-related facilities. These facilities/equipment would be removed once the landfill closed.

Viewpoint #4

The existing middleground and background views from this vantage point include a series of contrasting flat-topped, mine-related overburden piles. Proposed landfill development would replace the overburden piles seen in the background (Figure 4-19 top). The result would be a more gently sloped landfill behind the remaining overburden piles and a small, natural dark-colored hill remaining in middleground views. At this distance (approximately three miles), existing vegetative screening is minimal and would have little screening effect.

From this viewpoint No. 4, the existing and future overburden piles are highly visible, and produce a moderate to high contrast against the natural desert landscape. With construction of the proposed landfill, the background of this field of view would be filled with the landfill form. However, this overall modification of the landscape would more closely resemble the

natural forms and horizontal composition of the desert landscape than do the existing overburden piles. Because views have already been impacted as a result of mining activities, and because overburden piles would continue to be visible in the foreground, the overall contrast with the proposed landfill would be low to moderate. Replacement of the background overburden piles with a more-naturally contoured landfill form would potentially result in a visual enhancement over the existing visual condition, as seen from this vantage point.

In summary, distant range views of the proposed landfill would generally be of a landform that is more naturally-shaped and higher than the existing overburden piles that would be partially removed by the proposed project. The degree of contrast would increase from negligible to low to moderate to high as viewing distance decreased.

Certain close views to the proposed landfill (e.g., the view simulated in Figure 4-18) would be dominated by the proposed landform. However, views from many other close viewpoints are already dominated by the existing overburden piles. Because the proposed landfill would demand attention, would not be overlooked, and would be dominant in the landscape, impacts would not conform with VRM guidelines. Therefore, impacts would be significant.

Light and Glare

Night lighting would be provided at the landfill to facilitate up to 24-hour operations. The use of night lighting is a concern because of the potential for fugitive illumination to interfere with the visibility of drivers along SR 78, to interfere with Night Vision Devices (NVDs) used during nighttime flight operations at the CMAGR, and to interfere with the recreational experience of users of the ISDRA.

Night lighting is currently being used at the Mesquite Mine, and will continue to be part of the existing environment until the mine is closed, anticipated to occur in 10 to 15 years. The proposed landfill would remain open for approximately 85 to 90 years after the closure of the Mesquite Mine. Night lighting used at the landfill would be similar to that used for operation of the mine. During the next 10-15 years, while the mine is still operational, the additional light source associated with the landfill would result in a small increase in the overall level of illumination at the project site (most notably at the intermodal area). Upon closure of the mine, night lighting at the landfill would continue to produce a source of light of slightly greater intensity than currently exists for mining operations, within what would otherwise be a relatively dark sky in the project site area.

Lighting levels for the landfill would be as required by OSHA. For safety reasons, lighting at the intermodal area would be somewhat brighter than lighting levels associated with operation of the mine. Lighting in this area would be more visible because of the size of the proposed intermodal facility and its vicinity to SR 78. However, all lighting would be directed downward and shielded to minimize fugitive illumination. The use of cut-off fixtures would result in no direct lamp glare in the direction of the highway. Therefore, potential impacts to motorists along SR 78 associated with night lighting at the landfill would be below a level of significance.

Enclosed LFG flares would be used for LFG destruction during the first 16 years of landfill operation (See Section 2.1.6) and would serve as back-up equipment for optional energy recovery facilities that would be implemented after the sixteenth year. The flares would be cylindrical structures, enclosed and approximately 20 feet high. They would be located behind the intermodal area, adjacent to the truck trailer container storage area (Figure 2-8). Visibility of these structures from SR 78 would be reduced by their placement behind the lighted intermodal facilities. The flame would be contained within the structure, but could occasionally be seen as a flicker or slight glow above the stack. The overall contribution of these flares to the intensity of light seen at the landfill would not be noticeable because of the intervening light

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MESQUITE MINE ONLY: View northeast from Highway 78 approximately 3.5 miles from the proposed regional landfill site after approximately the year 2005. Overburden piles remaining after completion of mining activities would be visible in the distance as light brown in color with some striations due to the natural variation in the rock color, the method of deposition, and drainage.

WITH PROPOSED REGIONAL LANDFILL: After completion, the landfill would appear as a light brown hill with gradual slopes. Varying landfill heights would cause it to be more consistent with surrounding topography. Faint outlines of roads leading to the top and horizontal benches along the sides would also be visible.

Source: Environmental Solutions, Inc., 1992.

Proposed Mesquite Regional Landfill

Viewpoint #2

FIGURE

4-17

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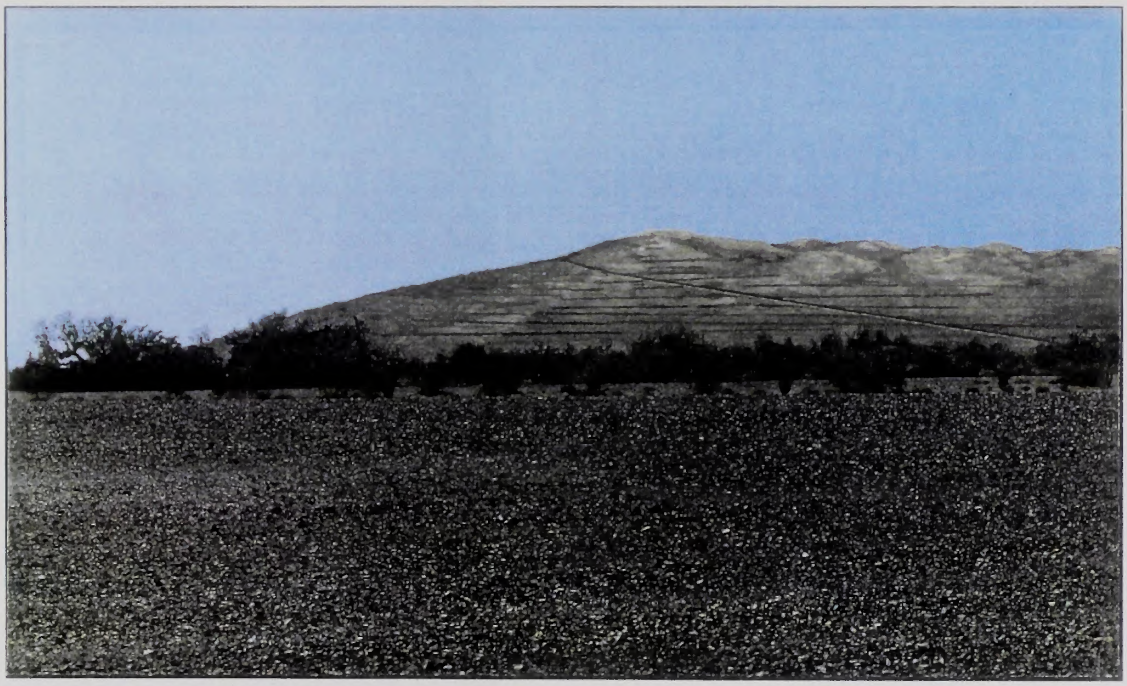
MESQUITE MINE ONLY: View northwest from Highway 78 about one mile from the proposed regional landfill site after approximately the year 2005. In addition, to the tops of remaining Mesquite Mine overburden piles, the Chocolate Mountains and Brownie Hill are visible in the distance.



WITH PROPOSED REGIONAL LANDFILL: Several Mesquite Mine overburden piles would disappear and be replaced by the gradually sloping landfill. Outline of roads leading to the top and horizontal benches would be more visible.

Source: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Viewpoint #3

FIGURE **4-18**

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MESQUITE MINE ONLY: View southwest from Highway 78 about 2.5 miles from the proposed landfill site after approximately the year 2005. The remaining Mesquite Mine overburden piles would form most of the horizon line.

WITH PROPOSED REGIONAL LANDFILL: Material from the overburden piles on the left side of the top figure has been used for landfill cover, resulting in the removal of those piles. The remaining overburden piles shield views of portions of the proposed landfill on the right.

Proposed Mesquite Regional Landfill

Viewpoint #4

Source: Environmental Solutions, Inc., 1992.

FIGURE **4-19**

sources and the public viewing distances. Compared to other lighting in the intermodal area, they would not be easily noticed by the casual observer or motorist.

Mobile light plants would be used at landfill working face areas. Visibility of this light source would be limited to occasional openings in stability berms constructed around the working face areas. "Sky glow" would be minimized by shielding and directing all lighting fixtures downward.

Night Vision Devices currently used during U.S. Marine Corps nighttime operational flights at the CMAGR, would potentially be affected by nighttime lighting at the landfill site. These devices allow the military to see at night using light at levels much lower than are detectable by the unaided human eye. Nighttime lights which seem normal to the average individual would appear extremely bright through these devices. For safety reasons, the U.S. Marine Corps generally directs its pilots to avoid the Mesquite Mine area when using NVDs. However, some aircraft may still operate in the area from time to time with NVDs. The Mesquite Mine has worked with the Marine Corps to ensure that mine lighting does not pose a hazard to these pilots. Since it began operation in 1984, the Mesquite Mine has had a constructive working relationship with the Marine Corps regarding these issues. Lighting from the landfill is expected to result in only a small increase in the overall level of illumination at the project site.

Like existing lighting at the Mesquite Mine, lighting at the proposed landfill site would be of wavelengths that interfere with NVDs. Therefore, there would be a potentially significant impact to pilots using NVDs in the project vicinity; however, the project area is a very small portion of the available CMAGR approach and departure avenues.

The area west of the proposed project site is heavily used for camping. Most heavily used is the area located south of SR 78 and in the vicinity of Glamis.

Night lighting at the proposed landfill would not produce on-site points of light and/or "sky glow" that would be substantially more visible to campers than is created by the Mesquite Mine at this time. Night lighting at the landfill would continue to produce a source of light in an area that would be dark after closure of the mine in 10-15 years. The proposed landfill would be sited far enough away from these heavily used camping areas that night lighting impacts would not be significant.

Proposed Rail Spur

The proposed rail spur would be constructed atop a railroad berm. In addition, a dirt access road would be constructed in the proposed ROW. These features would be similar to existing SP Main Line. Visibility of these features would be limited by the vegetation growing in the intervening desert washes. Because the proposed rail spur and access road would be similar to existing features, contrast would be low and impacts would not be significant.

Existing SP Main Line

Use of the existing SP Main Line would not create any degree of contrast with the existing conditions. Therefore, impacts would not be significant.

Potential Gas Pipeline to Niland

The potential gas pipeline to Niland would be laid underground within previously disturbed ROWs. Impacts would not be significant.

4.1.11.3 Mitigation Measures

Incorporated by Regulation

There would be no mitigation measures required by regulation.

Incorporated by Project Design

The applicant shall ensure that project-related lighting is pointed toward the ground and not at

sensitive receptors such as drivers on SR 78 and concentrations of campers in the Glamis and Boardmanville areas.

The Applicant shall minimize the presence of reflective material on-site at night that could reflect downward pointed light up or toward sensitive receptors.

The Applicant shall construct the proposed landfill so that it resembles a natural landform to the extent practicable. Measures to be incorporated include:

- Landfill side slopes that vary from 3:1 near the bottom to 5:1 near the top.
- A final landfill height of no more than 475 feet.
- Contoured top and sides.

Incorporated to Avoid Potentially Significant Impacts

The potentially significant impact of night lighting on NVDs shall be mitigated by providing the U.S. Marine Corps Air Station, Yuma, Arizona, with a map identifying the project site and specific locations of all potential light sources. This will enable the U.S. Marine Corps Air Station to identify the site as a light source so that pilots using NVDs can avoid the lighted area.

4.1.11.4 Level of Significance After Mitigation

The potential for impacts to NVDs would not be significant with incorporation of the proposed mitigation.

The significant impacts associated with the proposed landfill landform would remain significant after mitigation.

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4.1.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

4.1.12.1 Assumptions and Assessment Guidelines

This section evaluates the potential environmental health and safety impacts related to the proposed regional landfill project. Primary environmental health and safety concerns expressed in the public scoping process include:

- Potential Project Impacts Derived From
  - Hazardous materials (non-MSW) in the waste stream.
  - Vectors (e.g., insects) transported with the MSW.
  - Fires at the landfill.
  - The use of leached-ore residue for landfill cover.
  - Interference with aircraft using at the aerial gunnery range.
  - Contamination of ground water.
- Related Transportation Impacts Derived From
  - MSW residue train delays enroute.
  - At-grade railroad crossings.
  - MSW residue train accidents.
  - Highway safety during weekends from October 1st through May 31st of each year.

Evaluations of each of these issues and other health and safety considerations identified during the analysis process are discussed in this section.

A potential impact is considered significant if it would create a substantial increase in risk to public health or safety. Potential impacts to ground water, transportation and other elements of the human environment are considered in other sections of the EIS/EIR. Reference to those analyses are made, where appropriate, when they also involve issues associated with public health and safety.

4.1.12.2 Impacts of the Proposed Action

Proposed Landfill Site

Hazardous Materials in the Waste Stream

The proposed Mesquite Regional Landfill would be designed and permitted exclusively as a California Class III nonhazardous waste landfill that would only accept MSW residue (agricultural plant material would also be accepted, but only as necessary to provide air emission offsets). Title 23, §2533 of the CCR defines MSW to include garbage, trash, refuse, paper, rubbish, industrial waste, ashes, appliances, food waste, and other materials, provided that they do not contain wastes that must be managed as hazardous waste, or wastes with soluble pollutants in concentrations that exceed state water quality objectives.

Section 2.1.8 of this EIS/EIR describes the various steps MSW residue would undergo prior to disposal in the proposed Mesquite Regional Landfill to limit the amount of hazardous materials that are present. These steps, which would include hazardous waste screening procedures at transfer stations/MRFs and the requirement that all employees that work with MSW residue be trained to spot hazardous wastes, would eliminate the chance of larger hazardous materials (e.g., suspicious barrels or special hazardous waste containers) being present in the MSW residue disposed at the landfill.

Federal law does not classify HHW as hazardous and California law, while classifying these materials as hazardous, recognizes that after proper screening, HHW may be present in MSW residue. The strict regulations concerning landfill environmental controls, including base liner and leachate control requirements, are designed with the anticipation that HHW will be deposited in landfills. As described in Section 4.1.2 (Water Resources) the potential for ground water contamination from the proposed Mesquite

Regional Landfill is found not to be significant. Therefore, the presence of HHW in disposed MSW residue that was properly screened would not pose any substantial risk to public health or safety.

Vectors and Disease Control

Vectors (insects and rodents) can be attracted to a landfill site if opportunities are present for foraging and shelter in deposited MSW residues. Birds, especially ravens and seagulls, can also be attracted to a landfill as a source of food. Potential health and safety impacts could be caused by the transfer of disease from vectors to humans.

The potential for vectors to be attracted to the proposed regional facility would be lower than for most landfills because of the naturally arid conditions in the site area. The lack of water and sparseness of vegetation limits the numbers of animals or insects that occur in the vicinity of the site. In addition, regulations of the CIWMB (CCR Title 14) would require that the landfill be operated in a manner that minimizes attraction to vectors or birds.

The primary method of minimizing the attractiveness of the proposed landfill to vectors would be the placement of daily cover, at least once during each 24-hour period. Section 2.1.4.1 of this EIS/EIR describes procedures that would be used for placement of daily cover at the Mesquite Regional Landfill. Daily cover would limit opportunities for foraging and shelter in exposed MSW residues. In addition, the landfill working face size could be modified to minimize attraction to birds and other vectors. Monofilament lines or other special bird control procedures could also be used. Finally, the noise, lights and heavy equipment associated with landfill working face operations would discourage most large animals from approaching the area.

A concern was raised in the public scoping process regarding the potential for transfer of insects (especially the medfly) and rodents to Imperial County in the MSW residue loads. Transfer station/MRFs and landfill operating procedures would eliminate this possibility.

Transfer station/MRF sorting procedures would expose nearly all vectors prior to placement in MSW residue containers. Transfer stations/MRFs collecting MSW residue from areas that were quarantined for fruit flys would spray the MSW residue with an EPA-approved insecticide to kill any vectors prior to transportation of the MSW residue to the proposed landfill. The exact measures to be implemented would be subject to the approval of the Imperial County Agricultural Commission before MSW residue from a quarantined area was loaded for shipment to the proposed landfill. Vectors missed by these sorting procedures would be destroyed after the MSW residue underwent the following normal operating procedures:

- Up to ten hours of rail-haul transfer to the proposed regional landfill in enclosed containers (insects would not be able to escape the pressure vents).
- Dumping of the MSW residue at the proposed landfill working face and its immediate (within minutes) spreading with dozers, and compaction with heavy compactors.
- Covering of the MSW residue with subsequent layers of compacted MSW residue.
- Covering the MSW residue with a minimum of 6 inches of compacted soil at least once each 24 hours (Kutchur, 1979).

These procedures would substantially reduce the possibility of survival of vectors in the MSW residue loads. Insect larva that may not be destroyed would be buried with an insignificant potential for escape to the landfill surface. In the unlikely event a fruit fly or similar vector escaped the landfill, the distance to agricultural fields (and lack of suitable habitat in between), hot and dry conditions, and predominant wind

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directions would prevent vectors from creating an impact. Rodents would not be be expected to survive the compaction process or transport and disposal (Adest, 1979). Therefore, impacts would not be significant.

Fires

Fires at the proposed landfill site could occur due to the following causes:

- Ignition of the MSW residue in the landfill.
- Ignition of construction equipment or MSW residue container trucks.
- Ignition of structures, process or storage facilities, or other infrastructure.
- Lightning strikes.

Generally, MSW residue material fires are caused by either the disposal of hot or smoldering material or spontaneous combustion of previously buried material due to the inflow of air (oxygen) from an improperly designed or operated LFG vacuum control system. The potential for disposal of hot or smoldering material at the proposed site would be very small because of the numerous inspections (pickup, transfer station/MRF sorting process, and landfill face placement procedures) that would occur. The potential for spontaneous combustion to occur would also be minimized by:

- Dense compaction of the MSW to minimize air flow through the landfill.
- The provision of an LFG control system (Section 2.1.7) that would include collection trenches distributed throughout the waste so that high vacuums at isolated locations (potentially pulling in large volumes of air through a more permeable portion of the MSW/cover material) would not be necessary.
- Continuous operational monitoring of the gas stream being collected to assure that excess air is not being drawn into the system.

If a fire were to start in spite of these precautions, normal operating procedures would be to use the available construction equipment and spread the smoldering materials out near the working face and cover them with soils as necessary. Covering with soil would eliminate oxygen, thereby smothering the burning material and eliminating the potential for an uncontrolled fire. Adjustments might also be made to the gas collection system to avoid the continued influx of air if a fire is suspected inside of the landfill. In addition, several large (e.g., 4,000- to 10,000-gallon) water trucks would be used for landfill operations. These trucks could spray water to extinguish burning areas.

The potential for equipment or truck fires to occur would be small, similar to the potential for fires associated with construction projects or normal highway transportation. If such a fire were to occur it would be extinguished by one of the following procedures:

- Use of water supplied by fire hydrants in the intermodal and operations facilities area. The hydrants would be designed according to Factory Mutual Engineering standards and would be supplied by an on-site 600,000-gallon water tank. The hydrants would be supported by a series of pumps (including diesel in the event of a power outage) that would include sensors to maintain pressure throughout the system.
- By dousing from water trucks used for dust control if the equipment fire were to occur away from the intermodal or operations facilities.

The potential for any fire to spread prior to its being extinguished would be very small due to the lack of development and vegetation in the area and the daily application of cover soil.

Structures, LFG destruction and energy recovery facilities, storage facilities, and other infrastructure would be designed to appropriate standards (e.g., Uniform Building Code, Underwriters Laboratory, Inc.) to minimize the potential for fires and provide safety for workers in the event an accident were to occur. Portable fire extinguishers would be included in every enclosed structure. In addition, fire hydrants would be located near each facility to provide a means of extinguishing any fires which might be started. Personnel who have received fire control training would be scheduled for each working shift.

The chance of lightning striking the landfill or the operations facility and starting a fire would be extremely remote. However, in the event that this were to occur, the resulting fire would be handled using procedures described above. Therefore, impacts would not be significant.

Ore Residue

Concern was expressed in the public scoping process about use of leached-ore residue from the Mesquite Mine for landfill cover materials. Leached-ore residue is the leftover material from the heap-leaching procedures used to extract gold from mined and crushed ore. Heap leaching is a process where a dilute cyanide solution is percolated through ore to dissolve the gold from rock and soil particles. Before leaching, the ore is placed in piles above a low permeability liner to protect ground water quality. After leaching, the ore residue must be tested, and rinsed if necessary, to satisfy requirements established by the RWQCB, before it can be abandoned or used for site construction purposes (see description in Section 1.2.2.1 and analysis in Section 4.1.2.2). At that time, the remaining cyanide concentrations in the ore residue would not pose any threat to water quality or health and safety.

At the permitted residual concentrations, cyanide would not react with moisture used for compaction or in the MSW residue to create gases that could potentially affect site workers or the public. In compliance with requirements of the ICAPCD, Gold Fields evaluated the potential air emission risks of the leach pads (Environmental Solutions, Inc., 1991). That study, including field monitoring, shows that at full leaching operations, cyanide concentrations in the air are below levels that could pose a risk to workers in the immediate vicinity of the leaching operation.

Aircraft Interference Potential

The CMAGR exists to the north of the proposed project area and is used for live ordnance delivery practice by the U.S. Armed Forces. Of prime concern to the U.S. Armed Forces would be control of birds and the blowing of debris from the proposed landfill that could potentially interfere with aircraft operations. Also if concern would be the additional impact to military aircraft safety from nighttime landfill lighting.

Birds could be attracted to the landfill working face area due to the presence of MSW residue, a potential source of food. Birds would not be expected to be present in large numbers because of the remoteness of the site, activities of the working face equipment, and the regular placement of daily cover. In addition, pilots operating in the adjacent area outside of the aerial gunnery range are subject to minimum altitude requirements that would cause them to avoid low-flying birds. Nevertheless, it is possible that increased bird presence due to the proposed landfill could create safety or operational concerns for the pilots. Bird control methods, such as the use of a monofilament line, would be implemented, if necessary, to reduce bird numbers and avoid these potential impacts. Also, the Applicant would be required to conduct raven monitoring to determine if ravens were being attracted to the proposed landfill. If ravens were being attracted, the Applicant would be required to take all reasonable steps necessary to ensure that the proposed landfill would not continue to attract ravens.

Blowing debris would be less likely to affect pilots due to the aircraft altitude operating

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restrictions. However, debris would be controlled in any event as a part of site "housekeeping." Movable litter fences in the working face area, would be placed downwind to catch occasional blown litter. On windy days, operations would be modified, as appropriate. Examples of windy day operating techniques would include:

- Moving the working face to an area of the landfill that is protected from wind.
- Placement of cover materials more frequently.

A complete analysis of landfill night lighting impacts to aircraft pilots using NVDs is provided in Section 4.1.11 (Visual Resources). With mitigation, lighting impacts to pilots would not be significant. Therefore, aircraft interference potential would not be significant.

Contamination of Ground Water

Section 4.1.2. contains an analysis of the potential for the Proposed Action to contaminate ground water. This analysis concludes with a description of mitigation measures that would be incorporated into the design, construction, and operation of the Proposed Action, to protect ground water quality. It is determined that with implementation of these measures impacts to ground water quality and resulting health and safety impacts would not be significant.

Worker Safety

OSHA requires that employers comply with the safety and health standards set by the act to provide each employee with a work site that is free from recognized hazards that are likely to cause death or serious injury. The Labor Department OSHA regulations are published in 29 CFR 1910 under General Industry Standards. Additionally, 40 CFR 241 sets the Guidelines for the Land Disposal of Solid Wastes; Section 241.211 specifies safety requirements to protect the health and safety of personnel associated with the operation of solid waste facilities. The California counterpart to OSHA is Cal OSHA. Title 14, CCR, Chapter 3, lists the minimum Cal OSHA safety standards in California for solid waste facilities and requires that a copy of a Health and Safety Plan be filed with the LEA.

The proposed landfill project would be required to develop procedures to provide employees with a safe workplace as prescribed by OSHA and Cal OSHA. These requirements would be followed closely for on-site activities. Procedures and activities that would be implemented include:

- Health and safety training would be required for all personnel prior to commencement of their work. Regular refresher courses would also be required.
- A well-supplied first aid kit would be available on-site at appropriate locations.
- On-site emergency coordinators would be scheduled on every shift.
- An on-site emergency vehicle would be provided and the existing Mesquite Mine heliport would remain available to the proposed landfill project.
- Personal protective equipment such as hard hats, bright jackets, shirts, overalls or vests, steel-toed shoes, and gloves would be made available, or required, as appropriate.
- As part of maintaining a safe working environment, noise safety equipment such as earplugs would be available, or required, as appropriate. Noise suppression equipment, such as vehicle mufflers would be installed.

In addition, site representatives would receive necessary OSHA training for emergencies and for the safe handling of hazardous materials, as required in connection with inspection of the received MSW residue by disposal operators. Appropriate personal protection gear and monitoring equipment would be maintained on-site for such circumstances.

Sanitation would be handled in the same manner as it is handled at the existing Mesquite Mine, by installing one or more septic tanks and leach fields. These facilities would be separate from the existing Mesquite Mine facilities. The septic tanks would be pumped periodically to keep the system biologically active and in good working condition. The pumped materials would be transported off-site to an appropriate disposal facility.

Potable water would be obtained by treating well water at an on-site water treatment facility. Therefore worker safety impacts would not be significant.

General Landfill Public Safety

An evaluation of general threats the proposed project could potentially have on general public health and safety was also performed. The factors considered include:

- Effects of exposures to fugitive LFG emissions.
- Injury due to unauthorized site entry.
- Flooding due to storm flows crossing SR 78.

Appendix F presents the results of a health risk assessment for fugitive LFG emissions that was prepared to provide technical backup information for obtaining air quality permits from the ICAPCD (see Section 4.1.8). That analysis, which considers potential toxic air contaminants from LFG as well as from other on-site sources such as trucks, trains, etc., shows risks to the public from this source would be far below normal local, state, and federal thresholds.

Unauthorized site entry would be prevented by a 6- to 8-foot high industrial chain link fence.

The landfill drainage system would be designed to assure that storm flow rates at the three SR 78 wash crossings would not exceed design capacities as described in Section 4.1.2.

Additional Public Safety Issues

Potential MSW Container Explosions

A question was raised during one of the public scoping meetings about whether LFG generated in the MSW residue containers during rail delays could result in the potential for an explosion. Appendix F includes a study performed to evaluate the potential for this condition to occur. The study shows that even during delays as long as several days, LFG production in the containers would occur at such small levels that it would not create an explosive hazard. Pressure equalizing vents in the containers would prevent the buildup of any substantial pressure, and the quantity of gas and air in the container could not reach conditions that would be potentially ignitable.

At-Grade Railroad Crossings Safety

A detailed analysis of impacts to at-grade railroad crossings along the proposed rail-haul route is provided in Section 4.1.6, Transportation. This analysis finds that with mitigation, at-grade railroad crossing impacts would not be significant.

Railroad Accidents

Minor railroad accidents, such as one- or two-car derailments with no overturning, would not result in any exposure of MSW residue to the environment, and there would be no adverse health or safety effects. The MSW residue would be contained in metal containers, designed and constructed according to ISO criteria, that would not be ruptured in minor railroad accidents. A container manufacturer was contacted (May, 1993) to determine if containers with removable tops would be any more susceptible to breakage than their permanent top counterparts. The manufacturer indicated that containers with removable tops would be more sturdy in construction to make up for the additional structural support that otherwise would be provided by the permanent top. If used, these containers would be required to have removable tops that can be secured to control odors and

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vectors, and to avoid premature removal during transport. The container manufacturer also indicated that the removable top could be designed to provide substantially the same level of performance as the permanent top container. Also, access to these containers by unauthorized passengers would be difficult.

Substantial derailments, which could cause a container to break open, rarely occur on the rail-haul route. It is appropriate to evaluate the potential effects of such an event, however, since such accidents could potentially occur during the 100-year operating life of the proposed regional landfill.

In general, spillage of the MSW residue would not be expected to create any environmental health or public safety threats. The materials spilled would be generally dry, nonhazardous solids without the potential to create noxious or toxic gases or constituents of hazardous chemicals that could enter surface or ground waters.

Moreover, prior to rail transport, the MSW residue would be sorted at a transfer station/MRF where hazardous materials and liquids would be removed from the waste stream. This would substantially reduce the amount of potentially hazardous materials contained in the MSW residue containers during transport to the landfill.

When spillage does occur in connection with current rail freight, debris scatter tends to be limited, with spillage localized within the railroad ROW. It is anticipated that MSW residue spills, if any, would also stay confined to the immediate track area, and certainly within the ROW. Some blowing of the trash could occur on windy days, which could occasionally cause impacts outside of the SP Main Line ROW. This blowing trash would be picked up by cleanup crews, in accordance with SP's policy to leave the area just as it was prior to any incident (SP, 1993). SP's 24-hour cleanup crew typically responds to accidents quickly, usually within an hour.

Because MSW residue is not hazardous, PUC regulations would not require SP to have special emergency response procedures for spilled MSW residue. For nonhazardous materials, the cleanup operation is coordinated by the district dispatcher based on the needs of the situation. Local emergency response personnel (e.g., police, hospitals, or other emergency response personnel) are called, as appropriate, and the cleanup is accomplished as quickly as possible by railroad crews assisted by local contractors when necessary. The appropriate county emergency response office is called anytime a substantial accident or derailment occurs within their jurisdiction.

In addition to these general clean-up procedures, SP has a staff of environmental engineering personnel that are based in San Francisco and are called anytime a derailment occurs in California that has the potential to have an impact on the environment. These personnel consist of experienced professionals who manage the clean-up, if any, associated with such a derailment. Their clean-up activities include protection of sensitive species in the area, identifying the need for and coordinating the activities of environmental technical contractors or specialists (e.g., biologists, remediation professionals), developing and implementing mitigation measures for any damage to the environment, and working closely with responsible agencies e.g., county emergency service teams and other local, State, and federal officials as appropriate. SP's environmental engineering personnel can be at the site of a derailment within three to four hours.

Response activities vary depending upon site-specific conditions. The standard activities for any derailment accompanied by a spill are to contain and remove the spilled material as quickly as possible. Examples of response activities that have occurred in the past include:

- Use of temporary fencing to prevent access to a derailment area by the public and certain wildlife, and to help contain blowing debris.

- Use of netting to cover loose material that has spilled (e.g., small pellets capable of blowing around).
- Trapping and temporarily removing sensitive species until it is safe for their return.

Response times for SP personnel also vary. On the route that would be used for the proposed Mesquite Landfill (e.g., between central Los Angeles and Glamis), initial SP personnel would be expected to arrive at the site of a derailment within one hour to make a preliminary assessment of the situation. If heavy equipment is needed to lift overturned railcars, the equipment likely would come by rail from either of the permanent maintenance yards that exist at West Colton and Yuma.

These locations are about 200 miles apart. If an accident were to occur exactly between these locations, the heavy equipment would have to travel approximately 100 miles to the derailment and, therefore, would be expected to arrive in about 3 hours.

For trains carrying MSW residue to the Mesquite Regional Landfill, the dispatcher would coordinate the cleanup operation as described above and would also promptly contact the Applicant to determine the appropriate procedures for temporarily containing spilled materials and arrange for its disposal at appropriate landfills. The Applicant proposes to have its own cleanup crew available to respond 24-hours a day to assist railroad and local response personnel, as needed, in containing spilled MSW residue. This additional assistance has been proposed in response to concerns raised by the public and by the BLM and County of Imperial regarding the need for quick containment of spilled MSW residue in sensitive areas such as Salt Creek (desert pupfish habitat), irrigation canals, and windy desert areas. The Applicant would also provide the railroad and the landfill site management personnel with the MSW Residue Contingency Plan provided in Table 4-26. This Plan would not direct basic railroad response procedures but would provide the basis for the railroad and the Applicant to appropriately respond to a MSW residue spill. For all of the above reasons, the potential health and safety impacts of railroad accidents along the rail-haul route would not be significant.

Truck Transport Safety

The proposed landfill would accept MSW residue generated in Imperial County if desired by the local communities. If this were to occur, MSW residue generation volumes in Imperial County of up to approximately 600 tons per day would result in up to approximately 30 local MSW transfer trucks (60 trips) traveling to the landfill each day with approximately 25 tons each of waste.

The added traffic would not be significant with respect to normal existing trips (approximately 1,250 per day), or the estimated 50,000 to 60,000 trip capacity of the highway (see Section 4.1.6.2). Any additional traffic could contribute to existing safety issues that occur at the ISDRA during weekend periods from October 1st through May 31st each year. This potential impact would be avoided by restricting delivery of local MSW delivery truck traffic from occurring within the period starting the afternoon before, and ending the morning after, winter weekends from October 1st through May 31st each year.

Although not anticipated to ever occur, it is possible that, in the event of an extended rail delay, MSW residue containers could be hauled to the proposed regional landfill by trucks. The number of trucks would vary depending on the rate of disposal and the length of delay. The maximum number of truck trips could be 1,600 per day for a disposal rate of 20,000 tpd. The proposed trucking route from the Los Angeles Basin would be as follows: I-5 south to I-805 south, east on I-8, north on SR 111, and east on SR 78 to the proposed landfill site. Use of this procedure for anything greater than a short period would create substantial impacts on the infrastructure along the proposed trucking route. The safety aspects of this condition would

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TABLE 4-26

MSW Residue Spillage Contingency Plan Spillage Contingency Plan for Railroad and Canal Operators

Proposed Mesquite Regional Landfill

In addition to utilization of accident response procedures and, in cooperation with the appropriate emergency response authorities, do the following:

A. INSPECT the train to determine the condition of the MSW containers. Note how many MSW residue containers have been punctured or breached, if any.

B. NOTIFY Arid Operations Inc. as soon as possible after completion of inspection (phone #). Provide the following information:
   1. Your name and title.
   2. Train identification symbol.
   3. Specific location of the incident (station, milepost location, nearest street or highway crossing).
   4. Number of cars and MSW containers involved.
   5. Identification numbers of MSW containers involved.
   6. Condition of each affected MSW container upright or turned over; intact, punctured, or spilling.
   7. Location of nearby people and/or private property.
   8. Location of nearest surface water.
   9. Location of access roads.
   10 Local weather conditions.
   11. Any other information that will help Arid Operations Inc. understand the situation.

C. IF MSW residue has escaped from any container and Arid Operations Inc. cannot be reached, call AOI's 24-hour MSW cleanup contractor (name(s), phone #). Also call the following County Department of Health Services:
   1. In Los Angeles County (name, phone #).
   2. In Riverside County (name, phone #).
   3. In Imperial County (name, phone #).

D. CONTROL access to the area and secure areas that may be sensitive to introduction of MSW residue or cleanup crews (e.g., Salt Creek, irrigation canals, etc.). Attempt to pick up debris, if any, that could potentially be blown into these potentially sensitive areas. Prevent access by public to these potentially sensitive areas.

Source: Environmental Solutions, Inc., 1993.

not be significant, only because of its remote potential to occur and its short duration. To minimize the small safety effects and inconveniences associated with such an event the Applicant would require that such truck traffic avoid narrow roads in population centers to the extent possible (see Section 4.1.6.2).

Offered Exchange Parcels

No activities are planned for the BLM exchange properties. Therefore, there would be no health and safety impacts associated with those properties.

4.1.12.3 Mitigation Measures

Proposed Landfill Site

Incorporated By Regulation

The Applicant shall incorporate the following environmental health and public safety protection measures required by local, State, or federal regulations into the proposed landfill design and operation.

- The landfill shall receive only MSW (Class III) waste as defined in CCR Titles 14 and 23 that has undergone HHW screening, except that agricultural plant material may be accepted to provide project-related air emission offsets.
- Vectors shall be controlled by the placement of daily cover, in accordance with requirements of CCR Title 14 and a Facilities Permit to be obtained from the Imperial County Department of Health Services (LEA).
- Fire hydrants shall be designed and constructed according to Factory Mutual Engineering Standards.
- Structures shall be designed and constructed according to appropriate standards (e.g., Uniform Building Code, Underwriters Laboratory, Inc.).
- Prior to its use as landfill cover material, ore residue from the Mesquite Mine shall be tested and rinsed, if necessary, to assure that cyanide concentrations are below standards established by the RWQCB.
- The landfill shall be constructed above a liner and leachate collection system acceptable to the RWQCB.
- LFG emissions shall be controlled as required by the ICAPCD.
- The landfill operation shall abide by appropriate OSHA and Cal OSHA worker safety regulations.

Incorporated By Project Design

The Applicant shall incorporate the following environmental health and public safety protection features into the proposed landfill design, construction, and operation.

- All landfill employees with access to MSW residue shall be trained to identify hazardous wastes that could potentially be in MSW residue emptied from the containers.
- A safe location for temporarily storing hazardous materials removed from the MSW residue shall be provided at the landfill site (see Figure 2-8). A description of this area is provided in Section 2.1.4.8 of this EIS/EIR.
- Areas of exposed MSW residue at the proposed landfill (working faces) shall be maintained as small as practical (less than 0.5 acres per working face) to minimize the potential for the landfill to become a bird attraction. If necessary, special bird control methods (e.g., monofilament lines) shall be implemented.

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- Movable fencing shall be provided when necessary to prevent excessive blowing of trash. On high wind days, the operation shall be restricted to special locations protected from wind by higher portions of the landfill.
- Well-equipped first aid kits shall be available at appropriate on-site locations.
- Designated Emergency Coordinators shall be on-site for all operating shifts.
- An emergency vehicle shall be maintained on-site for transporting employees suffering from injuries or illness to medical facilities.
- The existing Mesquite Mine helipad shall be maintained for medical emergencies.
- Drainage control facilities shall be designed to avoid increases in peak flows at SR 78 wash crossings based on design criteria established by Caltrans in connection with the highway relocation.
- Appropriate at-grade railroad crossing signs shall be provided along the new spur.
- The Applicant shall prepare an MSW Residue Contingency Plan as outlined in Table 4-26 and provide this plan to the LEA and SP.
- The Applicant shall have a cleanup crew available to respond 24 hours a day to assist railroad and local response personnel, as needed, in containing spilled MSW residue.
- The Applicant shall provide funding to improve at-grade railroad crossings as described in Section 4.1.6 of this EIS/EIR.

Incorporated To Avoid Potential Significant Impacts

There would be no potential for significant environmental health and safety impacts after mitigations required by regulations or incorporated into the project design are implemented.

Offered Exchange Parcels

Since there would be no health and safety impacts from the proposed land exchange, no mitigation measures are needed.

4.1.12.4 Level of Significance After Mitigation

Based on regulatory requirements and mitigation measures that would be incorporated into the project design, potential effects of the proposed landfill would be mitigated so that no significant environmental health and safety impact would occur.

4.1.13 SOCIOECONOMICS

4.1.13.1 Assumptions and Assessment Guidelines

Socioeconomic impacts derive primarily from changes in the existing makeup of a community. Impacts such as a change in the age, ethnicity, or income distribution of an area may affect the community either negatively or positively. For the purposes of this EIS/EIR, an adverse significant socioeconomic impact is defined as follows:

- A one percent decrease in employment with the County
- A one percent decrease in the wage and salary earnings in the County
- A one percent decrease in the average wage and salary earnings per job in the County
- An increase in the County's expenditure to revenue ratio.

The following assumptions have been used in completing this socioeconomic analysis:

- At least 50 percent of the labor necessary to construct and operate the proposed landfill would be hired from the local labor force. It has been demonstrated at the Mesquite Gold Mine that Imperial County workers can provide a reliable workforce for projects in this area.
- Immigrating workers would have demographic characteristics similar to demographic characteristics for the State of California.
- The Applicant would pay workers a wage that is comparable to the average wages paid at the Mesquite Gold Mine for comparable work. At this time, the expected average wage for full-time landfill workers would be approximately $30,000 per year (in first quarter 1992 dollars).
- The Applicant would pay a "host fee" to the County of Imperial. The host fee would be based on fees negotiated with the County. A portion of the host fee may be allocated to the cities of Imperial County.
- Historical monetary values are in then-year dollars, current and future dollar values are in 1992 dollars.
- Project-related employees and the Applicant would pay all applicable currently-mandated fees and taxes and the level of Intergovernmental Transfers (e.g., County share of sales tax revenues) would not be adversely affected by this project.
- A regionalized Input/Output Model (Imperial County Model) of the economy of the United States will reasonably predict the secondary employment effects of the proposed project.
- 1.29 secondary jobs would employ one unemployed person (1.29 is the average number of jobs per worker in Imperial County). Of these jobs, 91.5 percent would be enlisting Imperial County residents and 8.5 percent would be from neighboring areas.
- Secondary employment and income effects likely are understated because the following inputs have not been included in the analysis:
  - Workers that move to Imperial County;
  - Secondary project-related jobs created in neighboring counties may be filled by Imperial County residents;
  - Employee benefits; and
  - Property income.

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- On average, persons who fill secondary jobs created by the proposed project would be paid the average wage for Imperial County for nonagricultural jobs (i.e., $23,011.59 in 1992 dollars).

4.1.13.2 Impacts of the Proposed Action

Proposed Landfill Site

Employment and Income

As described in Chapter 2 and shown in Table 4-27, it is expected that up to 268 persons would be directly employed by the proposed landfill during peak operations. Prior to project start up, approximately 150 construction workers would be hired for a period of approximately 10 months to construct the various facilities including the rail spur, intermodal, access roads, base liner and leachate collection system, drainage facilities, buildings, utilities, fencing, and monitoring system. Table 4-27 presents project-related direct and secondary employment by sector.

Approximately 12,975 workers were unemployed in Imperial County in June 1993 (EDD, 1993). Many of these workers are agricultural workers. However, based on the past experience at the Mesquite Mine, the unemployed labor pool in Imperial County is more than adequate to fill the majority of project-related jobs.

Assuming that at least 50 percent of the projected direct workers and 91.5 percent of the secondary workers (whose jobs would be created by project-related purchases of goods and services in Imperial County) would be local hires and assuming the County average of 1.29 jobs per worker for secondary workers and one job per worker for direct workers, almost 700 County residents would be employed directly or indirectly by the proposed project during the peak construction year.

Approximately 200 local residents would be employed directly or indirectly during long-term operations (years 8 to 100) (Table 4-28). The expected increase in local hiring would reduce Imperial County's unemployment rate. Using 1993 civilian labor force and unemployment data, long-term hiring would reduce the unemployment rate by an estimated 0.4 percentage points from 24.2 percent to 23.8 percent.

During the first year of construction, the unemployment rate would temporarily decrease by approximately 1.3 percentage points from 24.2 percent to 22.9 percent.

Project-related yearly direct earnings of Imperial County residents would amount to approximately $4.0 million for long term operations and $1.9 million for initial construction (Table 4-28). Yearly secondary earnings of Imperial County Residents would amount to $1.38 million for long-term operations and $14.57 million for initial construction (Table 4-28). The total projected long-term increase in earnings associated with the proposed landfill would be approximately $9.5 million, 5.38 million of which would accrue to Imperial County Residents. Because project-related direct wages of $30,000 per year for operations workers would exceed the average wages per job paid in Imperial County, the average earnings for wage and salary jobs would be increased. This would be a beneficial effect of the proposed project. (Average wages paid to secondary workers are expected to be about 30 percent less than the average wage paid to direct workers.)

Over the initial 20 years of the project, over a quarter of a billion dollars would flow through the economy in the form of direct employee payroll and benefit payments from the proposed Mesquite Regional Landfill, if it operates as described in Chapter 2.0 of this EIS/EIR. Well over a half a billion dollars would be expended on the proposed landfill over the first twenty years of its proposed life. Major expenditure items would include purchases of goods and services, construction costs, equipment, financing, and of course, payroll and benefits. A substantial portion of these expenditures would remain in

TABLE 4-27

Project-Related Direct Workers and Secondary Workers from Project-Related Purchases of Goods and Services in Imperial County

Proposed Mesquite Regional Landfill

Employment Category	Initial Construction (Peak Employment)	Long-Term Operations
Imperial County Residents		
Direct Workers	75	134
Secondary Workers	602	60
Subtotal Imperial County	677	194
Residents of Other Counties		
Direct Workers	75	134
Secondary Workers	59	5
Subtotal Other Counties	134	139
Total Workers		
Direct Workers	150	268
Secondary Workers	658	65
Total	808	333

Source: Environmental Solutions, Inc., 1992; The Butler Roach Group, 1993.

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TABLE 4-28

Estimated Project-Related Earnings from Direct Payrolls and Secondary Jobs Created by Purchases of Goods and Services in Imperial County

Proposed Mesquite Regional Landfill

Employment Category	Construction	20,000 Tons/Day
Earnings (Millions 1992$)		
Imperial County Residents		
Direct	$ 1.90	$ 4.00
Secondary	14.57	1.38
Subtotal Imperial County	$16.47	$ 5.38
Residents of Other Counties		
Direct	$ 1.90	$ 4.00
Secondary	1.36	0.12
Subtotal Other Counties	$ 3.26	$ 4.12
Total Earnings		
Direct	$ 3.80	$ 8.00
Secondary	15.93	1.50
Total	$19.73	$ 9.50

Source: The Butler Roach Group, Inc., 1993.

the local economy. The rest would flow to major equipment sales and manufacturing centers.

Implementation of optional energy recovery facilities on-site would increase the economic benefits to Imperial County. Of the optional energy recovery facilities considered in this EIS/EIR, the boiler/generator based power plant would have the potential to create the greatest employment and income benefits. Table 4-29 summarizes these benefits for a power plant of up to 50 megawatts. Total employment and earnings would be approximately 110 percent of the employment and earning forecast for the Proposed Action without a generator. Smaller employment and income benefits would occur if a smaller generator or other energy recovery option were used.

Demographics

As described in the previous section, long-term, project-related immigration to Imperial County would be caused by the hiring of workers from outside of Imperial County. Short-term effects would occur during construction. Demographic effects would be small and therefore, not noticeable.

It is anticipated that the proposed project would result in a very small net inmigration to Imperial County. Therefore, the project would not have a significant effect on population.

Imperial County Revenues and Expenditures

Revenues. Imperial County would receive both direct and secondary revenue from the Proposed Action. It is not possible to accurately predict the extent of all revenues and expenditures. The following analysis describes the likely sources of revenues and expenditures.

The County would generate revenues through its normal revenue sources described previously in Chapter 3.0. Specifically, the County would receive revenue from the following sources:

- Total Taxes - This includes property, income, utility, and sales tax revenues.
- Charges for Current Service - This would include all charges related to landfill permitting and inspections that would be paid by the Applicant. Also included would be charges that would be paid by landfill-related workers for their own private projects (e.g., building permits to add a new room to their private residence).
- Licenses and Permits - This would include the cost of business licenses and operating permits.
- Host Fees (sometimes called import fees).

In addition to normal County revenue sources, a host fee would be paid to the County on a per ton basis. For example, if a dollar in host fee were paid for each ton of MSW deposited at the landfill, and if the landfill were to operate at tonnage rates discussed in Chapter 2 of this EIS/EIR, Imperial County could receive in excess of $100 million during the first 20 years of operation. An additional $100 million would be paid for each $1.00 increase in the per ton host fee.

If the tonnage rate differs from that shown in the EIS/EIR--for example, if the tonnage were reduced--the total dollars paid through the host fee would be changed accordingly.

Expenditures. Project-related County costs would include expenditures for activities by the following County functions:

Permitting and Monitoring

Public Services

The County recovers the cost of the various process-related costs, such as inspections and permitting, through fees described in Chapter 3.0. As is described in Section 4.1.14, Public Services and Utilities, it is not expected that County services would be significantly impacted

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TABLE 4-29

Estimated Employment and Income From Direct Payrolls and Purchases of Goods and Services in Imperial County to Operate a Boiler/Generator Based Power Plant of up to 50 megawatts.

Proposed Mesquite Regional Landfill Project

	Employment (Place of Residence)	Income (Million of 1992 Dollars)
Imperial County		
Direct Employment/Earnings	14	$0.41
Secondary Employment/Earnings	6	$0.12
Subtotal Imperial County	20	$0.53
Other Counties		
Direct Employment/Earnings	13	$0.39
Secondary Employment/Earnings	2	$0.04
Subtotal Other Counties	15	$0.43
TOTAL EMPLOYMENT/EARNINGS		
Direct Employment/Earnings	27	$0.80
Secondary Employment/Earnings	8	$0.16
TOTAL	35	$0.96

Note: Employment and income estimates were calculated using the same methodology and assumptions applied to the proposed landfill operations.

Source: The Butler Roach Group, 1993.

by the proposed project. Therefore, it is expected that County costs would be covered by the aforementioned County revenue sources.

The question of financial liability was raised at the El Centro and Indio Public Scoping Meetings. The specific question asked was, who would be responsible for landfill maintenance after closure and who would be responsible for clean up in the event of a landfill-related leak. As required by law, 40 CFR Subpart 6, Financial Assurance Criteria (effective April 4, 1994), the Applicant would prepare a initial estimate of the closure and post closure maintenance costs, and corrective action costs, for the proposed landfill. This estimate would be submitted to the CIWMB for approval. The Applicant would then establish a trust fund, or equivalent financial arrangement acceptable under the prevailing financial assurance requirements, prior to the issuance of a Solid Waste Facilities Permit.

Property Values Along the Rail-Haul Route

As discussed in Chapter 3.0, the existing SP Main Line has been in service since 1877. The majority of residential and otherwise sensitive land uses along the SP Main Line have come under new ownership since the SP Main Line began operation. Because the presence of a railroad is known to potential land buyers, property value effects of the railroad were considered by the land buyer in determining the purchase price.

The trains that would haul MSW residue to the proposed landfill would be very similar to existing trains that use the SP Main Line. The MSW residue is by definition, non-hazardous, and therefore, less dangerous than the existing hazardous materials that are hauled on the SP Main Line. Methane gas and liquefied methane gas could be produced at the proposed landfill site if a compressed methane gas plant or liquefied methane gas plant were to be constructed. If these materials were transported off-site, the tanker cars used would meet all applicable regulations. Compressed gases and liquefied natural gas are currently transported along the SP Main Line. Therefore, the proposed project would not impact property values along the existing SP Main Line.

4.1.13.3 Mitigation Measures

Proposed Landfill Site

Mitigation Measures Incorporated by Regulation

The Applicant shall, as required by 40 CFR Subpart 6, prepare an initial estimate of the closure and post closure maintenance and corrective action costs. A trust fund or equivalent financial arrangement shall then be established and maintained that is acceptable to the CIWMB.

Mitigation Measures Incorporated by Design

None required.

Property Values Along the Rail-Haul Route

The mitigation measures identified in the Noise, Transportation, and Environmental Health, and Public Safety Sections of this EIS/EIR, as required to mitigate rail haul impacts, shall be implemented to ensure that impacts to property values along the SP Main Line would not be significant.

4.1.13.4 Level of Significance After Mitigation

Proposed Landfill Site

Implementation of the proposed project would result in beneficial socioeconomic impacts.

Property Values Along the Rail-Haul Route

Property values would not be significantly affected by the proposed project.

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4.1.14 PUBLIC SERVICES AND UTILITIES

4.1.14.1 Assumptions and Assessment Guidelines

The following impact analysis considers the effects the proposed project would have on the existing public services provided in Imperial County, and the utilities currently available at the Mesquite Mine. Public service and utilities impacts would be considered significant if existing or proposed facilities would be insufficient to provide for the needs of the proposed project.

4.1.14.2 Impacts of the Proposed Action

Public Services

Police, Fire Protection and Medical Services

Landfill construction and operations activities would involve the handling and use of heavy equipment and hazardous materials (e.g., motor oil and gasoline), and create the potential for occasional work-related injuries requiring medical attention. The Applicant would be required to develop procedures to provide employees with a safe workplace. Procedures and activities would include:

- Health and safety training would be required for all personnel prior to commencement of their work. Regular refresher courses would also be required.
- A well-supplied first aid kit would be available on-site at appropriate locations.
- On-site emergency coordinators would be scheduled on every shift.
- An on-site emergency vehicle would be provided and the Mesquite Mine heliport would remain available to the landfill project.
- Personal protective equipment such as hard hats, bright jackets, shirts, overalls or vests, steel-toed shoes, and gloves would be made available, or required, as appropriate.
- Noise suppression equipment, such as vehicle mufflers would be installed on on-site equipment.

The Applicant would provide a security force, and fire fighting systems that would adequately meet the requirements of the Proposed Action. As described in Section 4.1.13, Environmental Health and Public Safety, fires would be extinguished using on-site equipment and personnel. Imperial County fire fighting equipment personnel would not be affected.

Additional services would be available in Brawley, about 35 miles west of the site, and could be called upon in unusual emergencies (e.g., ambulance transport services). Consequently, the potential impacts related to availability of police, fire, and medical services would not be significant.

Community Facilities

Some increase in demand for community facilities could occur as a result of the Proposed Action though the demand would not be substantial. Such an increase would be generated by non-local construction and operations personnel and their families coming into the area on either a temporary or permanent basis.

The socioeconomic section identifies that some inmigration could occur if out-of-county workers are employed by the Applicant. However, the expected maximum number of out-of-county, direct workers (i.e., those workers that are most likely to move with their families as a result of project-related employment) would be at most 134. Assuming an average household size of 2.79 persons a maximum of about 375 persons (approximately 0.034 percent of existing (1990) population), including approximately 70 school-age children (approximately 0.025 percent of existing (1990) school-age children), would move to Imperial County as a result of the proposed project. The net effect inmigration to

Imperial County community facilities would not be significant.

Schools, Parks, Recreational Facilities, and Libraries

Landfill employees and their families would use schools, recreational facilities and libraries located within the vicinity of their residences. The demand for schools, parks, recreational facilities, and libraries would increase by less than 0.034 percent within Imperial County due to the small project-related inmigration described above. Also, it is likely that project-related inmigrants would move to different communities, thereby dispersing the impacts to any given service provider.

Solid Waste Facilities

Very little solid waste would be generated by the proposed project. These small volumes would be handled by the following procedures:

- Typical Class III wastes would be disposed in the proposed landfill along with other arriving MSW residue.
- Waste oils, solvents, oil filters, etc., would be recycled through licensed off-site recyclers, if practical, or disposed of at an appropriately permitted facility.
- Hazardous wastes generated on-site or removed from the MSW residue that would be delivered to the proposed landfill, if any, would be transported off-site in accordance with applicable State and federal laws, to an approved disposal facility.

The volume of waste oils, solvents, and hazardous wastes that would have to be recycled or disposed of would be negligible considering the quantities of these wastes that are generated in Southern California. Also, similar quantities of these wastes would be generated regardless of the landfill site that disposes of the MSW residue. Therefore, similar quantities of these wastes would be recycled or disposed of regardless of whether the Proposed Action is implemented.

Used tires would be disposed within the landfill in accordance with applicable laws. Impacts would not be significant.

Utilities

Power or Natural Gas Use

As described in Chapter 2.0 of the EIS/EIR, electricity would be the primary source of non-mobile power for proposed landfill operations. Most power usage would be for pumping of water, operation of the LFG control system, and nighttime lighting in the intermodal area and along the road to and at the proposed landfill working face. Other operations and maintenance activities would require minor amounts of electricity. Electrical power needs for the proposed landfill would be obtained from the existing IID 92 kV power line and substation at the Mesquite Mine. An extension from the existing IID line would be built to a new substation located near the proposed intermodal facilities. Standby generators fueled by LFG, methane, or imported fuel such as diesel, would be available to provide power for essential facilities in the event of power outages. In the future, if an energy recovery system is constructed, electrical power may be generated to support power requirements of the proposed landfill and related facilities, and the surplus would be a saleable commodity.

There are no natural gas lines in the vicinity of the Mesquite Regional Landfill project site. Bottled gas is available from local distributors Impacts to electric or natural gas supplies or purveyors would not be significant.

Communications Systems

Telephone service is currently provided at the Mesquite Mine via an existing microwave station. Additional equipment, in the form of an additional microwave station or satellite ground station, would be added to the site as needed. No

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underground or overhead wires or cables would be required, Therefore, impacts to communication systems would not be significant.

Water Supply

Chapter 2.0 provides examples of water uses at the proposed landfill. These include:

- Container/truck washing
- Dust control.
- Compaction of soils.
- Conditioning of the MSW for a pilot program, and for LFG enhancement if implemented.

This water would be obtained from the existing Mesquite Mine well field. The combination of Mesquite Mine and proposed landfill water use would not exceed the existing maximum permitted annual well field withdrawal rate of 4,033 acre feet per year (Section 4.1.2). A water pipeline currently extends from the well field to the Mesquite Mine. An extension to that pipeline would be built to bring water to storage tanks located in the operations and maintenance facilities area near the intermodal. From these storage tanks, water would be transferred by truck or ancillary pipelines to various project locations, as needed. Impacts would not be significant.

Sanitation

As described in Section 2.1.14, sanitation would be handled with the installation of one or more septic tanks and leach fields. The septic tanks would be pumped periodically to keep the system biologically active and in good working condition. Pumped materials would be transported off-site to an appropriate disposal facility. The amount of material pumped each year would be negligible compared to the existing disposal capacity in Imperial County. Thus impacts to sanitation facilities would not be significant.

Precipitation Drainage

As described in the Water Resources section of this EIS/EIR (Section 4.1.2), storm water diverted around the landfill, and runoff directly from the facility, would be directed to the three existing SR 78 wash crossings. The most important diversion channel would be that located along the north and west sides of the landfill. That channel would receive the largest flow through the mining area, originating from washes extending into the Chocolate Mountains. The proposed rail spur is aligned to be parallel to existing runoff patterns and therefore would not require any major diversion facilities. Proposed drainage facilities would not increase the risk of downstream flooding or cause flood velocities or volumes that would cause the washout of downstream facilities or infrastructure. Therefore, impacts would not be significant.

Offered Exchange Parcels

Public services and utilities would not be provided at the proposed exchange lands in the SRMNSA and near the Chuckwalla Bench ACEC because these areas would remain as open space.

4.1.14.3 Mitigation Measures

Incorporated by Regulation

- The Applicant shall recycle or dispose of all regulated Proposed Action-generated wastes and HHW removed for the MSW residue received at the proposed landfill according to all applicable regulations.
- The Applicant shall supply all OSHA- and Cal OSHA-required training, supplies, and equipment.
- The Applicant shall provide precipitation drainage facilities as described by Section 4.1.2 of this EIS/EIR.

Incorporated Into Project Design

- The Applicant shall dispose of all Proposed Action-generated MSW at the proposed landfill.
- The Applicant shall provide on-site security, fire protection services, and medical services.

4.1.14.4 Level of Significance After Mitigation

With the implementation of required mitigation measures, impacts would not be significant.

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4.1.15 ENERGY CONSUMPTION/ CONSERVATION

4.1.15.1 Assumptions and Assessment Guidelines

This section evaluates the potential impacts to energy resources that could result from the Proposed Action. Primary energy consumption of the Proposed Action would be gasoline and diesel fuel for landfill equipment and rail haul. Electricity would be used for lighting in the intermodal and working face areas and for on-site roads. The landfill operations and maintenance structures would also require electricity. For these reasons, electricity and diesel fuel are the energy resources that are considered in this analysis. An impact by the proposed landfill to an energy resource would be significant if it would restrict usage of the resource by others. In addition, significant impacts to energy resources would also occur if the proposed landfill would encourage activities that would result in the use of large amounts of fuel, water, or energy, or use fuel, water, or energy in a wasteful manner.

In the future, commercial quality methane could be developed for sale at off-site markets. Alternative fuels (e.g., liquefied natural gas) could also be used to supplement or replace on-site diesel fuel requirements for certain landfill equipment. Use of these alternatives would depend upon LFG generation rates, technological developments, economic feasibility, and selection of energy conversion techniques. The results of a preliminary evaluation of the electricity creation potential of the landfill based on LFG production are provided below. A description of potential commercial methane gas or liquefied methane gas production is provided in Section 2.1.6.

4.1.15.2 Impacts of the Proposed Action

The following discussion of impacts includes energy use on-site, energy use to haul MSW residue on the proposed rail spur and existing SP Main Line, and energy use to haul MSW residue to the LATC intermodal and load containers onto trains. Initial construction-related energy use would be negligible compared to yearly operational uses.

Electricity

The primary use of electrical power on-site would be the following:

- Intermodal and landfill lighting.
- Heating, ventilating, and air conditioning for the various operations and maintenance structures.
- Well pumps.
- Water reclamation plant.

Additional electricity use would be required for general lighting of on-site roads and storage areas. Preliminary design activities have determined that approximately three megawatts of power would be required for on-site electricity at peak operations. Table 4-30 shows the daily and annual electricity use for the Proposed Action. Power for the proposed landfill would be obtained through an extension of the existing IID line that serves the Mesquite Mine. The IID power line and substation connect with a U.S. Department of Energy (US DOE) power line that passes approximately four miles east of the mine. Preliminary discussions with IID have determined that existing capacity is available to provide three megawatts of power to the proposed landfill. As a result, use of electricity would not significantly impact electrical resources in the area.

It is possible that on-site generation of electricity would supplement power provided by IID if LFG production rates in the proposed landfill become large enough for energy conversion. LFG generation rates would depend primarily upon moisture content within the landfill. After transfer station compaction procedures, it is anticipated that moisture content of MSW residue would be low (no more than 23 percent). At this moisture level, approximately 53 kW-hours of electricity per ton of MSW residue could be

TABLE 4-30

Estimated Energy Requirements of the Proposed Action

Proposed Mesquite Regional Landfill

	Proposed Action			
	Approximate megawatts of electricity required		Approximate gallons of diesel fuel/ gasoline required	
	Daily	Annual	Daily	Annual
On-site energy requirements				
Energy usage (i.e., landfill equipment and lighting)	3	912	9,300 (1)	2,827,200 (1)
Off-site mobile energy requirements				
Rail haul fuel usage (2)	N/A	N/A	20,000	6,080,000
Truck transfer fuel usage (2)	N/A	N/A	5,120	1,556,480
Subtotal off-site requirements	N/A	N/A	25,120	7,636,480
TOTAL	3	912	34,420	10,463,680

Notes: This table is based on a disposal rate of 20,000 tons per day of the Proposed Project, with a 304 day per year operation period.
(1) Primary energy usage would be gasoline.
(2) Entire energy usage would be diesel.
(3) Energy requirements for employee commutes would be negligible.

Source: Environmental Solutions, Inc., 1993.

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generated (assuming 80 percent LFG collection) which could produce about 40 to 50 megawatts per day of electricity.

If the pilot program for LFG enhancement is successful and increased LFG rates could be sustained in an environmentally safe manner, approximately 123-kW hours per ton of MSW residue could be generated, which could produce about 100 megawatts per day of electricity. Energy generated on-site would be used to power landfill facility structures. The excess could be sold to IID by transfer through the on-site extension line.

A 50-megawatt or larger power plant is not addressed in this EIS/EIR because such a facility is not reasonably anticipated at this time. Should a 50-megawatt or larger power plant be proposed in the future, a new County CUP and permits from the California Energy Commission and other regulatory agencies would be required. Supplemental environmental reviews would also be required.

Fuel Usage

Table 2-2 contains a list of anticipated equipment for the landfill. This equipment would primarily be powered by diesel engines (some of the maintenance trucks could be gasoline powered vehicles). Preliminary design activities have determined that approximately 9,300 gallons per day (gpd) of fuel would be required to run on-site equipment (Table 4-30).

Off-site mobile energy requirements would be higher for the Proposed Action. The Proposed Action would require 25,120 gpd of fuel. Adequate fuel sources exist in the region for industrial uses based on Mesquite Mine experience. The additional 7,120 gpd of diesel fuel that would be used by the Proposed Action, as compared to the No Action Alternative (Section 4.2.15), would not be wasteful because the Proposed Action is in conformance with the SCAQMD 1991 AQMP Measure No. A-D-1, Out of Basin Transport of Biodegradable Solid Waste.

As a result, this expected usage would not be significant.

4.1.15.3 Mitigation Measures

Impacts would not be significant, therefore, no mitigation would be required.

4.1.15.4 Level of Significance After Mitigation

Impacts would not be significant, therefore, no mitigation would be required.

4.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed Mesquite Regional Landfill would not be approved for development. The BLM would not complete the proposed land exchange or grant the ROWs requested by the Applicant. The County of Imperial would not issue the CUP or other permits listed in Table 1-2 that would authorize the development of the proposed regional landfill.

4.2.1 GEOLOGY/SOILS/MINERAL RESOURCES

For the No Action Alternative, the proposed regional landfill would not be constructed at the Mesquite Mine property. Ground resources within a portion of the landfill footprint would not be used for this purpose. The overburden piles and ore residue from the mining activities would be left in place upon completion of mining. Clay resources in the overburden piles or mining areas would not be used to construct the proposed liner and final cover. The availability of on-site saleable sand and gravel would continue under this alternative.

4.2.2 WATER RESOURCES

For the No Action Alternative, the estimated 1,000 to 4,033 acre-feet per year of water from the existing Mesquite Mine Well Field would not be used during 100 years for landfilling activities. This would reduce the use of ground water stored within the Amos-Ogilby ground water basin.

Alternative landfills for disposal of the MSW residue would require similar quantities of water. The impacts of water use at those sites and the risk of adverse surface or ground water quality impacts cannot be reasonably predicted.

4.2.3 BIOLOGICAL RESOURCES

For the No Action Alternative, there would be no additional impacts to vegetation or wildlife at the proposed site. The land exchange would not occur and BLM would not gain ownership of offered exchange parcels that contain designated desert tortoise critical habitat and scenic resource values.

With implementation of the No Action Alternative, siting of other MSW residue landfills at different locations would be necessary. The biological impacts of the No Action Alternative cannot be reasonably predicted at this time.

4.2.4 CULTURAL RESOURCES

If the No Action Alternative were implemented, there would not be a regional landfill on the site of the Mesquite Mine and the identified cultural resources within the proposed project boundary would not be disturbed. Impacts to cultural resources of alternative landfills that would receive the waste stream that would have gone to the proposed Mesquite Regional Landfill cannot be predicted at this time.

4.2.5 PALEONTOLOGICAL RESOURCES

No paleontological resources exist at the proposed site. Impacts to paleontological resources from the No Action Alternative cannot be predicted a this time.

4.2.6 TRANSPORTATION

Implementation of the No Action Alternative would mean that no landfill-related highway traffic would occur in the proposed project area. Rail haul of MSW residue to the proposed landfill also would not occur. Instead, the MSW residue would be sent to other locations, possibly in the coastal areas (e.g., Los Angeles Basin) or to other regional landfills.

For other regional landfills, rail transportation impacts would be similar to those of the Proposed Action. For new landfills in the coastal areas, the impacts would be associated primarily with increased transfer trucks hauling the MSW residue longer distances to more remote sites away from population centers. Considering a 20-ton average capacity for transfer trucks, 2,000 truck trips (1,000 each way) would be required,

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for a distance of at least 45 miles (each way), based on the location of the proposed Sunshine and Elsmere landfills. It is likely that with time the trucking distance would increase as more remote locations are developed to provide additional landfill capacity for coastal areas. The significance of the added truck traffic would depend on specific site locations, routes used, and mitigation measures. Transportation impacts of the No Action Alternative cannot be reasonably predicted at this time.

4.2.7 NOISE

If the No Action Alternative were implemented, no project-related noise events along SR 78 would occur. In addition, there would be no increase in noise events on the rail-haul route due to proposed Mesquite Regional Landfill-related traffic. The MSW residue waste stream could be sent to locations in the Los Angeles Basin where additional noise events would occur on unknown surface streets and highways or to other regional landfills where additional noise events would occur on unknown rail lines. Noise events would also increase at and along routes to future newly sited basin landfills that would provide additional capacity for coastal areas. The significance of these additional noise events cannot be predicted at this time.

4.2.8 AIR QUALITY

4.2.8.1 Assumptions

The following assumptions are established for evaluating the potential impacts of the No Action Alternative:

- The period evaluated is after 2004, the earliest year that maximum disposal rates could otherwise be occurring at the Mesquite Regional Landfill.

- New Los Angeles Basin landfills would be at least as remote as the currently proposed Sunshine and Elsmere landfills located in northern Los Angeles County. The remote Elsmere and Sunshine sites were deemed the best alternative sites by the Los Angeles Sanitation District, despite the long haul distance associated with these two sites, implying that potential closer in sites are less preferred.

- The travel distance to these new landfills would be too great for local MSW collection truck haulage. Because of this factor and the need for originating communities to satisfy AB 939 recycling requirements, the MSW residue would be hauled to the new landfills by transfer trucks from transfer stations and MRFs located strategically with respect to population centers. It is assumed that the average distance between the transfer stations/MRFs and the new landfills would be 45 miles.

- A variety of different transfer truck designs would be utilized in the Los Angeles Basin because uniformity such as that used for waste-by-rail haulage would not be necessary. The average transfer truck would contain about 20 tons of MSW residue.

It is also assumed that the new landfill disposal activities would require approximately the same amount of equipment as that required for the Mesquite Regional Landfill (see Section 2.1.5.6). The actual amount of equipment could be greater if several smaller landfills would be required because smaller operations likely would be less efficient.

4.2.8.2 Impacts of the No Action Alternative

Emissions would not occur directly into the Coachella Valley or Imperial County. Instead, the 20,000 tpd of MSW residue would continue to be disposed in SOCAB landfills, but primarily at more remote sites due to declining space in urban areas. This would result in greater emissions in the SOCAB, because of increased truck emissions associated with transport of MSW residue to more remote areas in SOCAB, which in turn would affect the downwind areas (e.g., the

Coachella Valley and Imperial County) due to pollutant transport. This difference would be especially important for ozone because exceedances of AAQS for ozone in these downwind areas are primarily due to transport. The current nonattainment status of the Coachella Valley and Imperial County for ozone are mostly due to NO_x and ROG emissions transported into these areas (CARB, 1993a).

The No Action Alternative would have many of the same sources emitting criteria pollutants into the SOCAB atmosphere. The landfill equipment is assumed to be the same as for the Proposed Action. Using the same rainfall infiltration rate (30 percent) but higher precipitation in the SOCAB, more water would percolate through the soil cover to the MSW residue, resulting in a higher moisture content and LFG generation. The use of trucks for transportation, rather than a combination of trucks and trains, would lead to higher emissions of NO_x, ROG, PM_{10}, SO_x, and CO overall.

Table 4-16 provides a comparison of emissions in the three areas of interest for the Proposed Action and No Action Alternative conditions for the 100th year. For perspective, these are also compared with the estimated emissions from all sources in these areas in 1987, the base year for air quality attainment plans. The Proposed Action emissions are based on "as received" MSW residue moisture content and the use of a boiler/generator for LFG destruction. The No Action Alternative estimates are based on the same assumed landfill conditions in SOCAB, except that the MSW residue moisture content is assumed to be proportionally higher because of the additional precipitation of about 22.5 inches per year (SDLAC, 1990) versus 4 inches per year at the proposed landfill site. Implementation of the No Action Alternative with new landfills in the SOCAB would not be consistent with the SCAQMD 1991 AQMP Measure No. A-D-1, Out-of-Basin Transport of Biodegradable Solid Waste.

If the MSW residue volumes proposed for transporting and landfilling at the Mesquite Regional Landfill are transported to and landfilled at a different out-of-SOCAB regional landfill(s), air quality impacts and benefits similar to those described for the Proposed Action likely would occur.

4.2.9 LAND USE

For the No Action Alternative, the proposed zoning change, General Plan Amendment, CDCA Plan Amendment, and land exchange associated with the Mesquite Regional Landfill would not occur. However, the amendment to the CDCA Plan to revise the boundaries of the Singer Geoglyphs ACEC would still be appropriate because cultural resources do not occur within the portion of the ACEC north of SR 78. The existing land uses, which include gold mining, gravel borrowing and recreational (e.g., off-road vehicle) activities, would continue.

Because the location of future landfills under the No Action Alternative is not known, the land use impacts of such facilities cannot be reasonably predicted.

4.2.10 RECREATIONAL RESOURCES

For the No Action Alternative, approximately 1,750 acres of federally-owned land would remain available for recreational uses, and the existing Mesquite Mine Overlook Trail would not be affected.

Because the location of future landfills under the No Action Alternative is not known, the recreational resource impacts of such facilities cannot be reasonably predicted.

4.2.11 VISUAL RESOURCES

For the No Action Alternative, the regional landfill would not be developed at the Mesquite Mine site and the significant visual effects of the proposed landfill would be avoided. As a result, the predominant visual features at the site would be the mine overburden and leached ore residue piles, as illustrated in Figures 3-33 to 3-37. Lighting associated with the proposed landfill

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operation also would not occur. This would cause less nighttime lighting in the project area when mining activities are eventually discontinued in 10 to 15 years. Impact to visual resources at other, newly constructed landfills that would be necessary under the No Action Alternative cannot be predicted at this time.

4.2.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

If the No Action Alternative is implemented, on-site landfilling activities that could create potential health and safety impacts would not occur. The proposed rail-haul to the site would not occur. The proposed Mesquite Regional Landfill waste stream would be disposed of in alternative landfills in the Los Angeles Basin, or possibly other regional landfills. On-site health and safety impacts at alternative landfills would be similar to those identified for the Mesquite Regional Landfill. Health and safety impacts on the rail-haul route similar to those which could result from the Mesquite Regional Landfill, could also occur if another regional, rail-haul landfill were constructed.

4.2.13 SOCIOECONOMICS

The No Action Alternative would not create the estimated 200 new jobs by place of residence, that are expected to be filled by Imperial County residents, and economic benefits that would have resulted from the proposed landfill operations described in Section 4.1.13. The estimated project-related economic gain of hundreds of millions of dollars, considering revenues from taxes and fees, the purchase of supplies and services, and a host fee that would be negotiated with Imperial County would not occur. Any portions of a host fee that would be allocated to cities in Imperial County would also not be allocated.

The socioeconomic effects of other newly constructed landfills under the No Action Alternative cannot be predicted at this time.

4.2.14 PUBLIC SERVICES AND UTILITIES

For the No Action Alternative, no landfill activities would occur at the proposed project site. Therefore, there would be no local impacts to public services and utilities as a result. Existing infrastructure supporting the Mesquite Mine would be abandoned after 10 to 15 years. Impacts to public services and utilities from other, newly-constructed landfills under the No Action Alternative cannot be predicted at this time.

4.2.15 ENERGY CONSUMPTION/ CONSERVATION

For the No Action Alternative, no landfill activities would occur at the proposed site. Therefore, there would be no impacts to energy consumption/conservation. However, without construction of the Proposed Action, the opportunity to generate electricity, and methane gas at the proposed landfill would not occur. Table 4-31 shows that the No Action Alternative, without any rail haul of MSW residue, would require an equal 9,300 gpd for on-site landfill operation.

4.3 ALTERNATIVE I - SMALLER LANDFILL FOOTPRINT

The following analysis describes the environmental impacts of Alternative I - Smaller Landfill Footprint. Energy recovery options could also be implemented under Alternative I. The impacts of energy recovery options described in Section 4.1 of this EIS/EIR would also apply to energy recovery option impacts for this alternative. Therefore, these discussions are not repeated here.

4.3.1 GEOLOGY/SOILS/MINERAL RESOURCES

Development of the smaller footprint alternative would eliminate impacts to approximately 640 acres of BLM's gravel withdrawal area, although portions of the available gravel in that area would

TABLE 4-31

Comparison of No Action Alternative Energy Requirements with Proposed Project
Proposed Mesquite Regional Landfill

	Proposed Action				No Action Alternative			
	Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required		Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required	
	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
On-site energy requirements								
Energy usage (i.e., landfill equipment and lighting)	3	912	9,300(1)	2,827,200(1)	3	912	9,300(1)	2,827,200(1)
Off-site mobile energy requirements								
Rail haul fuel usage(2)	N/A	N/A	20,000	6,080,000	N/A	N/A	N/A	N/A
Truck transfer fuel usage(2)	N/A	N/A	5,120	1,556,480	N/A	N/A	18,000	5,472,000
Total	3	912	34,420	10,463,680	3	912	27,300	8,299,200

Notes: This table is based on a disposal rate of 20,000 tons per day of the Proposed Action, with a 304 day operation period.
(1) Primary energy usage would be gasoline.
(2) Entire energy usage would be diesel.
(3) Energy requirements for employee commutes would be negligible.

Source: Environmental Solutions, Inc., 1993.

still be purchased for project construction and long-term development. Other potential impacts (e.g., erosion) would be the same as those for the Proposed Action, as discussed in Section 4.1.1. With implementation of the mitigation measures described in Section 4.1.1, impacts would not be significant.

4.3.2 WATER RESOURCES

Water resource consequences associated with the smaller landfill footprint alternative would be only slightly less than for the Proposed Action discussed in Section 4.1.2. The difference would be that 1,000 to 4,033 acre-feet of ground water from the Amos-Ogilby Basin would not be used for Years 85 to 100. Also, a reduced footprint would reduce the lined area that would be covered with MSW residue. Therefore, the potential for a leak in the triple composite liner would be incrementally reduced. This reduced leak potential would not be a substantial difference between the Proposed Action and Alternative I because the potential for a leak in the triple composite liner under the Proposed Action would not be significant. With implementation of the mitigation measures described in Section 4.1.2, impacts would not be significant.

4.3.3 BIOLOGICAL RESOURCES

For the smaller footprint alternative fewer acres of habitat would be disturbed as compared to the Proposed Action. The BLM would receive fewer acres of desert tortoise critical habitat land as compensation for that reduced disturbance. Otherwise, biological consequences would be similar to those for the Proposed Action, as discussed in Section 4.1.3. The BLM would also receive fewer acres of land in the Chuckwalla Bench ACEC and/or near the SRMNSA in exchange because this alternative includes 1,750 fewer acres of BLM-managed land than the Proposed Action. With implementation of the mitigation measures, impacts would not be significant.

4.3.4 CULTURAL RESOURCES

Development of the smaller landfill footprint alternative would result in substantially less disturbance to significant cultural resources because of the small area of potential effect. Specifically, impacts to seven of the 10 identified significant cultural resources on-site would be avoided by this alternative. With implementation of the mitigation measures described in Section 4.1.4, impacts would not be significant.

4.3.5 PALEONTOLOGICAL RESOURCES

No paleontological resources exist at the proposed site. Therefore, no impacts to paleontological resources would occur as a result of this alternative.

4.3.6 TRANSPORTATION

The smaller footprint alternative would be operationally the same as the Proposed Action, including the same daily MSW volume and rail haul factors. Therefore, the potential transportation impacts of this alternative would be the same as those for the Proposed Action (discussed in Section 4.1.6), except that the impacts would end after year 85. With implementation of the mitigation measures described in Section 4.1.6, direct impacts would not be significant. As described for the Proposed Action, employee vehicle trips on SR 78 beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st would be cumulatively significant.

4.3.7 NOISE

The smaller landfill footprint alternative would be operationally the same as the Proposed Action, including the MSW volume and rail-haul factors. Therefore, the potential noise impacts of this alternative would be similar to those for the Proposed Action (discussed in Section 4.1.7), except that the impacts would end after year 85. With implementation of the mitigation measures

described in Section 4.1.7, impacts would not be significant.

4.3.8 AIR QUALITY

Most air quality effects of the smaller footprint alternative would be similar to those identified in Section 4.1.8 for the Proposed Action. The maximum operating emissions would be identical, and both the maximum fugitive and collected LFG rates would be nearly the same. The smaller footprint landfill would be closer to the project boundaries along the proposed southern landfill fence, with the related potential for higher pollutant concentrations and health risk effects as compared to the Proposed Action. Because of this difference, the Alternative I configuration was used as the conservative basis for calculating maximum conditions for the Proposed Project in Section 4.1.8. The major difference would be the decreased landfill operating life of approximately 85 years for the No Action Alternative. With implementation of the mitigation measures described in Section 4.1.8, impacts would not be significant. During periods of high winds and associated PM_{10} levels that exceed AAQS, project-related emissions of PM_{10} would continue to be cumulatively significant under this alternative.

4.3.9 LAND USE

The potential land use impacts for the smaller footprint alternative would be similar to those discussed in Section 4.1.9 for the Proposed Action, the exception being that approximately 1,750 acres of BLM-managed land including designated gravel withdrawal areas adjacent to the landfill site, would remain as multiple use federal lands. Also, for this alternative, the public would gain reduced ownership and management control of the exchange properties in the SRMNSA and near the Chuckwalla Bench ACEC compared to the exchange properties offered under the Proposed Action. As a result, the BLM would lose this opportunity to gain ownership of those lands. The portion of the Singer Geoglyphs ACEC located north of SR 78 would not be impacted by Alternative I. However, the amendment to the CDCA plan to revise the boundaries of the Singer Geoglyphs ACEC would still be appropriate because cultural resources do not occur within the portion of the ACEC north of SR 78. With implementation of the mitigation measures identified in Section 4.1.9, impacts not be significant.

4.3.10 RECREATIONAL RESOURCES

For the smaller footprint alternative, approximately 1,750 acres of federally-owned land would remain available for recreational uses. Potential impacts to recreational resources would be essentially the same for this alternative as those of the Proposed Action, as described in Section 4.1.10. With implementation of the mitigation measures described in Section 4.1.10, impacts would not be significant.

4.3.11 VISUAL RESOURCES

Visual resource consequences of the reduced landfill footprint would be similar to those described in Section 4.1.11 for the Proposed Action. Minor changes that could be viewed from Viewpoint Nos. 2 and 3 would not perceptively change visual characteristics of the proposed landfill. Landfill lighting would only occur for 85 years. Even with implementation of the mitigation measures described in Section 4.1.11, impacts would remain significant.

4.3.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

The smaller footprint alternative would be operationally the same as the Proposed Action. Therefore, the potential health and safety impacts of this alternative would be essentially the same as those for the Proposed Action, as discussed in Section 4.1.12, except that the impacts would only occur for 85 years. With implementation of the mitigation measures described in Section 4.1.12, impacts would not be significant.

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4.3.13 SOCIOECONOMICS

The smaller footprint alternative would not result in any socioeconomic changes from those described in Section 4.1.13 for the first 85 years of landfill operation. After 85 years, the landfill would close, and the economic benefits described in Section 4.1.13 would not continue. With implementation of the mitigation measures described in Section 4.1.13, impacts would not be significant.

4.3.14 PUBLIC SERVICES AND UTILITIES

The smaller landfill footprint alternative would be operationally the same as the Proposed Action. Therefore, the potential impacts to public services and utilities would be the same as those of the Proposed Action, as discussed in Section 4.1.19 except that the long-term need for public services and utilities would be reduced by 15 years. With implementation of the mitigation measures described in Section 4.1.14, impacts would not be significant.

4.3.15 ENERGY CONSUMPTION/ CONSERVATION

The smaller landfill footprint alternative would be operationally the same as the Proposed Action. Therefore, the potential impacts to energy consumption and conservation would be those of the Proposed Action, as discussed in Section 4.1.15 except that the long-term energy usage on-site and the potential to generate energy from LFG would be reduced by 15 years. Impacts would not be significant.

4.4 ALTERNATIVE II - DECREASED DISPOSAL RATE

The following section describes the environmental impacts of Alternative II - Decreased Disposal Rate. Energy recovery options could also be implemented under Alternative II. The impacts of energy recovery options described in Section 4.1 of this EIS/EIR also apply to Alternative II. Therefore, these discussions are not repeated here.

4.4.1 GEOLOGY/SOILS/MINERAL RESOURCES

A decreased MSW disposal rate alternative would essentially require the same land area as the Proposed Action. Therefore, the potential impacts to geology, soils, and mineral resources would be the same as those of the Proposed Action, as discussed in Section 4.1.1. With implementation of the mitigation measures identified in Section 4.1.1, impacts would not be significant.

4.4.2 WATER RESOURCES

A decreased MSW disposal rate alternative would require the same land area as the Proposed Action. Natural resource values, such as ground water supply, would be committed for a longer period of time under this alternative. Because the Amos-Ogilby Basin would continue to experience a net recharge under this alternative, ground water use would not be significant. Therefore, the potential impacts to water resources would be essentially the same as those of the Proposed Action, as discussed in Section 4.1.2. With implementation of the mitigation measures identified in Section 4.1.2, impacts would not be significant.

4.4.3 BIOLOGICAL RESOURCES

A decreased MSW disposal rate alternative would require the same land area as the Proposed Action, although the operational life of the landfill would be extended by 65 years. This would require a longer commitment of the biological resource values at the proposed site. With implementation of the mitigation measures described in Section 4.1.3, including compensation for lost desert tortoise habitat, impacts would not be significant.

4.4.4 CULTURAL RESOURCES

A decreased MSW disposal rate would require the same project configuration as the Proposed Action and therefore would result in the same impacts to cultural resources as the Proposed

Action, as discussed in Section 4.1.4. With implementation of the mitigation measures identified in Section 4.1.4, impacts would not be significant.

4.4.5 PALEONTOLOGICAL RESOURCES

No paleontological resources exist at the proposed site. Therefore, no impacts to paleontological resources would occur as a result of this alternative.

4.4.6 TRANSPORTATION

A decreased MSW disposal rate would result in fewer potential transportation impacts than the Proposed Action. It is expected that 12,000 tpd of MSW residue would be delivered to the Mesquite Regional Landfill in three trains per day under this alternative. This would generate six trips per day on the rail haul route, which would be four less train trips than for the Proposed Action. Also, fewer personnel would be required for the lower volume alternative, resulting in less traffic on Highway 78. Local MSW deliveries, if this option is chosen by Imperial County and/or local municipalities, would not be affected by a change in daily landfill volume. As a result of the differences, rail haul route impacts under this alternative would be less than those discussed in Section 4.1.6, but would last for approximately 165 years. With implementation of the mitigation measures identified in Section 4.1.6, direct impacts would not be significant. As described for the Proposed Action, employee vehicle trips on SR 78 beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st would be cumulatively significant.

4.4.7 NOISE

The decreased MSW disposal rate alternative would reduce the volume of MSW residue transported to the project site from 20,000 tpd to 12,000 tpd. This amount would be delivered by three trains each day, producing six daily noise events along the rail-haul route, which would be 60 percent of the trips that would be generated by the Proposed Action. Highway noise events due to this alternative would also be less than for the Proposed Action; however project-related noise would occur for 165 years. With implementation of the mitigation measures identified in Section 4.1.7, impacts would not be significant.

4.4.8 AIR QUALITY

Project-related emissions for Alternative II for Year 16 are shown on Table 4-32. A decreased disposal rate would result in the need for fewer employees at the Mesquite Regional Landfill. It would also require less project-related vehicle activity on-site. As a result of decreased employee trips to the landfill site and decreased project-related vehicle activity, project-related emissions would be less for this alternative than for the Proposed Action. Therefore, pollutant concentrations at project boundaries would be reduced.

Reducing the daily volume disposed at the Mesquite Regional Landfill could result in greater transport truck disposal in the SOCAB, with a resulting increase in the air quality impacts in the SOCAB. This would incrementally increase the O_3 transport into Coachella Valley and Imperial County. Train emissions directly into the Coachella Valley and Imperial County would be reduced. This would reduce the small effects of these local emissions identified for the Proposed Action (see Section 4.1.8). With implementation of the mitigation measures described in Section 4.1.8, impacts would not be significant. During periods of high winds and associated PM_{10} levels that exceed AAQS, project-related PM_{10} emissions would continue to be cumulatively significant under that alternative.

4.4.9 LAND USE

A decreased disposal rate alternative would require the same land area as the Proposed Action. Therefore, the potential land use impacts would be essentially the same as those described

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TABLE 4-32

Estimated Project Site Emissions
Alternative II and Alternative IV
Proposed Mesquite Regional Landfill

ALTERNATIVE II - REDUCED DAILY VOLUME AT YEAR 16 WITH A FLARE

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Stationary Sources	620	100	250	120	100
Fugitive Sources	0	140	60	0	0
Mobile Sources	900	160	20	30	750
TOTAL	1,520	400	330	150	850

ALTERNATIVE IV - LARGER PROJECT AT YEAR 90 WITH A BOILER/GENERATOR AND LNG PLANT

Source	Emissions (lbs/day)				
	NO_x	ROG	PM_{10}	SO_x	CO
Stationary Sources	1,320	760	20	750	10
Fugitive Sources	0	520	220	0	0
Mobile Sources	2,240	420	70	70	1,840
TOTAL	3,560	1,000	310	820	1,850

Source: Environmental Solutions, Inc., 1993.

in Section 4.1.9 for the Proposed Action. With implementation of the mitigation measures identified in Section 4.1.9, impacts would not be significant.

4.4.10 RECREATIONAL RESOURCES

The decreased disposal rate alternative would require the same land area as the Proposed Action. Therefore, the potential impacts to recreational resource impacts would be essentially the same as those of the Proposed Action, as described in Section 4.1.10 but would continue for approximately 165 years. With implementation of the mitigation measures described in Section 4.1.10, impacts would not be significant.

4.4.11 VISUAL RESOURCES

Visual resource impacts of the decreased disposal rate alternative would be essentially the same as those described in Section 4.1.11 for the Proposed Action, except that lighting associated with landfill operations would occur for 165 years instead of 100 years and the proposed landform would take longer to reach its final configuration. Even with implementation of the mitigation measures identified in Section 4.1.11, impacts would remain significant.

4.4.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

The decreased disposal rate alternative would require approximately 60 percent of the train trips and delivery/employee trips as the Proposed Action. This would result in a reduced potential for health and safety impacts in any given year, as compared to the Proposed Action.

The potential for impacts to occur would be over a 165-year period as compared to a 100-year period for the Proposed Action. With implementation of the mitigation measures identified in Section 4.1.12, impacts would not be significant.

4.4.13 SOCIOECONOMICS

For the decreased disposal rate alternative, the employment and economic benefits discussed in Section 4.1.13 for the Proposed Action would be less than those for the Proposed Action from Year 3 until Year 100. These benefits would continue at the reduced level for an additional 65 years. With implementation of the mitigation measures identified in Section 4.1.13, impacts would not be significant.

4.4.14 PUBLIC SERVICES AND UTILITIES

The decreased disposal rate alternative would require fewer public service and utility impacts than the Proposed Action. However, public service and utility impacts would be required for an additional 65 years. With implementation of the mitigation measures described in Section 4.1.14, impacts would not be significant.

4.4.15 ENERGY CONSUMPTION/ CONSERVATION

The decreased disposal rate alternative would similar to the Proposed Action. Therefore, the potential impacts to energy consumption/ conservation would be the same as those of the Proposed Action, as discussed in Section 4.1.15. Energy usage on-site would continue for an additional 65 years as would the potential to produce energy from LFG. Table 4-33 shows a comparison of the Alternative II energy requirements with those of the proposed project. Impacts would not be significant.

4.5 ALTERNATIVE III - ALTERNATIVE MESQUITE REGIONAL LANDFILL SITE

The following analysis describes the environmental impacts of siting the Mesquite Regional Landfill at the alternative site described in Section 2.2.5. Energy recovery options, including a potential gas pipeline to Niland, could also be implemented at this site. The impacts of energy recovery described in Section 4.1 of this EIS/EIR also apply to energy recovery

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TABLE 4-33

Comparison of Alternative II Energy Requirements with Proposed Project
Alternative II Decreased Daily Volumes
Proposed Mesquite Regional Landfill

	Proposed Project				Alternative II			
	Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required		Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required	
	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
On-site energy requirements								
Energy usage (i.e., landfill equipment and lighting)	3	912	9,300 (1)	2,827,200 (1)	1.8	547	5,580 (1)	1,696,320 (1)
Off-site mobile energy requirements								
Rail haul fuel usage(2)	N/A	N/A	20,000	6,080,000	N/A	N/A	12,000	3,648,000
Truck transfer fuel usage(2)	N/A	N/A	5,120	1,556,480	N/A	N/A	3,072	933,888
Total	3	912	34,420	10,463,680	1.8	547	20,652	6,278,208

Notes:

This table is based on a disposal rate of 20,000 tons per day for the Proposed Project and 12,000 tons per day for the Alternative Project, with a 304 day operation period.
(1) Primary energy usage would be gasoline.
(2) Entire energy usage would be diesel.
(3) Energy requirements for employee commutes would be negligible.

Source: Environmental Solutions Inc., 1993.

impacts at this site. Therefore, these discussions are not repeated here.

4.5.1 GEOLOGY/SOILS/MINERAL RESOURCES

4.5.1.1 Impacts

The geology of the alternative site area poses no substantial hazards to the development of a regional landfill. Due to the presence of deep, unconsolidated alluvium in the alternative site area, it is likely that a 600-million-ton landfill would settle into the underlying soils to some extent. Special design considerations for the base liner and leachate collection system, and for the gas control and collection system (e.g., compaction of the subgrade and the use of flexible tubing for leachate and gas collection) would be required at the alternative site. The unconsolidated alluvium in the proposed site area is estimated to be no more than 20 feet deep. These materials would be mostly removed, allowing the landfill to be constructed on the underlying Bear Canyon Conglomerate. The Bear Canyon Conglomerate is sufficiently dense such that these special design considerations would not be required at the proposed site.

Like the proposed site area, soils in the alternative site area have minimal or no erosion potential. As described in Chapter 2.0, the project design would include features to reduce the potential for erosion. Impacts to soils would not be significant.

No significant mineral resources are known to exist in the alternative site area. Therefore, development of a landfill in the alternative site area would result in no impacts to mineral resources.

No impacts due to surface rupture would be anticipated because no Holocene faults are known to exist within the alternative site. The nearest active fault is approximately 12 miles away from the site. Regional seismicity is not expected to cause large ground motions at the alternative site. Imperial County building codes and project design features would result in a landfill that would withstand an earthquake that exceeds the Maximum Probable Earthquake from the East Mesa Fault.

4.5.1.2 Mitigation Measures

The Applicant shall implement all mitigation measures identified for the Proposed Action should this alternative be implemented. In addition, the landfill subgrade shall be compacted or otherwise improved to ensure that settlement would not impact the LCRS or LFG collection system.

4.5.2 WATER RESOURCES

4.5.2.1 Impacts

Surface Water

The discussion contained in Section 4.1.2.2 for surface water impacts would also apply to the alternative site. In general, impacts to surface water in the alternative site area would not be significant. Runoff and run-on would be controlled by site drainage facilities that would be designed to direct surface flows around the alternative site and back to natural wash locations downgradient of the site (to the extent practicable). Minor spills of fuels and oils associated with on-site machinery would be controlled in accordance with a WDO issued by the RWQCB. Spills associated with rail-haul of MSW residue would be addressed by SP with support from 24-hour cleanup crews that the Applicant would provide.

Ground Water

The proposed landfill would include a state-of-the-art liner and LFG control system to prevent leakage of liquids or gas into vadose zone materials where it could eventually reach ground water. This same state-of-the-art design would also be used for Alternative III. Because of this design, impacts to ground water would not be expected. If a leak were to occur; however, the potential for this leak to reach ground water at

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the alternative site would be greater than at the proposed site for the following reasons:

- The depth to ground water is 80 feet or less.
- The alluvial materials that underlie the alternative site are very permeable to liquids or gas.

The 80-foot depth to ground water is substantially less than for the proposed site (e.g., between 140 and 250 feet). This condition would provide less time for any possible leaking materials from the landfill to be stopped. An additional factor is the potential for settlement of the landfill (due to its weight) into the softer alluvial materials, unlike the proposed site which is underlain by a consolidated formation. The settlement would further reduce the depth to ground water. Also, the alluvial materials are typically very permeable to liquids and gas. These materials would not serve as an effective barrier to escaping materials. Finally, unlike the proposed site, the alternative site sits directly above the Amos-Ogilby Basin, which supplies non-potable water to the area. Special monitoring systems would be required for this alternative site to assure that any potential leak could be instantly identified and stopped before it moved quickly through the alluvial materials and contaminated the Amos-Ogilby Basin (i.e., reached ground water in the Amos-Qgilby Basin in a few years versus over a 1,000 years for the proposed site).

4.5.2.2 Mitigation Measures

The Applicant shall implement all mitigation measures identified for the Proposed Action should this alternative be implemented. Instead of designing downstream drainages to protect SR 78, downstream drainages shall be constructed to protect Ted Kipf Road and the SP Main Line.

4.5.3 BIOLOGICAL RESOURCES

4.5.3.1 Impacts

Vegetation

Plant Community Impacts

Construction would occur in a manner similar to that described for the proposed site using similar procedures and occurring over approximately the same ten-month construction period. However, because no detailed site plan is available for Alternative III, it is assumed that the entire 5,200 acres of undisturbed vegetation at the alternative site would be impacted by construction and operation. This alternative would impact vegetation by direct removal of plants for construction of facilities. The Proposed Action would impact approximately 3,657 acres of desert tortoise habitat. Thus, implementation of this alternative would result in impacts up to an additional 1,543 acres of desert tortoise habitat.

The vegetated areas that would be disturbed at the alternative site represent a very small percentage of similar vegetation communities that occur in the project vicinity and in the Colorado Desert as a whole. As such, the alternative site is not considered a significant portion of the available plant community. Because the site is located in plant communities that are widely distributed, this alternative would not significantly reduce the overall species diversity or population of any plant species within the Colorado Desert. However, this area is not currently developed and construction and operation of a landfill at this site would "segment" the existing habitat more so than construction and operation of a landfill at the proposed site where the habitat is already segmented by the Mesquite Mine. A complete biological survey would be necessary before a landfill could be permitted at this site.

Impacts to Threatened and Endangered Species

No plant species listed as threatened or endangered are expected to occur on the alternative project site. However, because no biological survey was completed for the alternative site, no information on plant species that are listed as threatened or endangered is currently available. Impacts to threatened and endangered plant species would be similar to those discussed in Section 4.1.3 of the Proposed Action. Also, no threatened or endangered plant species are known to occur within the SP ROW where the optional gas pipeline to Niland would be constructed.

Impacts to Other Special Interest Species

Because no biological survey was completed for the alternative site, no information on plant species recognized as sensitive by scientists, conservationists, or agencies is available. Therefore it is not known for certain if any of these species occur on the alternative regional site. However, the alternative site is very similar to the proposed site and proposed rail spur ROW. Four sensitive plant species were found or were expected to be in the vicinity of the proposed landfill site and rail spur ROW (Section 4.1.3). These same species likely exist on the alternative site. Similar to the Proposed Action, project-related impacts to these species would not be significant under Alternative III.

Wildlife

Implementation of Alternative III would result in the removal of on-site wildlife habitat as facilities are developed and landfilling progresses. Potential impacts to wildlife and wildlife habitat would occur from both construction and operation. On-site habitat would be reduced in association with vegetation removal for project facilities. Eventually, facilities associated with project operations would replace up to 5,200 acres of existing wildlife habitat.

See wildlife discussion in Section 4.1.3.2 for a complete discussion of wildlife and wildlife habitat impacts. Impacts to wildlife would not be significant.

Impacts to Threatened and Endangered Species

The state and federally threatened desert tortoise is the only species expected to occur on the alternative site that is listed as threatened or endangered. The alternative site lies at the periphery of the geographic distribution of desert tortoise populations in California, as mapped by BLM. Impacts to the desert tortoise would be similar to those discussed in Section 4.1.3 for the Proposed Action. Due to the close proximity of existing desert tortoise relocation areas to the alternative site, population densities of the desert tortoise may be slightly higher than what would naturally occur. This small increase would not be considered significant. Thus, impacts would be similar to those of the Proposed Action.

Impacts to Other Special Interest Species

Other special interest species expected to occur on-site would be similar to those discussed in Section 3.1.3 for the Proposed Action. There are no other special interest species expected to occur on the alternative site.

4.5.3.2 Mitigation Measures

Prior to any approvals of a landfill at this site, full biological surveys and impact assessment shall be completed according to all applicable regulations. The mitigation measures identified for the Proposed Action would also be required at this site, including completion of a Section 7 Consultation with the USFWS for impacts to the Desert tortoise.

4.5.4 CULTURAL RESOURCES

4.5.4.1 Impacts

A potentially significant short-term prehistoric camp site (CA-IMP-4623) would be impacted by Alternative III. Additional significant cultural resources could also exist at the alternative site.

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Because this site contains one potentially significant site cultural resource impacts would be significant.

4.5.4.2 Mitigation Measures

Prior to granting of any discretionary approvals for a landfill at the Alternative Mesquite Regional Landfill Site, the BLM and Imperial County shall comply with Section 106 of the NHPA and all other applicable cultural properties-related regulations. An APE shall be established. Full cultural resource surveys of the APE, according to all appropriate guidelines, shall be conducted and all important cultural resources within this area shall be identified and evaluated in order to determine NRHP eligibility and project-related effects. All mitigation measures developed during the Section 106 process shall be fully implemented prior to construction of a landfill at this site.

4.5.5 PALEONTOLOGICAL RESOURCES

4.5.5.1 Impacts

No paleontological resources would be encountered at the alternative site because it would overlie alluvial deposits. Therefore, impacts would not be significant.

4.5.5.2 Mitigation Measures

Because impacts would not be significant, no mitigation would be required.

4.5.6 TRANSPORTATION

4.5.6.1 Impacts

Highways

Alternative III would be operationally the same as the Proposed Action, including the same daily MSW residue volume and rail-haul factors. The site would be located on the south side of SR 78, approximately three miles south of the proposed site.

It is assumed that suitable cover material could be obtained on-site, but that clay materials do not exist on-site. Therefore, off-site importation of up to 8 million cubic yards of clay would be necessary. The importation of clay materials would require an estimated 200 daily, one-way truck trips, about 60 days per year. Also, on-site employment would increase by approximately 10 percent, increasing employee commuter trips by a similar percentage. The additional truck trips and commuter trips would create short-term, periodic significant transportation impacts on SR 78 and Ted Kipf Road (i.e., LOS would fall to B during two periods: 1. during the Mesquite Mine-related peak hour until the mine substantially reduces employment, but only if Imperial County MSW residue was trucked to the alternative site; and 2. during the hours that clay material would be trucked to the alternative landfill site).

As described for the Proposed Action, employee vehicle trips on SR 78 beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st would be cumulatively significant.

Road Closures

Adoption of Alternative III would require the closure and relocation of roads Vista Mine Road (A262) and A2110 (an otherwise unnamed road). Vista Mine Road is currently categorized as an "unmaintained dirt road" by BLM, and A2110 is classified as a "maintained dirt road." Because these roads are used so infrequently, their removal and relocation around the site would not create significant transportation impacts.

Railroad

The Rail Spur

Two at-grade railroad crossings would be constructed across the spur to provide continued access through the area on the existing Ted Kipf Road. Appropriate crossing signs would be installed to warn vehicular traffic of the rail line.

Traffic on the rail spur would be two trips (one train) per day in the first year, and gradually increasing to 12 trips (six trains) per day if a freight train is used to pick up and deliver liquefied methane gas tank cars from/to the optional liquefied methane gas plant. The northern-most at-grade railroad crossing at Ted Kipf Road would experience minimal non-project-related vehicular traffic. Impacts would not be significant.

The Rail-Haul Route

Alternative III would be operationally the same as the Proposed Action, including the same daily MSW residue volume and rail haul factors. However, one additional at-grade railroad crossing would occur at Glamis and SR 78. The use of this existing crossing would not be considered significant. Therefore, the potential impacts of this alternative on the rail haul route would be the same as those discussed in Section 4.1.6 for the Proposed Action. Impacts would not be significant.

4.5.6.2 Mitigation Measures

The Applicant shall implement the mitigation measures described in Section 4.1.6 for the Proposed Action. However, only two at-grade railroad crossings with warning signs shall be provided at Ted Kipf Road along the rail spur. In addition, SR 78 access shall be provided via a new intersection east of the existing intersection with Ted Kipf Road. The access shall loop south, connecting with Ted Kipf Road approximately one mile south of SR 78. From that point, south to the southern boundary of the proposed site, Ted Kipf Road shall be improved to handle large trucks delivering supplies to the alternative site and to handle MSW residue container trucks in the unlikely event that short-term trucking of MSW residue was necessary due to an emergency shut down of the SP Main Line. The two dirt roads on-site shall be relocated around the alternative site perimeter to provide essentially the same access they currently provide.

Because Alternative III may require the importation of clay, the Applicant shall also add a truck acceleration lane for trucks entering SR 78 at the Ted Kipf Road loop-in and the Mesquite Mine Access Road and left hand turn lanes at the Ted Kipf Road loop-in and the Mesquite Mine Access Road on SR 78. The Applicant shall also schedule trucks to avoid the period beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st each year.

4.5.7 NOISE

4.5.7.1 Impacts

Alternative III would be operationally the same as the Proposed Action. Impacts associated with landfill activities including the rail haul route and the rail spur, would be similar to those discussed in Section 4.1.7.2 of this EIS/EIR.

The alternative site would be located approximately 1.5 to 3.75 miles from less than 10 permanent residential receptors. However, these receptors are located a sufficient distance from the project site that any potential noise impacts would be diminished. The alternative site would be located approximately 1.75 miles south of SR 78. Noise impacts to passengers in vehicles on SR 78 would be minimal. No gravel withdrawal areas have been identified on the alternative site, therefore, no impacts to gravel withdrawal personnel would occur.

Elsewhere the majority of non-residential receptors would be recreational users of the ISDRA and surrounding area. Many of these receptors would be using OHVs. This type of recreational activity typically creates greater noise than would result from the proposed project. Therefore, no significant noise impacts to the sensitive receptors in the area would occur.

It is assumed that off-site importation of clay would be required at the alternative site. Importation of clay material would require an estimated 200 daily, one-way truck trips, about

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60 days per year. These trips would occur during daylight hours. Noise impacts associated with this increase in truck traffic would have a minimal, if any impact with respect to noise levels associated with OHV activities. No significant noise impacts would occur.

4.5.7.2 Mitigation Measures

The mitigation measures described in Section 4.1.7.3 of the Noise Section would be applicable to the alternative site. No significant impact due to noise would occur

4.5.8 AIR QUALITY

4.5.8.1 Impacts

Alternative III would have essentially the same rail haul emissions as those estimated for the Proposed Action. The alternative site is about four to five miles further along the rail haul route than the proposed site, but Alternative III does not include the four to five mile rail spur required for the Propose Action. The analysis of emissions associated with the Proposed Action landfill operation itself (e.g., landfill gas emissions, on-site mobile equipment emissions, etc.) would also generally apply to the alternative site. Ambient air quality impacts for criteria pollutants (e.g., CO, NO_2, SO_2, and PM_{10}) would be essentially identical to those at the proposed site. Mobil source emissions for the alternative site would be somewhat increased by trucks hauling clay from the Mesquite Mine to the alternative site. Additional air quality impacts would occur to excavate cover material at the alternative site. Compliance with air quality standards could be more difficult for an alternative located close to the ISDRA due to the likely higher background PM_{10}.

4.5.8.2 Mitigation Measures

With implementation of the mitigation measures, including the proposed offsets identified in Section 4.1.8, impacts would not be significant.

4.5.9 LAND USE

4.5.9.1 Impacts

Compatibility with Existing and Surrounding Land Uses

The alternative site is located primarily on Public Lands managed by the BLM. One section is privately owned. This site is located adjacent to the ISDRA, which is used by approximately 30,000 visitors on winter holiday weekends. Due to it's proximity to the ISDRA, the area between the site and SR 78 (including the site itself) is used by approximately 1,050 campers on a winter holiday weekend. Additional surrounding land uses include; the Algodones Sand Dunes ACEC; residential and commercial uses approximately 1.5 and 3.75 miles northwest of the site; a landing strip; the Osborne Overlook; Gold Rock Ranch; and the CMAGR. Impacts to recreational resources are discussed in Section 4.5.10 of this EIS/EIR. Visual impacts are discussed in Section 4.5.11 of this EIS/EIR. The nearest residences are located approximately 1.5 and 3.75 miles northwest of the site, however, the total permanent population within a 10 mile radius is estimated to be less than 20 people. Therefore, the landfill would not be incompatible with surrounding land uses and would not result in significant land use impacts.

Conformance with Adopted Land Use Plans and Policies

Section 4.1.9.1 of the EIS/EIR discusses the proposed project's conformance with the Imperial County General Plan, Imperial County Zoning Regulations, and the BLM CDCA Plan. A General Plan amendment would be required to change the land use designation from "Recreation" to "Special Purpose Facility", and to be consistent with the General Plan. Objectives 1.3 and 1.9 of the Seismic and Public Safety Element and Objective 8.5 of the Open Space and Conservation Element apply to development near mineral deposits. No mineral deposits are located within or adjacent to the alternative site. Therefore, with the exception of these three

objectives, the discussion of applicable land use objectives for the Proposed Action would also apply to Alternative III. No ACECs are located within the alternative site and the federal lands are multiple use class M.

The proposed General Plan requires a one-quarter mile buffer around the landfill footprint. Ted Kipf Road is located approximately 2,100 feet from the ISDRA. The Alternative Site would be located immediately east of Ted Kipf Road, allowing a buffer between the Alternative Site and the ISDRA of over one-quarter mile. Therefore, Alternative III would be in conformance with the General Plan, Zoning Regulations, and CDCA Plan.

4.5.9.2 Mitigation Measures

With implementation of the mitigation measures identified in Section 4.1.9, impacts would not be significant. A CDCA Plan Amendment to change the boundaries of the Singer Geoglyphs ACEC that would not be required for Alternative III,

4.5.10 RECREATION

4.5.10.1 Impacts

The area located between the alternative site and SR 78 (including the site itself) is used by approximately 1,050 campers on a winter holiday weekends and approximately 88 campers on non-holiday weekends between October 1st and May 31st of each year. Approximately 7,890 persons use the area in the vicinity of the alternative site per year. The ISDRA, adjacent to the alternative site, is used by approximately 30,000 persons on winter holiday weekends and 750,000 people a year.

OHV users like to camp in this area because it provides easy access to the ISDRA, but is less crowded and less dusty than the ISDRA. Ted Kipf Road, south of Boardmanville, is only graded a few times a year. Consequently, the majority of users stay within a mile radius of Boardmanville. Therefore, impacts would not be considered significant because the alternative site is over one mile from Boardmanville and is minimally used for camping.

Construction of a landfill at the alternative site would result in the loss of 5,200 acres of primarily federally-owned land in the vicinity of the ISDRA, predominantly used for recreation. There are approximately 280,000 acres of BLM Class M and Class I desert lands available for recreation in the CDCA in Imperial County. The loss of 5,200 acres would amount to 1.9% of the total BLM Class M and Class I land available for recreation. This loss would be not be considered significant, but would be greater than the losses associated with the Proposed Action in terms of quantity. Use of the alternative site would not disturb the Mesquite Mine Overlook Trail.

There are no wilderness areas in the vicinity of the alternative site. The nearest WSA is the South Algodones Dunes WSA located approximately one mile south of the alternative site. There would be no impacts to this WSA.

4.5.10.2 Mitigation Measures

Impacts would not be significant; therefore, no mitigation would be required.

4.5.11 VISUAL

4.5.11.1 Impacts

As was done for the proposed landfill site, existing views of the alternative site were photographed from viewpoints along SR 78 in order to assess potential visual impacts. These photos were used to assess existing conditions, as discussed in Section 3.5.11 of this EIS/EIR. The location of these viewpoints is shown on Figure 3-39. Computerized, scaled, photo-simulations were then made to depict future views of the developed landfill at the alternative site from each viewpoint. These photo-simulations were prepared by Environmental Solutions, Inc., using a CADD system. Information on existing site topography and alternative landfill development plans was digitized by computer to obtain

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accurate physical configurations and elevation input. Existing and Alternative III project views from viewpoint Nos. 1 and 2 are shown on Figure 4-20 and 4-21, respectively.

The BLM Visual Contrast Rating system is used in this analysis to assess the potential visual impacts of the Alternative Site alternative. The alternative site is located in a Multiple-Use Class M (Moderate Use) designated area within the CDCA. Objectives of Multiple-Use Class M, and the significance criteria used in this analysis, are discussed previously under the visual analysis for the proposed action, Section 4.1.11 of this EIS/EIR.

Viewpoint #1

Figure 4-20 shows the existing view from viewpoint #1, and the photo-simulation created to show this same view following landfill development at the alternative site. With construction of a landfill at this site, distant views (approximately 10 miles) toward the alternative site area from viewpoint #1 would change. However, the view would still be dominated by the light-colored, rolling topography of the Algodones Sand Dunes (foreground and middleground). From this distance, the landfill would appear as a moderate landform alteration amidst the open desert floor.

Because views from this viewpoint would be elevated, the landfill would not be dominant against the skyline and the landform would tend to blend in with the dunes in the foreground and the desert background. Impacts to views from the Osborne Overlook would not be significant.

Viewpoint #2

Figure 4-21 shows the existing view from viewpoint #2, and the photo-simulation created to show this same view following landfill development at the alternative site. Construction of a landfill at this site would change distant and far middleground views toward the alternative site area from viewpoint #2. From this distance (3.75 miles), the texture and color of the landfill would begin to blend with that of its desert surroundings. However, the landfill form would produce a moderate to strong contrast within its predominantly flat surroundings. In addition, the contoured hill-like form would result in vertical impact above the horizon line in a view dominated by horizontally-oriented linear features.

Views from this Viewpoint would be dominated by the landfill landform that would rise above the otherwise flat desert. Views of the landform by campers in the Boardmanville area would be much closer (less than two miles) than the view depicted from Viewpoint 2 as would the views by travelers along Ted Kipf Road. The landfill would be even more dominant from these closer views. Impacts would be significant.

Light and Glare

The potential for light and glare impacts associated with fugitive illumination would be similar to those of the proposed action for recreational users of the ISDRA. Because of the increased distance of the alternative site from SR 78, potential impacts to drivers along SR 78 would be reduced. Fugitive illumination produced at the alternative site would not directly affect any low altitude, high speed training routes of the U.S. Marine Corps (pers. comm., Hansen, D.H., 1993). Therefore, landfill lighting at the alternative site would not result in potentially significant impacts to the use of NVDs by the U.S. Marine Corps during nighttime operational flights. Overall, potential light and glare impacts associated with implementation of a landfill at the alternative site would be less than those associated with the proposed action.

4.5.11.2 Mitigation Measures

Implementation of project design features described in Section 4.1.11, would be required for Alternative III. Even with mitigation, impacts would remain significant.

4.5.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

4.5.12.1 Impacts

Alternative III would be operationally the same as the Proposed Action. The on-site health and safety controls for the Proposed Action would effectively mitigate health and safety issues at equal landfilling volumes on the alternative site. Therefore, the potential on-site or off-site landfill-related health and safety impacts would be similar to those of the Proposed Action.

There would be no increase in train traffic resulting from this alternative as compared to the Proposed Action. One additional existing at-grade railroad crossing on the SP Main Line would be required at Glamis and SR 78. Two new at-grade railroad crossings, one each north and south of the alternative site on Ted Kipf Road would be constructed. The addition of these crossings would not be considered significant. To haul clay to the alternative site, 200 one-way truck trips, 60 days per year, would be required. With the construction of the improvements described in Section 4.5.6.2, the additional truck traffic would not result in significant impacts. Therefore, with implementation of the mitigation measures described in Section 4.1.12, the potential impacts of this alternative on the rail haul route would not be significant.

Cyanide contamination would not occur at this site because it is assumed that all cover material could be obtained on-site and leached ore residue from the Mesquite Mine would not be used.

There is no helipad at the alternative site. Emergency evacuation of any injured personnel would not require a helipad because helicopters used for emergency evacuation of seriously injured persons could occur from any flat and unobstructed area on-site (i.e., almost anywhere on-site).

4.5.12.2 Mitigation Measures

With implementation of the mitigation measures identified in Section 4.1.12, impacts would not be significant.

4.5.13 SOCIOECONOMICS

4.5.13.1 Impacts

Alternative III-related increases in employment and purchases of good and services within Imperial County would result in the creation of additional employment and earnings. The estimated employment and earnings associated with Alternative III are presented in Tables 4-34 and 4-35, respectively. It is estimated that 926 workers would be hired (for direct and secondary jobs) as a result of initial construction activities that would be required for Alternative III, an increase of 118 workers compared to the Proposed Action. For long-term operations, an estimated 367 workers would be hired (for direct and secondary jobs) if Alternative III were implemented, an increase of 34 workers compared to the Proposed Action. Total project-related earning would be approximately $21.7 million for initial construction and $10.5 million per year for long-term operations, increases of $20 million and $1 million, respectively, as compared to the Proposed Action.

As with the Proposed Action, unemployment in the County would be reduced. These changes would be beneficial effects of Alternative III. It is expected that long-term inmigration into Imperial County would occur as out-of-county residents move into Imperial County to work at the proposed landfill. As with the Proposed Action, demographic effects would be small and therefore, not noticeable.

It is anticipated that Alternative III would result in slightly increased net inmigration to Imperial County because of the increase in long-term operations-related jobs. This effect would not have a significant effect on population.

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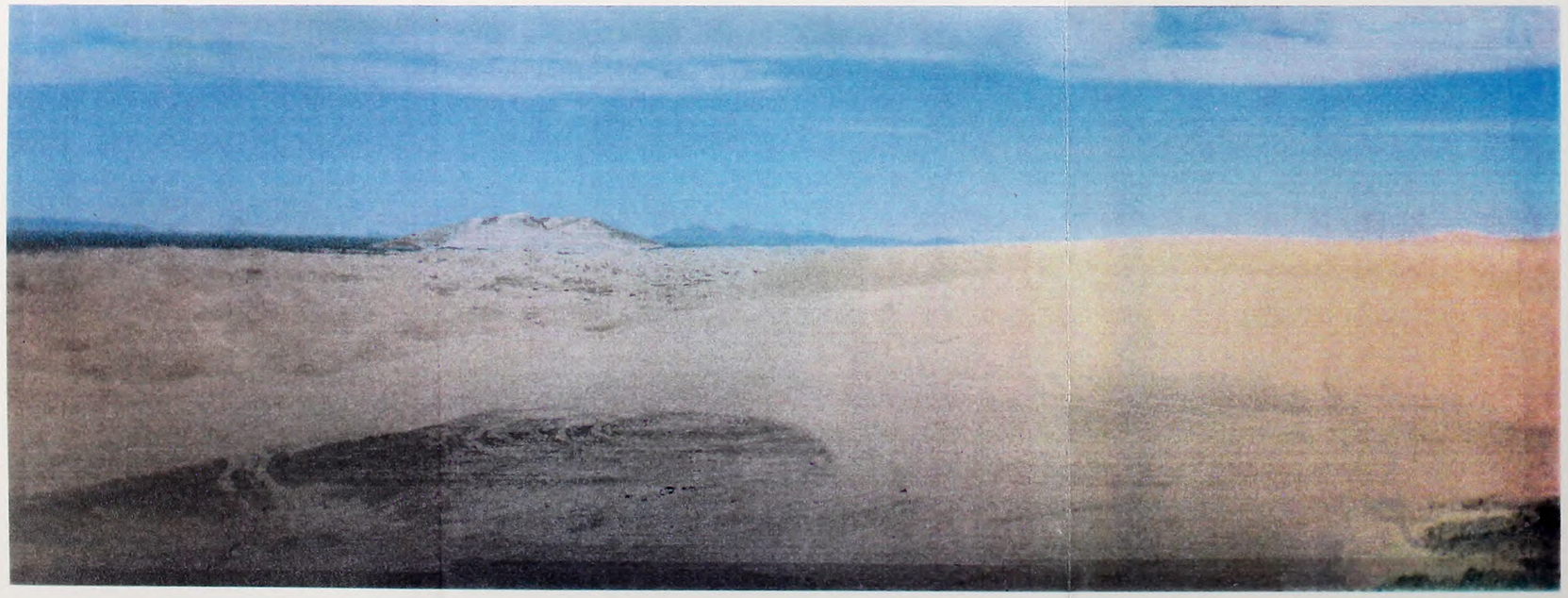
Existing View

View southeast from scenic overlook point at Osborne Park, about eight miles from the alternative site.



View with Alternative Site Landfill

In approximately the Year 2095 when landfilling activities would be completed, the landfill would appear as a large, light brown hill, breaking up the horizon line beyond the sand dunes.

Proposed Mesquite Regional Landfill

Alternative Site Viewpoint #1

FIGURE **4-20**

Source: Environmental Solutions Inc., 1993

Existing View

View southeast from SR 78 at Ted Kipf Road, approximately 3.75 miles northwest of the alternative site.

View with Alternative Site Landfill

After completion, the landfill would appear as a large brown hill, dissimilar to the surrounding topography.

Proposed Mesquite Regional Landfill

Alternative Site Viewpoint #2

FIGURE **4-21**

Source: Environmental Solutions Inc., 1993

TABLE 4-34

Project-Related Direct Workers and Secondary Workers from Project-Related Purchases of Goods and Services in Imperial County

Mesquite Regional Landfill - Alternative III

Employment Category	Initial Construction (Peak Employment)	Long-Term Operations
Imperial County Residents		
Direct Workers	83	148
Secondary Workers	696	65
Subtotal Imperial County	779	213
Residents of Other Counties		
Direct Workers	82	147
Secondary Workers	65	7
Subtotal Other Counties	147	154
Total Workers		
Direct Workers	165	295
Secondary Workers	761	72
Total	926	367

Note: Employment estimates do not include direct and secondary employment that would be generated by hauling clay 60 days per year from the Mesquite Mine to the alternative site.

Source: Environmental Solutions, Inc., 1992; The Butler Roach Group, 1993.

TABLE 4-35

Estimated Project-Related Earnings from Direct Payrolls and Secondary Payrolls Created by Purchases of Goods and Services in Imperial County

Mesquite Regional Landfill - Alternative III

Earning by	Initial Construction	Long-term Operations
Earnings (Millions 1992$)		
Imperial County Residents		
Direct	$ 2.10	$ 4.41
Secondary	16.02	1.50
Subtotal Imperial County	$18.12	$ 5.91
Residents of Other Counties		
Direct	$ 2.08	$ 4.39
Secondary	1.49	0.16
Subtotal Other Counties	$ 3.57	$ 4.55
Total Earnings		
Direct	$ 4.18	$ 8.80
Secondary	17.51	1.66
Total	$21.69	$10.46

Note: Earnings estimates do not include direct and secondary earnings that would be generated by the hauling of clay materials 60 days per year from the Mesquite Mine to the alternative site.

Source: The Butler Roach Group, Inc., 1993.

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Adoption of Alternative III would produce increased tax revenues and expenditures derived from the increased earnings and inmigration, respectively. Host fee revenue would be the same as for the Proposed Action because Alternative III would be as large as the proposed landfill and would receive MSW residue at the same rate as the proposed landfill.

No unmitigated impacts to land uses along the proposed or expanded rail haul route required for Alternative III are identified previously in this Chapter. Therefore, adverse impacts to property values would not be significant.

As with the Proposed Action, the Applicant would be responsible for providing financial assurance for landfill closure, post-closure care, and corrective action.

4.5.13.2 Mitigation Measures

With implementation of the mitigation measures described in Section 4.1.13, impacts would not be significant.

4.5.14 PUBLIC SERVICES AND UTILITIES

4.5.14.1 Impacts

Public Services

An emergency vehicle and first aid station with trained personnel would be provided at the landfill site to administer treatment in the event of any emergency. The nearest hospital is located in Brawley. No heliport would be located on the proposed site. However, in the event of an emergency that would require medical air evacuation services, a helicopter would be able to land in any cleared area or wash in the vicinity of the alternative site. A private security force and fire fighting system and equipment would be provided on the proposed alternative site. In addition, the County could respond to a fire without increasing existing facilities, manpower, or equipment. The applicant would upgrade SR 78 and Ted Kipf Road to provide the necessary site access. No significant impacts would occur.

Community Facilities

Impacts to community facilities including schools, parks and recreation facilities, libraries, and solid waste facilities, would be similar to those discussed in Section 4.1.14 Public Services and Utilities, of this EIS/EIR. No significant impacts would occur.

Utilities

Power or Natural Gas

Sources of on-site power are described in section 4.1.15 of this EIS/EIR. Electricity would be brought in along the SP ROW. The Applicant would pay for this improvement; therefore, impacts would not be significant.

Section 2.2 contains a list of anticipated equipment required for the landfill. This equipment would be primarily powered by diesel engines. Adequate fuel sources exist in the region however, fuel storage tanks would be required at this alternative site. These tanks would be constructed to be consistent with current building code and licensing requirements.

There are no natural gas lines in the vicinity of the alternative site. Bottled gas is available from local distributors. No significant impacts to electric or natural gas supplies or purveyors would occur.

In addition, if a full-scale LFG generation enhancement program proves successful, it may be economically feasible to use the LFG for on-site or commercial energy recovery.

Communications Systems

No telephone service currently exists on this site. A microwave station or satellite ground station built by the Applicant would provide telephone service for the alternative site. No above or

below ground telephone lines would be required, therefore, no significant impacts to communications would occur.

Water

There are no known existing water lines at the alternative site. The most likely source of water would be from newly-constructed, on-site wells. Potable water would be obtained by treating ground water pumped from these wells. Since this alternative site is directly over the Amos-Ogilby Basin, construction of new wells should be feasible. No significant impacts would result.

Sanitation

No public sewer services are provided at the alternative site. Sanitation would be provided as described in Section 2.1.13 of this EIS/EIR. Impacts would not be significant.

Precipitation Drainage

A preliminary drainage plan is shown on Figure 2-37. The Applicant would provide protection for Ted Kipf Road, the SP Main Line, and project-related facilities. Impacts would not be significant.

4.5.14.2 Mitigation Measures

With implementation of the mitigation measures described in Section 4.1.14, impacts would not be significant.

4.5.15 ENERGY CONSUMPTION/ CONSERVATION

4.5.15.1 Impacts

The energy usage and the energy recovery capacity for Alternative III would be similar to the energy usage and energy recovery capacity described for the Proposed Action. The primary difference would be the requirement to truck clay materials from the Mesquite Mine to the alternative site and to excavate cover material. It is estimated that 200 one-way truck trips per day, 60 days per year would be required to deliver clay to the alternative site. This increased fuel usage would be minor when compared to the overall project energy requirements and energy recovery capacity. Nevertheless, compared to the Proposed Action, Alternative III would be less energy efficient but not enough to create a significant environmental effect.

4.5.15.2 Mitigation Measures

Impacts would not be significant; therefore, mitigation would not be required.

4.6 ALTERNATIVE IV - LARGER PROJECT

The following analysis describes the environmental impacts of Alternative IV - Larger Project. Energy recovery options could also be implemented at this site. The impacts of energy recovery described in Section 4.1 of this EIS/EIR also apply to energy recovery impacts of Alternative IV. The impacts of a potential gas pipeline to Niland described for the Proposed Action would also occur if Alternative IV were implemented. Therefore, these discussions are not repeated here.

4.6.1 GEOLOGY/SOILS/MINERAL RESOURCES

Development of the larger project alternative would result in impacts that are substantially the same as for the Proposed Action. This is because the larger landfill alternative would be contained within the same project boundary as the Proposed Action. Additional mine overburden and clay materials would be required for cover and liner development of the larger landfill. It is anticipated that upon completion of mining at the Mesquite Mine, on-site overburden materials would accommodate these additional needs. Some additional gravel resources may be required to use as aggregate for various project construction activities. These would be purchased, as needed, from gravel operators in the area. With implementation of the mitigation

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measures identified in Section 4.1.1, impacts would not be significant.

4.6.2 WATER RESOURCES

Water resource consequences associated with the larger project alternative would be slightly greater than for the Proposed Action. The difference would be that 1,000 to 4,033 acre-feet would be used for 90 years resulting in reduced drawdown of local wells. Because of the larger area lined, the potential for "aligned" leaks in the liner and associated ground water contamination would be incrementally greater, but still very small. Potential impacts to precipitation runoff and ground water quality would be essentially the same as those for the Proposed Action, as discussed in Section 4.1.2. With implementation of the mitigation measures identified in Section 4.1.2, impacts would not be significant.

4.6.3 BIOLOGICAL RESOURCES

The larger project alternative would result in the disturbance of 810 additional acres of desert habitat. However, because the larger project would fall within the boundary of the Proposed Action, lands disturbed under this alternative would be the same as those considered in Section 4.1.3 for the Proposed Action because Section 4.1.3 considers the impacts associated with the disturbance of all the land within the project boundary (i.e., all 4,245 acres, including the proposed rail spur ROW). Therefore, the significant impacts (e.g., loss of desert tortoise habitat and potential attraction of ravens that could prey on tortoise) identified for the Proposed Action would also occur for the larger project alternative. With implementation of the mitigation measures identified in Section 4.1.3, impacts would not be significant.

4.6.4 CULTURAL RESOURCES

Implementation of the larger project alternative would result in the same disturbance of identified cultural resources as the Proposed Action. This is because the project boundary would be the same as for the Proposed Action, though the landfill footprint itself would be larger (Figure 2-40). All of the significant cultural resources on-site occur within the footprint of the proposed landfill. With implementation of the mitigation measures identified in Section 4.1.4, impacts would not be significant.

4.6.5 PALEONTOLOGICAL RESOURCES

No paleontological resources exist at the proposed site. Therefore, no impacts to paleontological resources would occur as a result of this alternative.

4.6.6 TRANSPORTATION

The larger project alternative would result in daily MSW deliveries of up to 30,000 tpd, the maximum anticipated waste stream available for deposit in regional landfills from coastal communities over the next 20 years. This would increase the daily number of train trips to and from the Mesquite Regional Landfill to a maximum of 16 MSW residue trains trips per day.

This increased train traffic would cause more at-grade railroad crossing delays than the Proposed Action and would result in a similar increase in the chance of train accidents. The addition of 16 trips per day combined with the present 28 trips per day (Section 4.1.6) would result in a daily traffic volume along the rail haul route of 44 trips. This could be accommodated by the existing SP line configuration, which is estimated to have a practical capacity of up to 65 trips per day.

The increased traffic volumes could also accelerate the timing of railroad crossing improvements funded by the PUC. In addition to the grade-crossing funding contributions included as mitigation for the Proposed Action (Section 4.1.6), the Applicant would contribute the local funding portion (10 percent) of the cost of two additional PUC-administered at-grade railroad crossing improvements or up to $50,000 for each improvement, whichever is less, within one year of the time MSW residue volume

reached 25,000 tpd and 30,000 tpd (i.e., the Applicant would contribute to a total of four additional at-grade railroad crossing improvements). The Applicant would also provide 10 percent of the local funding portion (up to $500,000) for one additional grade-separation project that received the $5 million award in state funding (Section 4.1.6) as part of the PUC's administration of state subsidized grade separations. These funds would be made available in the year the landfill operations reached 30,000 tpd.

The increase in employee-related commuter and truck delivery highway traffic on SR 78, associated with the larger project alternative, would be significant during Mesquite Mine-related peak hour traffic periods until the Mesquite Mine substantially reduces employment (but only if Imperial County MSW was trucked to the site). Impacts would only occur for 90 years as compared to 100 years for the Proposed Action. With implementation of the mitigation measures identified in Section 4.1.6 and providing funding of up to four additional at-grade railroad crossing improvements and one additional grade separation as described above, direct impacts would not be significant. As described for the Proposed Action, employee vehicle trips on SR 78 beginning the afternoon before and ending the morning after weekends and/or holidays from October 1st to May 31st would be cumulatively significant.

4.6.7 NOISE

Implementation of the larger project alternative would result in an increase in the daily number of trains that would travel to the Mesquite Regional Landfill to an average to 16 daily trips along the rail haul route. An increase in the number of train trips would cause more noise events than the Proposed Action and would result in a higher average noise level on the rail-haul route. Impacts would occur for 90 years as compared to 100 years for the Proposed Action. With implementation of the mitigation measures identified in Section 4.1.7, impacts would not be significant.

4.6.8 AIR QUALITY

The expected air emissions in year 90 associated with Alternative IV are shown in Table 4-32. The primary air quality impact differences between the larger project alternative and the Proposed Action include:

- On-site MSW residue handling and disposal activities would increase by 50 percent. This would result in a proportional increase in potential pollutant emissions due to on-site fuels and construction activities, unless additional controls were to be implemented.

- Train traffic on the SP Main Line and transfer truck container deliveries to the LATC intermodal would increase by 50 percent.

LFG emission generation rates for this alternative would also increase. Application of the model described in Appendix F for this case indicates a maximum potential LFG generation rate 50 percent higher than for the Proposed Action.

Table 4-11 summarizes the boundary pollutant concentrations estimated for the Proposed Action and compares them to the NAAQS and CAAQS. However, because this alternative would be similar to the Proposed Action, the boundary pollutant concentrations shown in Table 4-11 would be similar for this alternative. As shown, it is not anticipated that standards would be exceeded. Similar to the Proposed Action, PM_{10} monitoring stations would be provided at locations selected by the ICAPCD to assure that planned control measures (e.g., water spraying of unpaved roads and paving of permanent roads) are maintaining PM_{10} emission concentrations below standards. Additional controls would be implemented if the results of the monitoring are such that the PM_{10} standards are being exceeded.

The 50 percent increase in LFG generation would increase the following three sources of airborne toxics by 50 percent: fugitive LFG, LFG

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destruction device exhaust, and heavy-duty equipment exhaust. These would increase the health risks in Table 4-11 by 50 percent. The resulting carcinogenic risk, acute risk hazard index, and chronic risk hazard index would increase to no more than 1.05×10^{-7}, 4.5×10^{-3}, and 0.02, which would be below acceptable limits. Therefore, impacts would not be significant.

Offset requirement for this alternative would be greater than those required for the Proposed Action. Offsets likely would be obtained from the Mesquite Mine and by diverting agricultural plant material from burning.

The larger landfill footprint would extend closer to the SR 78. However, there would be no increased health risk to travelers using this highway. In addition, a larger landfill project could, for the life of the project, reduce the amount of MSW residue landfilling required in the SOCAB, with resulting improvements to air quality in the SOCAB. These improvements would also assist in reducing O_3 exceedances in the SOCAB, which would in turn reduce O_3 transport-related exceedances in Coachella Valley. The reduced transport from the SOCAB would also reduce the O_3 background in Imperial County, and may reduce O_3 exceedances in Imperial County, depending on the degree that transport in that portion of the Salton Trough is from Mexicali, SOCAB and San Diego.

Local emissions that would be caused by Alternative IV-related train traffic in the Salton Trough areas would increase by 50 percent on average and by 60 percent on the alternate days as compared to the train emission of the Proposed Action. These days would result in 5, 0.3, 0.003, 1.8 and 0.4 percent increases, respectively, of NO_x, ROG, PM_{10}, SO_x and CO in Imperial County, and 3.6, 0.06, 0.03, 0.56 and 0.06 percent increases Coachella Valley. The small increase in NO_x would not cause exceedances of NO_2 CAAQS. The increases in NO_x and ROG could potentially increase background O_3 conditions in the Coachella Valley by about two ppb (see Section 4.1.8). These concentrations would not noticeably contribute to exceedances caused by SOCAB transport, which frequently reach concentrations of 180 ppb. Emissions would begin to decline after 90 years. With implementation of the mitigation measures identified in Section 4.1.8, impacts not be significant.

4.6.9 LAND USE

The potential land use impacts for the larger project alternative would be the same as those of the Proposed Action since the expanded footprint would be entirely within the proposed project site and because off-site impacts to neighboring uses would not be significant. With implementation of the mitigation measures identified in Section 4.1.9, impacts would not be significant.

4.6.10 RECREATIONAL RESOURCES

Because the entire larger project alternative is within the Proposed Action site area and because the additional noise and air quality effects to campers would not be significant, the potential impacts to recreational resources for this alternative would be the same as those for the Proposed Action, as described in Section 4.1.10. Impacts would not be significant.

4.6.11 VISUAL RESOURCES

Potential visual resource impacts of the larger project alternative would be similar to those described in Section 4.1.11 for the Proposed Action. The greatest visual difference would be that the landfill would be closer to SR 78 for approximately three miles, and practically all of the mine overburden piles would be removed. This condition is best illustrated by Viewpoint No. 4 in Figure 4-19, However, the landfill slope would be more visible to highway travelers at the bend in the road. Landfill lighting would occur for 90 years as compared to 100 years for the Proposed Action. Even with implementation of the mitigation measures identified in Section 4.1.11, impacts would remain significant.

4.6.12 ENVIRONMENTAL HEALTH AND PUBLIC SAFETY

A larger project alternative would be operationally the same as the Proposed Action. The on-site health and safety controls identified for the Proposed Action would effectively mitigate landfill-related health and safety issues at higher landfilling volumes. Therefore, the potential on-site or off-site health and safety impacts would be similar to that of the Proposed Action and, with mitigation described in Section 4.1.12, would not be significant.

The increase in vehicular and train traffic resulting from this alternative would increase the potential for safety hazards at grade crossings along the rail-haul route. These impacts would be mitigated as described in Section 4.6.6.

The increased train traffic would also result in the increased potential for a landfill-bound train having an accident. Spillage of any MSW residue would not be expected to create any environmental health or public safety threats. The MSW Residue Spillage Contingency Plan, described in Section 4.1.6, would also be provided under this alternative. Impacts would occur for 90 years as compared to 100 years for the Proposed Action. With implementation of the mitigation measures described in Section 4.1.12 and provision of funding of four additional at-grade railroad crossing improvements and one additional grade separation, as described in Section 4.6.6, impacts would not be significant.

4.6.13 SOCIOECONOMICS

For the larger project alternative, the employment benefits and economic gains to the local region would be approximately 50 percent greater than those discussed for the Proposed Action (Section 4.1.13). These employment and economic benefits would cease in year 90 as opposed to year 100 for the Proposed Action. It is expected that the current high unemployment labor pool in Imperial County would be more than adequate to fill the majority of these project-related jobs. With implementation of the mitigation measures described in Section 4.1.13, impacts would not be significant.

4.6.14 PUBLIC SERVICES AND UTILITIES

A larger project alternative would be operationally similar to the Proposed Action. Therefore, potential impacts to public services and utilities would be similar as those of the Proposed Action, as discussed in Section 4.1.14. Impacts would occur for 90 years as compared to 100 years for the Proposed Action. With implementation of the mitigation measures described in Section 4.1.14, impacts would not be significant.

4.6.15 ENERGY CONSUMPTION/ CONSERVATION

The use of energy on-site and for rail haul would be increased by about 50 percent for this alternative. Table 4-36 shows the daily and annual electrical and fuel usage for the larger landfill project. This alternative would more fully implement SCAQMD 1991 AQMP Measure No. A-D-1, because more MSW residue would be transported out of the basin. It may be more feasible to generate energy under this alternative. Impacts would not be significant.

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TABLE 4-36

Comparison of Energy Requirements for Larger Project (Alternative IV) vs. Proposed Action

Proposed Mesquite Regional Landfill

	Alternative IV				Proposed Action				Difference	
	Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required		Approximate megawatts of electricity required		Approximate gallons of diesel fuel/gasoline required			
	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual	Daily	Annual
On-site energy requirements										
Energy usage (i.e., landfill equipment and lighting)	4.5	1,368	13,950(1)	4,240,800(1)	3	912	9,300(1)	2,827,200(1)	+1.5	+456
Off-site mobile energy requirements										
Rail haul fuel usage(2)	N/A	N/A	30,000	9,120,000	N/A	N/A	20,000	6,080,000	NA	NA
Truck transfer fuel usage(2)	N/A	N/A	7,680	2,334,720	N/A	N/A	5,120	1,556,480	NA	NA
Total	4.5	1,368	51,630	15,695,520	3	912	34,420	10,463,680	+1.5	+456

Notes: This table is based on a disposal rate of 20,000 tons per day for the Proposed Action and 30,000 tons per day for Larger Project (Alternative IV), with a 304 day operation period.
(1) Primary energy usage would be gasoline.
(2) Entire energy usage would be diesel.
(3) Energy requirements for employee commutes would be negligible.
N/A = Not Applicable.

Source: Environmental Solutions Inc., 1993.

4.7 CUMULATIVE EFFECTS

4.7.1 SCOPE OF CUMULATIVE IMPACTS

Pursuant to NEPA and CEQA, this cumulative impact discussion includes consideration of existing, proposed, and reasonably foreseeable future projects that are: (1) in the general vicinity of proposed Mesquite Regional Landfill and could result in potential cumulative impacts, or (2) would result in a compounded or increased impact because of the utilization of the SP Main Line. The cumulative projects addressed in this EIS/EIR include the following:

- Proposed Eagle Mountain Regional Landfill
- Proposed Chocolate Mountain Regional Landfill
- Existing Mesquite Mine
- Existing American Girl Mining Complex - Proposed Oro Cruz Project
- Proposed Calexico East Border Station and State Route 7
- Proposed East Mesa Recharge and Recovery Wells
- Proposed El Centro Intermodal Loading Facility
- Proposed Southern Arizona Transmission Project
- Proposed Tamal Energy Co-Generation Project
- Proposed All American Canal Lining Project

Table 4-37 identifies key characteristics of cumulative projects considered in this analysis. The approximate locations of the cumulative projects in Imperial County are shown in Figure 4-22. The proposed Eagle Mountain Regional Landfill is in Riverside County.

The environmental documents or other data sources used in preparing this cumulative analysis are available for review at the El Centro Area Office of BLM, 1661 South 4th Street, El Centro, California, 92243 or the Imperial County Planning Department, 939 Main Street, El Centro, CA 92243.

Based on the identification of cumulative projects, the following elements of the human environment would potentially be subject to cumulative impacts:

- Water Resources (quantity of ground water use from the Amos-Ogilby Basin);
- Biological Resources (primarily associated with desert tortoise habitat);
- Transportation, Noise, Air Quality, and Environmental Health and Safety (primarily associated with potential concurrent landfills); and
- Socioeconomics.

The socioeconomic cumulative impact evaluation also includes the discussion of current activities that are affecting employment opportunities in Imperial County.

Other environmental resources (geology/soils/ minerals, cultural, paleontology, land use, recreation, visual, and public services) would have site-specific impacts for each of the identified projects. However, cumulative impacts to these resources would not be significant. As discussed in Chapter 1.0, there would be no project-related impacts to farm lands, floodplains, Native American religion concerns, wetlands/riparian zones, wild and scenic rivers and wilderness areas; therefore, there would be no project-related cumulative effects.

4.7.2 DESCRIPTION OF CUMULATIVE PROJECTS

4.7.2.1 Concurrent Regional Landfills

Two additional regional landfills have been proposed within Southern California that would also haul MSW residue via the SP Main Line (Figure 4-23). The concurrent operation of the proposed Mesquite, Chocolate Mountain, and Eagle Mountain Regional Landfills could result

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TABLE 4-37

Characteristics of Cumulative Projects
Proposed Mesquite Regional Landfill

Project Characteristics	Proposed Eagle Mountain Regional Landfill (1)	Proposed Chocolate Mountain Regional Landfill (2)	Existing Mesquite Mine	Existing American Girl Mining Complex - Proposed Oro Cruz Project (3)	Proposed Calexico East Border Station & State Route 7 (4)	Proposed Southern Arizona Transmission Project (5)	Proposed Tamal Energy Co-generation Project (6)	Proposed East Mesa Recharge/ Recovery Wells (7)	Proposed El Centro Intermodal Loading Facility (8)	Proposed All American Canal Lining Project
Approx. Distance from Proposed Action	65 miles	14 miles	Overlapping and Contiguous	20 miles	25 miles	Passes within approximately 4 miles (nearest Alternative)	35 miles	25 miles	Approximately 50 miles	24 miles
Approx. Total Project Area	4,695 acres	3,480 acres	5,200 acres	182 acres	159 acres	Varies by Alternative	10 acres	(e)	(b)	350 acres
Approx. Area to be Disturbed	2,272 acres	1,200 acres	4,000 acres	182 acres	159 acres	Varies by Alternative	None	(e)	(b)	700 acres
BLM Managed Land	2,280 acres	1,150 acres	3,100 acres	182 acres	None	Varies by Alternative	(b)	(e)	(b)	(b)
Daily Truck Highway Traffic	200 (a)	(b)	9	No additional highway traffic	Unknown	Not Applicable	(b)	0	(b)	(b)
Groundwater Requirements (acre-feet/year)	1,972	0	1,000	484 (c)	250 by Year 2015	No long-term requirements	(b)	1,000 (f)	(b)	67,700 (g)
Number of Employees	163	262	370	174 (d)	0	(b)	(b)	(b)	Net loss of 19 local jobs	415 (h)
Anticipated Operating Period	> 100 Years	100 Years	10 to 15 years (Until 2004 to 2009)	through 1997	1995 - (b)	(b)	(b)	One Year	Anticipated Start January 1994	(b)

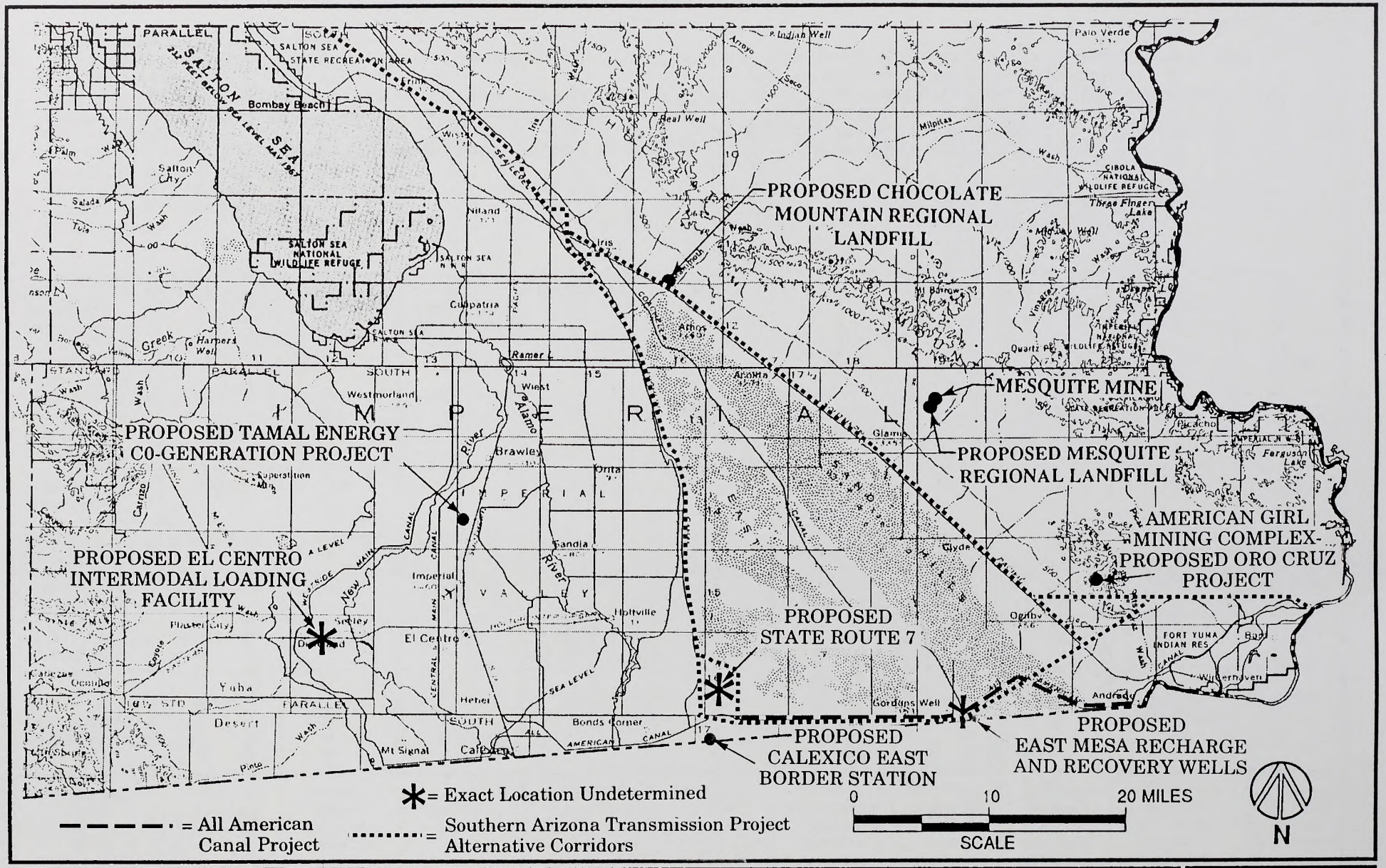
Notes:

(a) Trucks on surface streets.
(b) This information not yet available.
(c) American Girl Complex permitted to use 484 ac-ft/year. Oro Cruz would not cause this amount to be exceeded.
(d) Total employment figure for the American Girl Canyon, Padre Madre, and Oro Cruz projects.
(e) All affected land is managed by BLM; however, no acreage figures are available.
(f) 1,000 acre-feet of reclaimed water/year would be pumped into the East Mesa Basin to replace this use.
(g) The amount of current seepage that would be prevented by the project.
(h) Full-time equivalent construction workers.

Source:

(1) Eagle Mountain Regional Landfill Draft EIS/EIR, June 1991.
(2) Chocolate Mountain Regional Landfill, Application for Development, September 1992.
(3) American Girl Project, Oro Cruz Operation Public Scoping Meeting Handout, June 1992.
(4) Calexico East Border Station Final EIS, August 1993.
(5) Notice of Intent published in the Federal Register, January 28, 1993.
(6) Imperial County Planning Department, October 1993.
(7) East Mesa Recharge Demonstration Recovery Wells Scope of Services Proposal to Imperial County Planning Department, No date.
(8) El Centro Intermodal Loading Facility Proposal for Funds, August 31, 1993.

Source: Butler Roach Group, Inc., 1993.

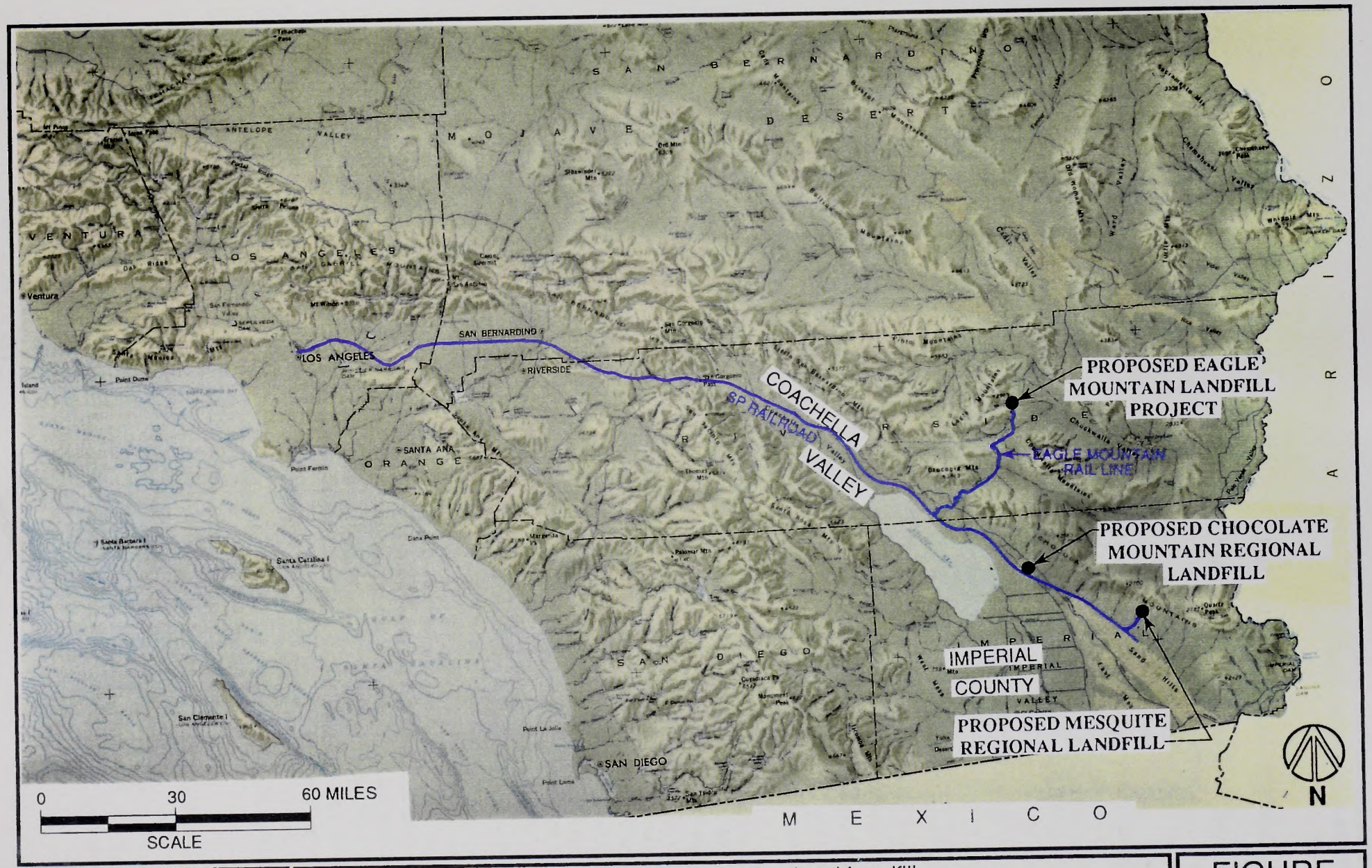


SOURCE: Environmental Solutions, Inc. 1993.

Proposed Mesquite Regional Landfill

Projects Considered for Cumulative Impact Analysis

FIGURE **4-22**



SOURCE: Environmental Solutions, Inc. 1992.

Proposed Mesquite Regional Landfill

Location of Proposed Regional Landfills on Southern Pacific Main Line Rail Route

FIGURE **4-23**

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in cumulative impacts. The proposed Bolo Station (Rail-Cycle) project is not addressed here because this project would be served by different railroad tracks and is so far away from the others that there would be no cumulative impacts. The following discussion presents the assumptions used for the cumulative analysis of the concurrent operation of the three regional landfills.

In the event of the concurrent operation of the three regional landfills, each of the landfills likely would operate at disposal rates less than the maximum disposal rates identified by the project applicants (i.e. less than 20,000 tpd) because there would be insufficient MSW residue in the foreseeable future to provide all three projects with 20,000 tpd. The exact total and distribution of waste delivered to each landfill cannot be projected with precision because of the numerous variables that could change during the 100-year lives of the projects, including:

- The population growth rate in the coastal counties and the future waste per capita trends.
- The success of diversion programs (e.g., AB 939).
- The availability of new or expanded landfills in the coastal areas.

Nevertheless, cumulative impacts are analyzed assuming that all three landfills operate at proposed levels. Five trains per landfill per day would be required to haul the MSW residue, resulting in 30 new one-way train trips per day on the SP Main Line.

The operating schedules would also be different for each landfill. However, for the purpose of this analysis, it is assumed that the three separate operations would result in a fairly even distribution of trains throughout the day to avoid overall railroad scheduling conflicts.

Proposed Eagle Mountain Regional Landfill

The proposed Eagle Mountain Regional Landfill (EMRL) would be located at the site of abandoned iron ore mines in the Eagle Mountains in Riverside County. Figures 4-22 and 4-23 show the proposed location of the EMRL, as provided in the Draft and Final EIR/EIS documents submitted for public review in 1991 and 1992, respectively (Riverside County, 1992). Key features of the proposed Eagle Mountain project are listed on Table 4-37 and are summarized below:

- Property Size: 4,695 acres
- Federal Land Exchange Size: 2,280 acres
- Landfill Size: 2,272 acres
- Landfill Capacity: 700 million tons
- Daily Site Capacity: 20,000 tpd
- Operational Life: Greater than 100 years

The proposed EMRL would receive MSW residue from new transfer stations and MRFs in the Los Angeles area. The trains would operate at night or as required to satisfy overall railroad schedules. The trains would travel along the SP Main Line to Ferrum Junction adjacent to the east shoreline of the Salton Sea near the Riverside and Imperial County boundaries. This approximate 150 mile portion of the trip would be on tracks common with the proposed Chocolate Mountain and Mesquite regional landfills.

From Ferrum Junction to the Eagle Mountain landfill site, the EMRL-trains would be hauled by either Eagle Mountain project or SP locomotives along a 52-mile long, dedicated spur line. This rail spur would be upgraded along the route originally used for hauling of iron ore. Trucks could also deliver up to 2,000 tpd of MSW from local communities in Riverside and San Bernardino counties.

Proposed Chocolate Mountain Regional Landfill

In September 1992, Chambers Waste Systems of California, Inc., submitted an Imperial County CUP application for the proposed Chocolate

Mountain Regional Landfill (CMRL). The County deemed the application incomplete and is currently awaiting the submittal of a revised application. As proposed, the CMRL would be located on undeveloped land between the SP Main Line and the CMAGR. This site is approximately 14 miles north and west of the proposed Mesquite Regional Landfill (Figure 4-22). Key features of the proposed CMRL are shown on Table 4-37 and are listed below:

- Property Size: 3,480 acres
- Federal Land Exchange Size: 2,530 acres
- Landfill Size: 1,200 acres
- Daily Site Capacity: 20,000 tpd
- Operational Life: 100 years

The Chocolate Mountain Regional Landfill Application for Development, indicated that the CMRL would received up to 20,000 tpd of MSW residue for up to 100 years (Chambers, 1992). Most of the MSW residue would be hauled to the landfill on the SP Main Line. In addition, approximately 300 tpd of Imperial County MSW residue may be hauled to the landfill by truck. The Application for Development also indicated that MSW residue would be collected at transfer stations that would generally include MRFs (Chambers, 1992). However, the area in which the waste stream would be generated was not identified.

The transfer stations would be connected to the SP Railroad either by rail or by trucking MSW residue to an intermodal facility. The number and size of the trains required for this project would depend on several factors, including, but not limited to the ultimate locations of the transfer stations and the scheduling considerations of the SP Railroad.

The proposed CMRL would require approximately 350 to 400 acre-feet of water per year. This water would be obtained from the IID. It would be taken from the East Highland Canal and transported to the site via pipeline. According to the Application for Development, the IID water may be supplemented by ground water sources or by diverting surface water runoff into a holding basin located within the project boundaries.

The project area was found to contain low quality habitat for desert tortoise and signs of desert tortoise were found within the project vicinity (Chambers, 1992). In addition, the project area contains creosote bush scrub habitat, which is associated with flat-tailed horned lizards (proposed for listing as a federal threatened species by the USFWS).

4.7.2.2 Mining Activities

Mesquite Mine

The Mesquite Mine and related activities are discussed in Section 1.2.2 of this EIS/EIR. Key features of the Mesquite Mine are identified on Table 4-37. The Mesquite Mine overlaps and is contiguous to the project area for the proposed Mesquite Regional Landfill. The Mesquite Mine is currently operating at about 85 percent of its permitted capacity. Mining activities are expected to remain at approximately current levels until about 1997. After 1997, it is anticipated that Mesquite Mine activities would decline until mining at the site is completely discontinued sometime in the next 10 to 15 years.

American Girl Mining Complex - Oro Cruz Project

The American Girl Mining Complex (AGMC) consists of two active mines (American Girl and Padre Madre) and the proposed Oro Cruz Mine. All of these mines are located in the Cargo Muchacho Mountains, about 20 miles southeast of the Mesquite Mine. A Plan of Operation was submitted to the El Centro Office of the BLM, describing the proposed Oro Cruz Gold Mine (BLM, 1993). The BLM is currently preparing an environmental impact statement to address the environmental impacts of the combined mining operations. Characteristics of the AGMC are summarized in Table 4-37 and its location is depicted on Figure 4-22.

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The AGMC obtains its water supply from the perimeter of the Amos-Ogilby alluvial basin. This basin would also serve as the water supply for the proposed Mesquite Regional Landfill. In addition, the AGMC is located in Category III desert tortoise habitat. Employees at the AGMC primarily live in the Yuma area and do not commute on SR 78.

4.7.2.3 Transportation Projects

One transportation-related project is proposed, which could potentially result in significant cumulative impacts and for which sufficient environmental impact data is available to allow cumulative impacts to be addressed.

Calexico East Border Station and State Route 7

The U.S. General Services Administration (U.S. GSA) and Caltrans prepared a Draft and a Final EIS/EIR that addresses the construction of a new Port of Entry (POE) between the United States and Mexico, approximately 6.5 miles east of the City of Calexico in Imperial County (U.S. GSA, 1993). The Draft and Final EIS/EIR were distributed for public review on February 26, 1993, and August 6, 1993, respectively.

In conjunction with this development, a new four-lane highway, SR 7, would be constructed between the POE and State Route 98. The South Alamo Canal would also be realigned to accommodate construction of SR 7. The purpose of the Calexico East Border Station project is to relieve major congestion at the existing Downtown Calexico crossing.

The proposed Calexico East Border Station would service all commercial vehicles currently passing through the Downtown Calexico port. It would also accommodate passenger vehicles and pedestrian traffic. Construction of all POE facilities is scheduled to be completed by early 1995 and the completion of SR 7 is proposed to coincide with the opening of the new border station. Combined, the station, the connecting highway, and related improvements would involve approximately 159 acres.

The characteristics of the proposed Calexico East Border Station and SR 7 are shown on Table 4-37 and the general location of the project is depicted on Figure 4-22.

Water for the proposed border station would be obtained from IID and no ground water would be used. Shallow ground water would be extracted during construction. This effort would be coordinated with the RWQCB. Agricultural lands surround the proposed border station and no displacement of natural communities or habitat for special status species would occur.

4.7.2.4 Water Conservation Projects

All American Canal Lining Project

The U.S. Bureau of Reclamation (USBR) and the IID have proposed to line the All American Canal to conserve water that is being lost through seepage. It is estimated that approximately 67,700 acre-feet per year of water would be conserved by the preferred Parallel Canal Alternative.

The USBR and IID jointly released a draft EIS/EIR for the All American Canal Lining Project on June 9, 1991. Project elements are described on Table 4-37 and the project location is shown on Figure 4-22. In all, 23 miles of lined canal would be constructed, reducing water loss.

4.7.2.5 Other Cumulative Projects in Imperial County

Several other projects that could produce cumulative or related impacts were identified in Imperial County. These include the proposed East Mesa Recharge Demonstration Project, the proposed El Centro Intermodal Facility, the proposed Southern Arizona Transmission Project, and the proposed Tamal Energy Co-Generation Project. These projects fall under the category of reasonably anticipated future projects.

It is not possible to determine the cumulative effects associated with these projects because

1) the projects are in the early planning stages and have not been fully developed at this time; or 2) the environmental review for the projects has not been completed. Therefore, the cumulative impacts for projects described in this section are too speculative in nature to determine.

East Mesa Recharge Demonstration Recovery Wells

The USBR submitted to the Imperial County Planning Department, a Draft Scope of Services Proposal to conduct the Imperial County portion of the Colorado River Recharge Study (Imperial County, N.D.). This study would determine the feasibility of developing a recharge/recovery operation in the vicinity of the All-American Canal and its Coachella Branch (Figure 4-22). The study would include the installation of four (4) 16-inch diameter, 70-foot deep pilot demonstration wells to be constructed along the old, unlined Coachella Branch recharge area. Water recovered from the wells would be piped directly to the east through an 8-inch diameter conveyance line into the lined Coachella Branch Canal for delivery to Coachella Canal. The USBR would also conduct a recovery test by pumping 1,000 acre-feet of water out of the East Mesa Basin over a one-year period. An amount of water equal to the amount of water recovered would be made available by Reclamation. Therefore, there would not be a net loss of ground water in the East Mesa Basin. If successful, the recharge and recovery of water in East Mesa could be used as one option to facilitate the delivery of 16,000 acre-feet of water to the Band of Mission Indians in San Diego County, California.

The USBR is in the process of locating a non-federal partner to provide matching funds for the study and no further information is available at this time.

El Centro Intermodal Loading Facility

In August 1993, Kuhn Farms, submitted a proposal for funds under the AB 2766 Discretionary Funds Program to the Imperial County Planning Department (Imperial County, 1993d). Kuhn Farms proposes to initiate a project that would substitute rail transport of agricultural products for the existing truck transport by opening a freight intermodal facility in El Centro, California. The facility would load containers and trailers onto railroad cars for delivery to the Los Angeles port areas and nearby facilities. The proposed freight intermodal facility would be located along the SP Railroad Imperial Branch Line. A specific location has not yet been identified; however, the proposal included a site location map which identified the general area between I-8 and SR 80, west of Seeley (Figure 4-22).

The main objective of the project would be to substitute trucking with rail-haul. This would begin with approximately 2,000 round trip truck loads in the first year of operations, increasing to 15,000 loads over five years (the number of train trips required to haul these truck loads has not been estimated). The initial shipments would consist of Kuhn Farms' volume of hay bound for Pacific Rim countries via the ports of Long Beach and Los Angeles. According to the Proposal for Funds, Kuhn Farms expected to begin operations in January 1994 (Imperial County, N.D.). No formal development permit application has been submitted to the Imperial County Planning Department and no further information is available.

Southern Arizona Transmission Project

The IID has requested a ROW grant from BLM to construct, operate, and maintain a 500 kilovolt (kV) electrical transmission line between Arizona and California (IID, 1993). The purpose of the project is to satisfy increased customer electrical energy demands and anticipated customer increases. The proposed transmission line, known as the Southern Arizona Transmission Project (SATP), would begin at the Palo Verde switchyard, west of Phoenix, Arizona, and would terminate near Desert Hot Springs, California. The transmission line's proposed route would proceed southwest from Palo Verde, linking with the North Gila Substation, northeast of Yuma

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Arizona. From North Gila, the proposed SATP route would proceed north adjacent to and paralleling the SP Main Line. It would continue northward, following the IID's existing 230 kV collector system paralleling the East Highline Canal and linking with the Midway, Coachella Valley and Mirage Substations. From the Mirage Substation, the route would proceed in a northwest direction, ultimately terminating at Southern California Edison's Devers Substation near Desert Hot Springs, California.

The location of that portion of the transmission route located within Imperial County is shown on Figure 4-22.

The BLM and the IID have entered into a agreement to prepare a joint EIS/EIR for the proposed transmission line project. The NOI for the Southern Arizona Transmission Project EIS/EIR was published in the Federal Register on January 28, 1993. According to the NOI, the EIS/EIR will address the issues of land use, biological resources, visual resources, cultural resources, and electrical effects. It is anticipated that the Draft EIS/EIR will be available for public review in April or May 1994 (pers. comm., Seigel, M., November 11, 1993).

Tamal Energy Co-Generation Project

In October 1993, Russell Associates submitted a comment letter on the Imperial County Draft General Plan Update (Imperial County, 1993c). This letter indicated that Tamal Energy, Inc., has plans to construct a large gas-fired co-generation project adjacent to the Holly Sugar facility on Keystone Road in Imperial County. The proposed facility would be located on 10-acres within the proposed Mesquite Lake Special Planning Area, approximately 35 miles west of the proposed Mesquite Regional Landfill. Imperial County has not received a formal development application for this project and an environmental review has not been conducted. The general location of the proposed co-generation facility is shown on Figure 4-22. However, because this project is in its early planning stages, specific information about the project is not currently available.

4.7.3 RESOURCE-SPECIFIC CUMULATIVE IMPACTS

4.7.3.1 Water Resources (Ground Water Usage)

The Proposed Action would impact the Amos-Ogilby Basin and if a hydrological connection exists, the East Mesa Basin as well. This analysis considers only cumulative impacts to the Amos-Ogilby Basin because the Amos Ogilby Basin is smaller and experiences a lesser recharge than the combined basins.

The Mesquite Mine and the AGMC are the only other existing facilities in the vicinity of the proposed landfill that cause a net loss of substantial volumes of ground water from the Amos-Ogilby Basin. The Mesquite Mine is expected to operate for an additional 10 to 15 years, and with the approval of the Oro Cruz Project, the AGMC is anticipated to operate until 1997. The potential water use impacts discussed in Section 4.1.2 include consideration of the cumulative effects of both of these operations for that period and finds that impacts would not be significant because the Amos-Ogilby Basin would continue to experience a net recharge.

The proposed All American Canal Lining Project would substantially reduce recharge of the Amos-Ogilby Basin (by 67,700 acre-feet/year). Because the Amos-Ogilby basin would still receive a net recharge from the Colorado River, rainfall infiltration, and the All American Canal (it is estimated that approximately 15,000 acre-feet/year would still leak from a lined canal), cumulative impacts would not be significant.

The proposed CMRL may use ground water to supplement its water supply. Cumulative impacts to ground water would still not be significant.

There are no other known cumulative projects that, when combined with the Proposed Action, would result in a net loss of substantial volumes of water from the Amos-Ogilby basin.

4.7.3.2 Biological Resources

The Proposed Action would impact the Chuckwalla Bench population of desert tortoise. Category III habitat would be lost, but areas of critical habitat would be purchased by the Applicant and given to BLM as exchange and compensation parcels. The Proposed Action would not impact any other desert tortoise population and would not jeopardize the existence of the Chuckwalla Bench desert tortoise population. Therefore, only cumulative impacts to the Chuckwalla Bench desert tortoise population are considered in this analysis. Impacts to other species and habitat would not be cumulatively significant because the distribution of these species and habitats is extensive.

Biological resources associated with the proposed EMRL, the proposed CMRL, and AGMC have been or would be identified and analyzed for site-specific impacts in the environmental documents for each project.

Except for a portion of the EMRL rail spur, each of the regional landfill projects and the AGMC are located in a lowest priority Category III desert tortoise habitat area. These Category III areas are so designated because they are not considered essential to maintenance of viable populations, have relatively low tortoise densities, and have unresolvable conflicts (e.g., between habitat and land uses) (U.S. DOI, 1988). The total acreage of Category III habitat potentially disturbed by the projects cannot be determined at this time because the area of impact from the proposed CMRL and the AGMC are unknown. A net loss of desert tortoise habitat would occur. However, the total area of cumulative impact from each of these projects would be relatively small compared to the total habitat area of the Chuckwalla Bench desert tortoise population.

Each of the projects in desert tortoise habitat would be required to complete Section 7 consultation and obtain a biological opinion from the USFWS. Measures to mitigate significant desert tortoise impacts would be specified through this process. The mitigation measures implemented would include at a minimum various combinations of the following types of activities:

- Initial site clearance and relocation of desert tortoise by a trained person;
- Fencing to preclude reentry;
- Construction and operations worker and visitor training;
- Provisions to prevent rail-related mortality;
- Provisions to minimize the attraction of tortoise predators (e.g., ravens);
- Off-site compensation by transferring ownership of privately-owned Critical or Category I habitat land to federal ownership and protection based on a ratio formula designated by the BLM in consultation with the USFWS; and/or
- Speed controls for unfenced access roads.

Implementation of these measures would result in insignificant cumulative impacts to the desert tortoise.

Cumulative impacts to on-site habitat areas and other sensitive species would occur but would not be significant because the potentially impacted habitats (desert microphyll woodland and creosote brush scrub) and the associated foraging areas provided by these habitat areas are very small when compared to the total quantity of such habitat and foraging area in the Colorado Desert, because existing higher quality areas of similar habitat would be preserved off-site, and because the projects are far enough apart that the cumulative impacts would not occur to one localized population.

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Cumulative rail-haul impacts along the SP Main Line would occur. Rail traffic on the SP Main Line would approximately double if all three proposed regional landfills received 20,000 tpd of MSW residue by train. It is reasonable to assume that the increase in train traffic would result in an increase in train-related wildlife mortality along the SP Main Line. Impacted wildlife mortality potentially would include the wildlife species identified in Section 3.3 of this EIS/EIR, game species such as the mule deer, and other common species. Any increase in the train-related mortality, or "take," of state and federally protected species would be a cumulatively significant environmental impact. Likewise, any increase in truck and automobile-related mortality, or "take," of state and federally protected species would be a cumulatively significant environmental impact. Increased mortality of game species and common species would not be a cumulatively significant environmental impact because the cumulative mortality would be very small when compared to existing populations.

4.7.3.3 Transportation

The analysis of cumulative railroad impacts was limited to the SP Main Line between the LATC and the proposed rail spur, because project-related trains would not impact other railroads. The analysis of cumulative highway impacts was limited to SR 78 west of the ISDRA. Very little project-related traffic would travel east on SR 78. Therefore, cumulatively significant impacts would not occur east of the proposed site. Project-related traffic west of Glamis would travel to various communities in western Imperial County, Riverside County, and beyond. It is not possible to predict the distribution of the project-related trips west of Glamis, because they would disperse quickly (i.e., turnoff onto other roads heading for varying destinations). Impacts would not be concentrated on any given road and cumulative impacts would not be significant.

Cumulative rail-related transportation impacts would primarily be associated with the concurrent operation of the three proposed regional landfills. The combined operation of the three landfills would add 15 trains (30 one-way trips) to the SP Main Line. As of July 1992, the average volume of rail traffic along the proposed rail-haul route was 28 trips per day. The concurrent operation of all three regional landfills would increase rail traffic to 58 trips. This would be below the haul route's current maximum practical capacity of 65 trips, given its present single track arrangement (SP, 1992). In addition, at-grade railroad crossing improvements would continue to be implemented as directed by the PUC. As described in Section 4.1.6, the Applicant would contribute to the cost of these improvements according to the rate at which the proposed Mesquite Regional Landfill rail traffic increases, and based on priorities established by the PUC. Any accidents involving Mesquite Regional Landfill trains would be handled according to the MSW Residue Spillage Contingency Plan (Table 4-26) that would be provided to SP at the commencement of operations. It is assumed that contributions to railroad crossing improvements and the basic procedures presented in the MSW Residue Spillage Contingency Plan would be implemented by each of these proposed regional landfills. Therefore, the cumulative effects on the rail-haul route would not be significant.

In the event that rail traffic exceeds 65 trips/day because of future, unforeseen increases in train trips, SP may decide to upgrade segments and/or control procedures to increase capacity. The environmental impacts of any unforeseen improvements to the SP Main Line cannot be predicted at this time and any physical changes required to upgrade rail segments would be subject to applicable environmental review.

Cumulatively significant impacts to SR 78 in the project vicinity would occur during winter weekends between October 1st and May 31st each year. During these weekends, large traffic volumes travel SR 78 bound for the ISDRA and neighboring areas. The additional project-related traffic would exacerbate the LOS F conditions experienced in this area during these weekends.

4.7.3.4 Noise

Potential cumulative noise impacts would occur with the increased rail haul traffic on the SP Main Line resulting from the concurrent operation of the regional landfills. The distance between the landfill sites themselves is too great to result in site-related cumulatively significant noise impacts.

Thirty additional daily one-way trips would be required to haul a total of 60,000 tons of MSW residue to the three proposed regional landfills considered in this analysis. A conservative estimate of the noise impacts would be to consider the effects of 30 additional daily trips with "current technology" locomotives. For this case and assuming the distribution of trips to be 15, 3, and 12 for daytime, evening, and nighttime, respectively, the CNEL would increase to 79.1 dBA. This represents an increase of 2.4 dBA above current conditions (76.7 dBA in the Coachella Valley) and would not be significant.

4.7.3.5 Air Quality

Cumulative air quality effects would occur in the SOCAB, SEDAB, and Imperial County. No project-related emissions would occur in other air basins. Out-of-basin transport of project-related emissions would not be significant because the good mixing characteristics of the Imperial County air basin would reduce project-related pollutant concentrations to insignificant levels before those pollutants enter another air basin.

Proposed Action

The Proposed Action would contribute to local exceedances of PM_{10} during periods of high wind. Project-related PM_{10} concentrations would be at their minimum during these periods of high wind. Despite offsets, there would be a net increase of PM_{10} emissions related to proposed landfill activities. This would be a cumulatively significant effect of the Proposed Action.

Cumulative Regional Landfills

Additional trains hauling 60,000 tpd of MSW residue along the SP Main Line to the three proposed regional landfills would result in air quality impacts that are directly proportional to those discussed for the proposed Mesquite Regional Landfill (Section 4.1.8). This comparison is shown on Table 4-38. The regional and local impacts and beneficial effects would also be proportionally greater than those identified for the proposed Mesquite Regional Landfill itself. The EMRL rail haul emissions that would occur for the last 52 miles of the Eagle Mountain rail haul route, which is east of the SP Main Line, are not included in this comparison because that area is not within the Salton Trough portion of the SEDAB. These estimates do not include adjustments for future improvements in the control of train-related air pollutant emissions. It is assumed that project-related trains would use diesel fuel that conforms with the recent requirement that diesel fuel for highway vehicles have a sulfur content of less than 0.05 percent.

The additional reductions in NO_X and ROG in the SOCAB that would be achieved by reducing the quantity of MSW residue that would otherwise be landfilled in the SOCAB would result in a further reduction in the creation of O_3 as compared to the Proposed Action. O_3 is the key component of smog in the SOCAB. For the same reason, there would be additional reductions in each of the other criteria pollutants in SOCAB. Therefore, air quality effects in SOCAB would be positive as a result of the increased waste-by-rail hauling.

The decrease of O_3 in SOCAB would also result in a reduction of background and peak concentrations (and the potential for exceedances of standards) of O_3 in the Coachella Valley and Imperial County. The increased emissions of criteria pollutants in Imperial County and the Coachella Valley would be small (i.e., no more than three times the emissions shown on Table 4-13).

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TABLE 4-38

Rail Haul Transport Emissions (1) for the Proposed Action and Cumulative Regional Landfills for Year 16 (2009) (lb/day)

Proposed Mesquite Regional Landfill

I. SOCAB

PROJECTS	NO_X	ROG	PM_{10}	SO_X	CO
Proposed Action	3,480	260	160	120	940
3 Regional Landfills - 60,000 tpd	10,430	770	490	350	2,820

II. COACHELLA VALLEY

PROJECTS	NO_X	ROG	PM_{10}	SO_X	CO
Proposed Action	2,680	120	80	60	380
3 Regional Landfills- 60,000 tpd	8,030	360	240	180	1,120

III. IMPERIAL COUNTY

PROJECTED	NO_X	ROG	PM_{10}	SO_X	CO
Project Site/Trains	1,990	100	60	40	610
2 Regional Landfill/ Trains - 60,000 tpd	3,240	160	100	50	890

Notes:

(1) Emissions between MSW generators and transfer/compactor stations are identical for project and "No Project" alternatives. After the trucks leave these stations, the emissions are summed to provide the values in this table.

Source: Environmental Solutions, 1993.

Mesquite Mine and All American Girl Mining Complex Considerations

In evaluating potential cumulative impacts, other sources of criteria air pollutants in Imperial County were evaluated for their proximity to the project site and the possibility that their contributions to ambient air concentrations might need to be added to those of the landfill. The only stationary sources of air emissions within 20 miles of the landfill are the Mesquite Mine and the AGMC. The mine overlaps the landfill in site layout. The Mesquite Mine is expected to close in the next 10 to 15 years. The AGMC is located approximately 16 miles from the proposed Mesquite Regional Landfill. Because air quality standards must be met at the boundaries of both the AGMC and the proposed Mesquite Regional Landfill, these projects are not expected to result in adverse cumulative air quality impacts.

During the period when both the Mesquite Mine and the proposed Mesquite Regional Landfill are operating concurrently, cumulative impacts for all but PM_{10} emissions would not be significant because required offsets for landfill emissions would be obtained by diverting agricultural plant material from burning. PM_{10} emissions during periods of high winds and associated background PM_{10} levels that exceed standards would be cumulatively significant.

Calexico East Border Station and State Route 7

Construction of the Calexico East Border Station and SR 7 would generate the emission of air pollutants and would contribute to relatively high existing background PM_{10} levels during the 10 month construction period. This cumulative project would implement standard dust control procedures including construction site watering, maintaining vehicle speeds below 15 MPH, and covering construction loads with tarps. Operation of the new POE would have a significant impact on CO concentrations at the Border Station itself. A local CO "hot spot" would be created by vehicles queued up during the peak travel periods. However, the project includes mitigation measures to minimize the waiting time for vehicles to reduce the amount of exhaust in the vehicle inspection area, protect workers in the inspection booths from exhaust, and dilute any vehicle exhaust that may enter the inspection booths. Because the proposed Mesquite Regional Landfill would be located approximately 25 miles from the proposed POE and because it is not expected that the proposed Mesquite Regional Landfill would contribute to border crossings at the POE, cumulative impacts from the Proposed Action to the CO hot spot at the POE would not occur.

The new POE and associated road improvements are proposed to meet anticipated future traffic both to and from the Federal Republic of Mexico. Without these new facilities, traffic volumes would increase until the capacity constraints at the existing facilities results in the diversion of future traffic to other POEs. Therefore, the new POE would result in additional mobile-source emissions in Imperial County and, for traffic traveling to and from Los Angeles, in the SEDAB and the SOCAB. It is not possible to predict the magnitude or timing of these additional emissions.

Imperial County is classified as nonattainment of O_3 by the State of California and for PM_{10} by both the state and federal government. Emissions of criteria pollutants and their precursors in Imperial County and the Coachella Valley by each of the cumulative projects considered here would contribute O_3 and PM_{10} pollutants, that are not fully offset, to existing exceedances, and would be considered cumulatively significant. However, because the Proposed Action would reduce O_3 transport from the SOCAB to Imperial County and the Coachella Valley, the Proposed Action would not contribute to significant cumulative O_3 air quality impacts. PM_{10} emissions during periods of high winds (i.e., those times when PM_{10} standards are currently exceeded) would be cumulatively significant.

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4.7.3.6 Environmental Health and Public Safety

Potential cumulative environmental health and public safety impacts could result from the increased rail traffic on the SP Main Line associated with the concurrent operation of the three regional landfills. The proposed landfill would operate independent of other off-site cumulative projects; therefore, on-site health and safety issues at the Mesquite Regional Landfill would not have the potential to result in cumulative effects.

The addition of up to 30 train trips to the SP Main Line would increase total average daily train trips on the haul route to 58 trips. This is below its current maximum practical capacity of 65 trips. Any accidents involving Mesquite Regional Landfill trains would be handled according to the MSW Residue Spillage Contingency Plan (Table 4-26) that would be provided to SP at the commencement of operations. The basic procedures presented in the Plan could be applied to train accidents while hauling MSW residue to any of the sites. The Eagle Mountain EIS/EIR also identified a plan that would be implemented by SP in the event of an accidental spill. Although the CMRL Application for Development does not include mention of an emergency response plan, such a plan likely would be required prior to approval of the project.

The PUC would continue to monitor safety issues in connection with the increased rail traffic, and would make determinations regarding the need for additional at-grade railroad crossing improvements (such as additional grade separations and additional at-grade railroad crossing warning requirements). It is assumed that each proposed regional landfill project would provide partial funding for additional at-grade railroad crossings and grade separations. Therefore, cumulative impacts would not be significant.

4.7.3.7 Socioeconomics

Imperial County would experience the most substantial project-related socioeconomic change. Other areas of Southern California and the United States would experience minimal socioeconomic changes related to project-related purchases of goods and services and some workers (less than 150) and their families moving to Imperial County to accept a landfill-related job. Therefore, cumulative socioeconomic effects would only occur to Imperial County.

Past and Present Projects

Imperial County is currently experiencing mixed economic conditions (pers. comm., Kelly, K., 1993). Several employers within the County have either cut back employment or plan cutbacks in the near future. In August 1992, Grumman Technical Services, Inc. laid off 50 of the 70 workers that maintained TA-4 fighter jets at the Naval Air Facility in El Centro.

Farm employment in Imperial County has been adversely impacted by a species of whitefly. Valley farmers planted fewer melons the last two fall seasons because of the whitefly. It is estimated that $21 million in revenue and between 700 to 1,000 jobs were lost as a result. Last year, Mario Saikhon, Inc., a 2,200 employee farming operation in Holtville notified city officials it will cease operations October 2, 1992. Operations are still underway (pers. comm., Stoffer, K., 1993).

New businesses are planned for Imperial County and the state has recently increased public sector employment in the county. Two new businesses are expected to open in Holtville. Western Lighting Systems, a manufacturer of decorative lighting poles, plans a $3 million foundry and factory, and Suburban Sanitation of California is starting a $400,000 recycling operation in the city.

The state prison in Calipatria currently is expected to employ up to 1,200 people as the inmate population reaches 4,000. However, only

24 percent of the employees are local hires (i.e., from Imperial County). A second state prison was recently completed in Seeley. It is expected that this facility will employ up to 800 people.

In addition, the County is currently experiencing a construction boom including residential and commercial developments. For example, Calexico issued approximately 400 building permits in 1992 compared to only 85 for 1988 (pers. comm., M. Knechel, 1993).

A cumulative effect that would result from development of the Mesquite Regional Landfill would be creation of up to 286 new direct and 65 secondary job opportunities (long-term) as described in Section 4.1.13. The new landfill employment would also provide opportunities for current Mesquite Mine employees as that current land use activity declines in the future.

Reasonably Anticipated (Foreseeable) Future Projects

The single largest potential cumulative socioeconomic impact on Imperial County is the North American Free Trade Agreement (NAFTA). However, it is not possible to predict the socioeconomic impact that implementation of the NAFTA would have on the County at this time. Calexico is ranked number 3 in the U.S. for border crossings with 32 million in 1992. Certain NAFTA-related projects are already being implemented, including the international border crossing improvements in Calexico (described in Section 4.7.3.3) and planned improvements to SR 111.

As described in Chapter 3.1.13, the Mesquite Mine generates economic benefits to Imperial County. It is anticipated that these benefits will cease in the next 10 to 15 years with the mines closure.

The proposed Eagle Mountain and Mesquite Regional Landfills are located in separate counties and near two different communities. Therefore, there would not be direct cumulative socioeconomic effects in Imperial County due to the concurrent operation of these two facilities. An indirect effect of the Eagle Mountain project could be that its operation would reduce the amount of MSW residue available for disposal at the proposed Mesquite Regional Landfill. That would in turn reduce the magnitude of employment and economic improvements realized by Imperial County, as described in Section 4.1.13.

Concurrent operation of the proposed Mesquite Regional Landfill and a possible CMRL could potentially result in increased cumulative benefits if the disposed volume were greater than that for the proposed Mesquite Regional Landfill alone. The magnitude of additional benefits would be approximately proportional to the amount of increase above the 20,000 tpd of MSW residue planned for the Proposed Action. Because both the Proposed Action and the proposed CMRL would be required to provide financial assurance for closure, post-closure care, and corrective action, and because a host fee would be paid, cumulatively significant adverse economic effects would not occur.

It is anticipated that the Calexico East Border Station Project would induce the development of adjacent vacant lands in a manner similar to the development of Otay Mesa in San Diego that occurred with the opening of the Otay Mesa Border Crossing. The result would be an increase in construction, manufacturing, warehousing, and retail trade jobs resulting in a increase in the median income of the area and the County and a decrease in unemployment (U.S. GSA, 1993).

Socioeconomic benefits are expected to occur if the Oro Cruz Project is implemented; however, sufficient information is not presently available to provide quantitative estimates.

Cumulative socioeconomic impacts would be beneficial and not adverse.

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CHAPTER 5.0

OTHER REQUIRED CONSIDERATIONS

This chapter focuses on several specific effects of the Proposed Action, presented in a format required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). These issues are:

- Growth-inducing effects of the Proposed Action.
- Irreversible and irretrievable resource commitments.
- Relationship between the short-term use of the environment and the enhancement of long-term productivity.

The information presented is based on more detailed discussions in Chapter 4.0 Environmental Consequences.

5.1 GROWTH INDUCEMENT

Growth-inducing effects are those characteristics of a project that tend to foster or influence direct and indirect growth in its environs, or that create significant new demands for supporting services and activities.

The Proposed Action would not require the extension or expansion of any utilities or services that could be used by other development. Based on the general absence of public utilities and services in the project area, and on the Bureau of Land Management (BLM) and Imperial County land use policies, it is not anticipated that the project could indirectly induce population growth through the provision of utilities.

The proposed Mesquite Regional Landfill would provide employment for approximately 150 construction workers prior to beginning service, and up to 268 employees for the 100-year life of the landfill. These landfill employees would ultimately replace the 370 gold mine employees presently employed by the Mesquite Mine, which will close in 10-15 years, leading to a net decrease in employment in the project area. Given that Imperial County's unemployment rate in May 1992 was 22.9%, as compared to the state average rate of 8.7% for the same period, it is anticipated that all landfill employees could be recruited from the existing labor force in Imperial County. Neither construction workers nor landfill employees would live in the project vicinity. Workers would most likely travel to the job site from Brawley or Palo Verde, 35 miles to the west and northeast respectively, or more other distant areas where adequate housing and other infrastructure are available.

The proposed Mesquite Regional Landfill, in providing the capacity to dispose of up to 20,000 tpd of municipal solid waste (MSW) for the next 100 years, could provide the MSW disposal capacity for new development in the greater Southern California area, including Imperial County. The additional MSW disposal capacity provided by the project would not be enough in and of itself to induce new residential, commercial or industrial development, either directly or indirectly.

5.2 IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

The land requirements for the Mesquite Regional Landfill would represent an irreversible commitment because the landfill, except for ancillary facilities, likely would not be removed at the end of the proposed project's life span, and the land could not be restored to its original condition. The landform created by the proposed landfill would be expected to stay in perpetuity, and the land underneath would not be available for other potential uses, though the surface of the landfill could support certain recreational activities after closure.

The commitment of capital, labor, material, and energy during construction and operation of the proposed landfill and ancillary facilities would be irretrievable. Energy would be expended in the form of diesel fuel, gasoline, and oil for construction equipment and transportation vehicles, and electricity and water for plant operations. Materials used for construction would include limited amounts of wood, aggregate, plastics, steel, aluminum, and other metals. However, this or similar consumption would occur whether the Proposed Action, the No Action Alternative, or one of the other alternatives was implemented.

The proposed landfill would accept MSW residue (i.e., MSW that has been sorted and processed to remove recyclable materials). Nevertheless, it is likely that the MSW residue would contain potentially recoverable materials under future economic conditions. Also, it is possible that recyclables would be landfilled if they were shipped to the proposed project for storage and subsequently landfilled (Section 2.1.8.2). These materials would be potentially recoverable in the future because of the arid conditions at the proposed site and the proposed controls to prevent moisture infiltration. Implementation of a full scale landfill gas (LFG) generation enhancement program (add moisture to the MSW to facilitate decomposition) could reduce the amount of such materials that could be recovered in the future.

The proposed project would irreversibly change the visual character of the site and its surroundings, because the landfill site could not be reverted to its original condition. Landfill design and the use of earthtone colors for associated structures would reduce long-term visual contrasts to the area, but nearby viewers would notice contrasts in color and landform, largely due to the proposed landfill's equipment and structures, relative to the surrounding environment.

5.3 RELATIONS BETWEEN THE LOCAL SHORT-TERM USE OF THE ENVIRONMENT AND THE ENHANCEMENT OF THE LONG TERM PRODUCTIVITY

Principal uses of the project site, as established by previous activities, and as provided by the Imperial County General Plan and BLM California Desert Conservation Area (CDCA) Plan, include mineral exploration and extraction. The Proposed Action would commit up to approximately 4,245 acres on site to a single land use for an indefinite period. As the landfill was constructed, the remainder of the site could continue to be used for mining activities, and portions would remain available for reduced value wildlife habitat. In addition, the proposed action would commit a 150-foot wide, four- to five-mile long stretch of land to use as a rail spur for the 100-year life of the proposed project.

Following the operation period, the rail spur would be removed, and the landfill would be closed and available for other compatible uses. The mining pits would remain so that future mineral extraction could occur. At this time, there is no proposal to remove landfill-related structures. The project-related short-term uses of the environment would include the following:

- Use of up to 4,033 acre feet of water per year for 100 years from the Amos-Ogilby Basin.
- Relocating desert tortoises for 100 years.
- Increasing rail traffic, noise, and air quality impacts on the SP Main Line and vehicle traffic, noise, and air quality impacts on SR 78 for 100 years.
- Potential, very short-term traffic, noise, and safety impacts from emergency trucking.
- LFG, exhaust, and other on-site air emissions.
- Increased demand for public services and utilities.

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Development of MSW repositories, such as the proposed project, that minimize environmental impacts is in the long-term interest of Southern California. The development of such repositories would meet the goals set forth by the Southern California Association of Governments (SCAG), the BLM, and Imperial County regarding the productive and environmentally sensitive use of land resources and environmentally safe land disposal of MSW residue. The short-term employment, expenditures, and tax revenue would benefit local citizens by providing income that could be invested by individuals. Also, project-related tax revenues to the Cities and Counties could be invested in infrastructure and other vehicles to provide for the long-term economic and environmental productivity of the County, cities, and citizens.

In providing these economic, social, and environmental benefits, the project would enhance the long-term productivity and economic well-being of Southern California in general, and Imperial County in particular, while not precluding the long-term use of much of the site for other valuable activities. In addition, by exchanging the public lands on-site for the proposed lands in the Santa Rosa Mountains National Scenic Area and near the Chuckwalla Bench ACEC and by transferring ownership of privately held desert tortoise critical habitat to the federal government, the long-term productivity of public lands would be enhanced.

6.0

CHAPTER 6.0

CONSULTATION AND COORDINATION

6.1 SCOPING AND NOTICE OF INTENT/NOTICE OF PREPARATION

The County of Imperial and the U.S. Bureau of Land Management (BLM) provided for a number of opportunities for early consultation and public comments on the environmental issues that should be addressed in this Environmental Impact Statement/Environmental Impact Report (EIS/EIR). These opportunities included public and agency "scoping meetings" in May of 1992, circulation of a Notice of Preparation (NOP) in May 1992, and publication of a Notice of Intent (NOI) in May of 1992. The results of these activities are briefly summarized as follows:

1. Two community scoping meetings were conducted on May 27 and 28, 1992. The purpose of these public meetings was to solicit and receive public input on the environmental concerns that should be addressed in the EIS/EIR being prepared by the BLM and the County of Imperial for the proposed new Mesquite Regional Landfill. The meetings were conducted by the BLM. A brief informational presentation was followed by approximately two hours of discussion by members of the community who attended the meetings and enumerated their concerns.

   The first community scoping meeting was held at the El Centro Community Center on May 27, 1992 at 7:00 p.m. Approximately 60 people were in attendance, and about 40 people spoke.

   The second scoping meeting was held at the Desert Expo Center on May 28, 1992 at 7:00 p.m. Approximately 20 people were in attendance, and about 15 people spoke.

   A summary of the scoping meetings, including the agenda, attendance lists, and comments made by attendees at the scoping meetings, and additional correspondence received during the scoping period are contained in Appendix A-1.

2. The County of Imperial mailed an NOP to approximately 65 individuals and agencies on May 4, 1992. The NOP was distributed to known interested individuals and organizations as a notice of early consultation, as well as to known responsible agencies (State California Environmental Quality Act (CEQA) Guidelines Section 15082). Although the State CEQA Guidelines establish a 30-day comment period for the NOP, responses were received and considered through the month of July, 1992. A total of 14 letters were received in response to the NOP. Copies of the NOP, mailing list and responses are contained in Appendix A-2.

3. The BLM published a NOI to prepare a joint Federal-State EIS/EIR in the Federal Register on May 8, 1992 (40 Code of Federal Regulations (CFR) Part 1508.22). The NOI was distributed to known interested individuals and organizations as a notice of early consultation, as well as to known responsible agencies. The BLM's *National Environmental Policy Act Handbook* establishes a 30-day comment period for the NOI, therefore, responses were received and considered through June 12, 1992. A total of eight letters were received in response to the NOI. Copies of the NOI, mailing list and

responses are also contained in Appendix A-2.

4. The initial identification of general areas of environmental impacts to be addressed by this EIS/EIR are documented by an Initial Study prepared by the Imperial County Planning Department according to the County of Imperials Rules and Regulations to Implement California Environmental Quality Act (1991). The Environmental Initial Study and accompanying Environmental Discussion for the proposed Mesquite Regional Landfill are included in Appendix A-2 of this EIS/EIR.

The comments received in response to the NOI and the NOP were used to assist in the determination of the scope of this EIS/EIR. As provided by NEPA and CEQA guidelines, the impact analysis documented in this EIS/EIR focuses on potential significant effects, which have been identified for the following elements of the human environment:

1. Geology/Soils/Mineral Resources
2. Water Resources
3. Biological Resources
4. Cultural Resources
5. Paleontological Resources
6. Transportation
7. Noise
8. Air Quality/Odors
9. Land Use
10. Recreational Resources
11. Visual Resources
12. Environmental Health and Public Safety
13. Socioeconomics
14. Public Services and Utilities
15. Energy Conservation

These issues are addressed in this EIS/EIR, including an evaluation of the affected environment, potential significant impacts, and mitigation measures that would be required for each area of significant environmental effect should the proposed action be implemented.

6.2 CONSULTATIONS

In addition to compliance with NEPA and CEQA, there are numerous environmental laws and regulations that are designed to protect environmental resources including threatened and endangered species, archaeological and historical sites, air quality, and water quality. These laws and applicable regulations would need to be satisfied prior to full implementation of the project.

Protection of air and water quality are reviewed by the respective responsible agencies through the NEPA and CEQA environmental review process and, especially, through each agency's permit application process. These permit review processes are typically completed following the NEPA and CEQA processes.

Protection of threatened and endangered species, and archaeological and historical sites, are also addressed as part of the NEPA and CEQA environmental review process, as well as by consultation with the agencies responsible for the protection of these resources. Compliance with these laws and regulations are being completed concurrently with the environmental review process for this project. The procedures being undertaken to comply with the laws and regulations for the protection of these resources are discussed on the following pages.

6.2.1 THREATENED AND ENDANGERED SPECIES

The federal Endangered Species Act (ESA) extends legal protection to plants and animals listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS). The ESA authorizes the USFWS to review proposed actions to assess potential impacts to such listed species. Consultation initiated between the BLM and USFWS with regard to endangered or threatened species is completed pursuant to Section 7 of the

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ESA. The "Section 7" consultation and review is based on a Biological Assessment, prepared by the BLM and submitted to the USFWS, that addresses the potential impact of the proposed action on any endangered or threatened species. The process results in a Biological Opinion issued by the USFWS to the BLM that indicates that the proposed action either "is" or "is not" likely to "jeopardize the continued existence of the species." If the action is determined not likely to jeopardize the continued existence of the species, the Biological Opinion specifies measures, terms, and conditions that must be complied with for implementation of the project. BLM, as the public land administrator, is responsible for ensuring that the project complies with the specified stipulations.

The California Endangered Species Act (CESA) also offers legal protection to endangered or threatened plants and animals. Such plants and animals are listed in the state by the California Fish and Game Commission. Consultation with the California Department of Fish and Game (CDFG) for a permit pursuant to California Fish and Game Code Section 2081 is required prior to initiating any activities that could affect a designated endangered or threatened species. If the species under consideration is listed by both the ESA and the CESA, then California Fish and Game Code regulations enable the CDFG to concur with the USFWS Biological Opinion, to avoid duplicative procedures.

For the Mesquite Regional Landfill, the desert tortoise is the only threatened species at the project site. Other threatened or endangered species, including the desert pup fish, Yuma clapper rail and black rail occur in the vicinity of the existing rail line near the Salton Sea. BLM has entered into Section 7 consultation with the USFWS pursuant to the ESA with regard to these species and has prepared and submitted a Biological Assessment to USFWS. The Biological Opinion is to be issued by USFWS prior to consideration of project approval by the BLM. CDFG is also being consulted in compliance with the CESA. The existing conditions, potential impacts and proposed mitigating measures addressed in the Biological Assessment are summarized in this EIR/EIS.

6.2.2 ARCHAEOLOGICAL AND HISTORICAL SITES

The National Historic Preservation Act of 1966 (NHPA), as amended, established: (1) a National Register of Historic Places (NRHP) to be maintained by the Secretary of the Interior, (2) the position of State Historic Preservation Officer (SHPO), and (3) the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA requires federal agencies to provide the SHPO and ACHP an opportunity to comment on any project on federal lands within their state that would affect properties included in or eligible for inclusion in the NRHP. Section 304 directs federal agencies to withhold from disclosure to the public information relating to the location or character of eligible properties whenever disclosure of such information may create risk of harm to such resources.

NRHP eligibility criteria specify that the quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of national, state, or local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and the following:

- Are associated with events that have made a significant contribution to the broad patterns of history; or
- Are associated with the lives of people significant in our past; or
- 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 that represent a significant and distinguishable entity whose components may lack individual distinction; or

- Have yielded or are likely to yield information important in prehistory or history.

The Advisory Council regulations, "Protection of Historic and Cultural Properties" (36 CFR 800: Federal Register, Vol. 51, No. 169, September 2, 1986), outline procedures to be followed by federal agencies. Agencies are required to consult with the SHPO to determine if a proposed undertaking encompasses any property included in, or eligible for inclusion in, the NRHP. For each eligible property identified, the federal agency must determine if the proposed undertaking would have an effect. If there could be an effect, the Criteria of Adverse Effect are applied, and treatment measures are developed for resources that would be adversely affected. The regulations provide for consultation with the SHPO and ACHP to develop conditions for a Memorandum of Agreement for mitigation of potential adverse effects.

Within statutory constraints (NHPA Section 304 and Archaeological Resources Protection Act of 1979, Section 9), the Advisory Council regulations encourage participation by local governments, Native American tribes, and the public (36 CFR 800.1 [c] [2]). Within this context, comments on the proposed Mesquite Regional Landfill from the Native American Heritage Commission, the local Native Americans, archaeologists, historians, and other groups or individuals concerned with cultural resources will be considered by BLM and Imperial County.

The proposed site has been inventoried for the presence/absence of historic or archaeological resources. Where the project would affect a site, treatment measures shall be determined and provided to SHPO pursuant to the consultation requirements of Section 106.

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CHAPTER 7.0

LIST OF PREPARERS

This Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) has been prepared jointly by the United States Department of the Interior, Bureau of Land Management (BLM) and the Imperial County Planning and Building Department (Planning Department). The following BLM and Planning Department Staff participated in the document preparation:

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The following Technical Studies were supplied by the Applicant, reviewed for accuracy and adequacey by BLM and the Imperial County Planning Department, and incorporated in this EIS/EIR:

Faulting and Seismicity in the Vicinity of the Mesquite Regional Landfill, prepared by Environmental Solutions, Inc.

Hydrologic Assessment Report, Mesquite Regional Landfill, prepared by Environmental Solutions, Inc.

Air Quality Technical Report for the Proposed Mesquite Regional Landfill, Imperial County, prepared by Environmental Soultions, Inc.

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CHAPTER 9.0

GLOSSARY OF TERMS AND ACRONYMS

AB 939	California Integrated Waste Management Act of 1989, as revised, State Assembly Bill 939
ACEC	Area of Critical Environmental Concern
Aceramic lithic assemblages	Artifact collections of stone stools and flaking debris in which no pottery occurs; assumed to date before c. A.D. 500 when pottery was first introduced to the region.
ACHP	Advisory Council on Historic Properties (or Preservation)
acre-feet	The quantity of water that would cover one acre to a depth of one foot (43,560 cubic feet).
acf	Actual cubic feet
Aquifer	A body of rock or unconsolidated sediments that contains sufficient saturated permeable material to yield economic quantities of water to wells and springs.
Alluvial	Deposited by a stream or running water.
Alluvium	Material such as clay, silt, sand, or gravel deposited by streams.
Amos-Ogilby Basin	An elongated area (ground water basin) designated by the State of California Department of Water Resources.
AMSL	Above Mean Sea Level
APCD	Air Pollution Control District
APE	Area of potential effect
AQAP	Air Quality Attainment Plans
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARPA	Archaeological Resources Protection Act
ATC	Authority to Construct

Avifauna	The birds, or all the kinds of birds considered collectively, of a region.
BACT	Best Available control Technology
Bajadas	A long outwash slope at the base of a mountain range.
BDT	Best Demonstrable Technology
Bear Canyon Conglomerate	An Upper Miocene Sequence of variably cemented, interbedded nonmarine conglomerate beds and basaltic flows.
BFMA	Brian F. Mooney Associates
BLM	U.S. Bureau of Land Management
B.P.	Before Present
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	Ambient Air Quality Standards
Cairns	Piles of rocks that, depending on their context, are interpreted to represent trail markers, trail shrines, boundary markers, or hunting blinds, mining claims, or burial markers.
Cal OSHA	California Occupational Health and Safety Act (or Administration)
Caltrans	California Department of Transportation
CAMA	California-Arizona Maneuver Area
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game

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CDMG	California Department of Conservation, Division of Mines and Geology
CESA	California Endangered Species Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CIWMB	California Integrated Waste Management Board
CIWMP	County Integrated Waste Management Plan
Closure Plan	A plan prepared by the owner or operator of a solid waste landfill in accordance with any permit conditions and standards which may be required by an enforcement agency, a regional water board, the state water board, or the CIWMB.
CMAGR	Chocolate Mountains Aerial Gunnery Range
Cm/Sec	Centimeters per second
CN^-	Free cyanide
CNEL	Community Noise Equivalent Level
CNG	Compressed Natual Gas
CNPS	California Native Plant Society
CO	Carbon Monoxide - a by-product of incomplete combustion which bonds tightly to hemoglobin molecules in the bloodstream and thus reduces the oxygen carrying capacity.
CO_2	Carbon Dioxide
Conglomerate	A rock composed of rounded fragments, varying from small pebbles to large boulders, in a cement of hardened clay, or the like.
CoSWMP	County Solid Waste Management Plan
CRMP	Cultural Resources Management Plan
CUP	Conditional Use Permit

Desert pavement	An area consisting of stones that have been closely packed together to form a uniform, stony surface, generally without vegetation.
Desert varnish	This shiny black material containing approximately 70 percent clay, also contains oxides of iron and manganese which give it its black color. It is found primarily on the exposed side of desert pavement.
DTC	Desert Training Center
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
Endangered Species	A plant or animal species that has the possibility of becoming extinct by threats to its present and future reproductive capabilities.
ESA	Endangered Species Act
Evapotranspiriation	Discharge of water from the earth's surface to the atmosphere by evaporation from lakes, streams, and soil surfaces, and by transpiration fom plants.
FAA	Federal Aviation Administration
Fluvial	Of, found in, or produced by a river.
FLPMA	Federal Land Policy and Management Act
FML	Flexible Membrane Liner
Foliation	A general term for a planar arrangement of textural or structural features in any type of rock; most commonly applied to metamorphic rock.
fps	Feet per second
FY	Fiscal year
g	Acceleration due to gravity (32 feet per second squared)

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Geoglyphs	Designs on the ground that were formed by the artificial modification of desert pavements. They include areas where dark desert pavement has been scraped away to reveal the lighter subsoils, rock alignments, and configurations of cobbles and flaked stone. Also called earth figures, ground figures, or intaglios.
Gold Fields	Gold Fields Mining Corporation
gpm	gallons per minute
H_2S	Hydrogen sulfide
HDPE	High Density Polyethylene
Holocene	An Epoch of the Quaternary period, from the end of the Pleistocene (approximately 10,000 to 11,000 years ago) to the present; synonym of Recent.
Hydraulic Conductivity	The capacity of a medium to transmit water; synonym of permeability. Expressed as the volume of water at the prevailing temperature that will move in unit time under a unit hydraulic gradient through a unit area. Units include gallons per day per square foot, centimeters per second.
HHW	Household Hazardous Waste
ICAPCD	Imperial County Air Pollution Control District
IID	Imperial Irrigation District
Inversion	An increase in air temperature, instead of the usual decrease in air temperature, with an increase in height.
ISDRA	Imperial Sand Dunes Recreation Area
ISO	International Standards Organization
Isolates	Less than five artifacts in a 2.5 square meter area.
IVCM	Imperial Valley College Museum
IWMP	Integrated Waste Management Plan
KOP	Key Observation Points
LAER	Lowest Achievable Emission Rate
LATC	Los Angeles Transportation Center

LCRS	Leachate Collection and Recovery System
LCRV	Lower Colorado River Valley
LEA	Lead Enforcement Agency
Leachate	A solution obtained by water percolating through soil containing soluble substances; in this case through the MSW residue being disposed of.
Landfill Gas	The subsurface decomposition by-product of organic matter comprised of about 50% methane and 50% carbon dioxide, and small amounts of more complex organic (carbon containing) compounds.
LFG	Landfill Gas
Lithic scatters	Surface scatters of flaked stone tools and manufacturing debris.
Mano	A groundstone artifact used in conjunction with a slick or basin for the reduction of plant food resources.
MCE	Maximum Credible Earthquake. The largest possible earthquake considering the known tectonic framework of an individual fault.
Mesozoic	A geologic era after the Paleozoic and before the Cenozoic, covering a period between 230 and 650 million years ago.
Metates	Flat or basin shaped portable rocks on which seeds and nuts are ground with a hand stone or mano.
MPE	Maximum Probable Earthquake. The largest earthquake likely to occur with a 100-year return period at a given probability.
MRF	Materials recovery facility
MSW	Municipal solid waste
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NDDB	California Department of Fish and Game Natural Diversity Database
NHPA	National Historic Preservation Act of 1966

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NMOC	Nonmethane organic compounds
NO_2	Nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	Nitrogen oxides - mainly nitric oxide (NO) and Nitrogen dioxide (NO_2) which participate with ROG in the ozone formation process, act as independent lung irritants, form eye irritants that cause watering, and may ultimately end up as airborne nitric acid droplets contributing to acid fog and acid rain.
NRHP	National Register of Historic Places
O_3	Ozone - a triatomic form of oxygen; toxic to micro organisms, but also a strong lung irritant which may lead to increased respiratory infection among senior citizens, young children, and any body in heavy work or exercise requiring frequent deep breathing into deep lung tissue. Ozone in the stratosphere is necessary because it absorbs strong radiation and protects people from skin cancer. Ozone in the near-surface atmospheric layer is harmful because of its irritating and oxidizing effects.
OALS	Office of Arid Land Studies
OHV	Off -highway vehicle
OSHA	Occupational Health and Safety Administration
Pd	Lead
Perennial	A plant that has a life-cycle of more than two years.
Petroglyphs	Designs on rock faces that are produced by pecking or scratching the surface.
Pictographs	Paintings on rock faces.
PIXE	Proton-induced X-ray Emissions
Pleistocene	The first epoch of the Quaternary Period in the Cenozoic Era, characterized by the spreading and recession of continental ice sheets, and the appearance of modern man.
Pliocene	The last epoch of the Tertiary Period in the Cenozoic Era, during which many modern plants and animals developed.

PM_{10}	Respirable particulate matter (particles less than 10 microns in diameter).
Porosity	The percentage of the bulk volume of rock, sediment or soil that is occupied by interstices whether isolated or connected.
Postclosure Maintenance Plan	A plan prepared by the owner or operator of a solid waste landfill to maintain the landfill for at least 30 years after closure in accordance with any permit conditions and standards which may be required by an enforcement agency, a regional water board, the state water board, or the board.
Pot drops	Pottery concentrations where individual pots were accidentally or intentionally broken and abandoned. They often occur along trails or near water sources.
Precambrian	An era of geological time preceding the Paleozoic era, before 570 million years ago. Approximately 90 percent of all geologic time occured within this period.
PSD	Prevention of Significant Deterioration
PUC	Public Utilities Commission
Quaternary	The second period of the Cenozoic era, covering the last two to three million years.
RACT	Reasonably Available Control Technology -- technology currently achieved and demonstrated to be feasible for a reasonable period of time.
Riparian	Adjacent to, or living on, the bank of a river or, sometimes, of a lake, pond, etc..
ROG	Reactive organic gases
ROW	Right-of-way
RWQCB	Regional Water Quality Control Board
Salton Trough	A landward extension of the East Pacific Rise, a zone of rifting and crustal spreading which has caused the opening of the Gulf of California.
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments

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SCAQMD	South Coast Air Quality Management District
Scat	Excrement left by an animal, especially a wild animal.
SEDAB	Southeast Desert Air Basin
Sensitive Species	Generic term for any plant or animal species which is recognized by the government or by any conservation group as being depleted, rare threatened, or endangered.
Sherd scatters	A fragment of a ceramic vessel.
SHPO	State Historic Preservation Officer
Significant Environmental Impact	The Council on Environmental Quality regulations state that environmental impact statements ". . . shall provide full and fair discussions of significant environmental impacts," and that impacts shall be discussed in proportion to their significance. In addition, the following definition of significance is provided in 40 CFR 1508.27: "Significantly" as used in NEPA required 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 interests, and the locality. Significant 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 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: • 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. • The degree to which the proposed action affects public health or safety. • Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Significant Environmental Effects (Cont'd)

- The degree to which the effects on the quality of the human environment are likely to be highly controversial.

- The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

- 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.

- 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.

- 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 of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

- The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determine to be critical under the Endangered Species Act of 1973.

- Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

A significant effect on the environment is defined by the State CEQA Guidelines (CEQA Guidelines, § 15382), as follows:

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. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

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Significant Environmental Effects (Cont'd)	Both the NEPA and CEQA definitions were considered in preparing this EIS/EIR.
SOCAB	South Coast Air Basin
SO_2	Sulphur dioxide
SO_x	Oxides of sulphur
SP	Southern Pacific Transportation Company
SR	State Route
SRMNSA	Santa Rosa Mountains National Scenic Area
SWMP	Solid Waste Management Plan
SWRCB	California State Water Resources Control Board.
Tertiary Age	The first period of the Cenozoic Era, covering the span of time between 65 and 2-3 million years ago.
Threatened Species	A species which, although not presently threatened with extinction, is likely to become endangered in the foreseeable future in the absence of special protection and management efforts.
TPD	Tons per day
Transmissivity	The rate at which water is transmitted through a unit width of an aquifer under a unit hydraulic gradient. Equals the hydraulic conductivity multiplied by the aquifer thickness. Values given in units of gallons per day per foot.
U.S. DOE	U.S. Department of Energy
U.S. DOI	U.S. Department of Interior
U.S. DOT	U.S. Department of Transportation
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
Vadose zone	The saturated and/or unsaturated overburden soils above the permanent groundwater table.
VLDPE	Very Low Density Polyethylene

VRM	Visual Resource Management
VOC	Volatile Organic Compounds
YBP	Years Before Present

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CHAPTER 10.0

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