FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL ASSESSMENT (EIWEA)

for the proposed

VCR MINING PROJECT

Imperial County, California

October 28, 1987 SCH NO. 87052709 EA NO. CA-067-87-48

PREPARED FOR

The County of Imperial El Centro, California 92243 Bureau of Land Management El Centro Resource Area Office El Centro, California 92243

APPLICANT Gold Fields Operating Co. Brawley, California 92227

PREPARED BY Environmental Solutions, Inc. Irvine, California 92718

This Final EIWEA consists of: (1) the August, 1987, Draft EIWEA, and (2) the October **28**, **1987** Addendum, included on tan paper at the back of this document. The Final EIWEA was certified by resolution of the Imperial County Planning Commission on October **28**, **1987**.

ENVIRONMENTAL IMPACT REPORT INDEX R Mining Project "INA EIR NAME Nining 06 EIR TOPIC DATE OF 28, 87 1.D. # 34 87052709 SCH. # VCR Mining Project -Gold Fields PROJECT NAME inter of Crushing of Ole interview Mine (35 Miles E AREA Portion of Eastern Inperiod APN County PROJECT TYPE PROJECT LOCATION C. o. esquite Kei SUP. DIST. Env. Solutions CONSULTANT NAME Anc



August 25, 1987

Dear Reader:

Enclosed please find a copy of the draft Environmental Impact Report/Environmental Assessment prepared for the Gold Fields Operating Co. VCR Mining Project. This project is located immediately east of the existing Mesquite Mine, approximately 35 miles east of Brawley, California, within Sections 2-4,9-1 1, 15, 19-22, 29, 30, and Tract 38, T13S, R19E, as well as Sections 23-26, T13S, R18E, Imperial County, California.

Gold Fields Operating Co. is proposing to develop four open-pit gold mines and realign 8.5 miles of State Highway 78 to the south of the mine area. Approximately 2.5 million tons per year of gold bearing ore and 8.25 million tons per year of overburden will be produced during a 20-year period. A total of about 1,625 acres will be disturbed over the life of the project. No new leach pads will be required for this project -- the existing and permitted leach pads for the Mesquite Project will be utilized.

Written comments should be sent to the Imperial County Planning Department, at the letterhead address. Comments must be received by October 8, 1987, in order to receive consideration. For additional information concerning the project, contact Jerry Santillan, planner, at 619/339-4236. For information concerning the Federal aspects of the project, call Peter Ertman of the Bureau of Land Management at 619/352-5842 or FTS/894-22481.

Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger Planning Director, County of Imperial

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IMPERIAL COUNTY FLANNING DEPARTMENT Environmental Assessment CA-067-87-48 VCR Mining Project State Clearinghouse No. 87052709

Prepared and recommended for acceptance and approval by:

ieter

Peter G.D. Ertman Project Manager Chief, Branch of Resource Program Operations - El Centro

Accepted and approved by:

G. Ben Koski Area Manager, El Centro Area Office

Findings of No Significant Impacts

VCR Mining Project

Based on Environmental Assessment CA-067-87-48, I conclude that implementation of Alternative 1 with mitigating measures will result in no significant impacts to the human environment and, therefore, preparation of an Environmental Impact Statement is not required.

Prepared and recommended for approval by:

Peter G.D. Ertman Project Manager Chief, Branch of Resource Program Operations - ECRA

Approved by:

G. Ben Koski Area Manager El Centro RA

TABLE OF CONTENTS

VCR MINING PROJECT

	PAGE NO.
LIST OF TABLES/LIST OF FIGURES	ix
EXECUTIVE SUMMARY	ES-1
 1.0 INTRODUCTION 1.1 Project Background and Location 1.2 Environmental Procedures 1.3 Intended Uses of the EIR/EA 1.4 Initial Study and Notice of Preparation 1.5 Effects Found not to be Significant 1.6 Terms Used in this Report 1.7 Report Organization 	1-1 1-5 1-6 1-6 1-7 1-8 1-9
 2.0 SUMMARY OF THE PROPOSED ACTION AND ITS ENVIRONMENTAL EFFECTS 2.1 Introduction 2.2 Project Summary 2.2.1 Proposed Project Alternatives 2.2.2 Project Elements 2.3 Project Schedule 2.4 Summary of Potential Environmental Effects 	2-1 2-1 2-1 2-5 2-8 2-8
 3.0 DESCRIPTION OF THE PROPOSED ACTION AND ITS ALTERNATIVE 3.1 Introduction 3.1.1 Project Location 3.1.2 Consistency with County and BLM Land Use Plans 3.2 Description of the Proposed Action 3.2.1 Mine Pits and Mining Operations 3.2.2 Overburden and Protore Stockpiles 3.2.3 Primary Crusher and Conveyor 3.2.4 Mobile Equipment Repair Shop 3.2.5 Highway 78 Modifications 3.2.5.1 Alternative I, with Highway 78 Realignment 3.2.6 Zappone Road and Vista Mine Road Modifications 3.2.7 Transmission Line Relocation 3.2.8 Project Access 3.2.9 Flood Diversion Facilities 3.2.9.1 VCR Mining Area 3.2.9.2 Highway 78 Realignment 	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

				<u>PAGE NO</u> .
		3.2.10	Construction and Operations Personnel and Equipment	3-18
		3.2.11	Water and Power Requirements	3-20
		3.2.12	Waste Disposal	3-22
			3.2.12-1 Sewage Disposal	3-22
			3.2.12.2 Solid Waste	3-22
		3.2.13	Reclamation Plan	3-23
		0.2.10	3.2.13.1 Introduction	3-23
			3.2.13.2 Phase L - Project Development Period	3-24
			3.2.13.3 Phase II - Completed Operational Areas	3-25
			3.2.13.4 Phase III - Final Reclamation	3-25
			3 2 13 5 Bonding	3-26
			32136 Restoration of Disturbed Surface Areas	3-27
	33	Δlterns	atives Considered But Not Further Analyzed	3-27
	5.5	3 3 1	Introduction	3-27
		3.3.1	Alternative Technologies	3-28
		5.5.2	3 3 2 1 Mining Techniques	3_28
			2.2.2.2. Overburden Disposel	3 20
			2 2 2 2 Overburden Disposal	3 3 2 3
		222	Alternative Sites	3-32
		3.3.3	Alternative Sites	2 22
			2.2.2.2 Overburden Stockniller	3-32
		224	3.3.3.2 Overburden Stockpites	3-33 2-24
		3.3.4	Postponement of Proposed Action	5-54
		3.3.5	No Action Alternative	3-34
		3.3.6	Highway /8 Realignment Alternatives	3-35
4.0	DES	SCRIPTI	ON OF THE EXISTING ENVIRONMENT	4-1
	4.1	Geology	y and Soils	4-1
		4.1.1	Geologic Setting	4-1
		4.1.2	Stratigraphy	4-2
		4.1.3	Regional Seismicity	4-5
		4.1.4	Project Area Seismicity	4-7
		4.1.5	Soils	4-9
		4.1.6	Mineral Resources	4-11
	4.2	Water	Resources	4-11
		4.2.1	Surface Water Hydrology	4-11
		4.2.2	Surface Water Quality	4-13
		4.2.3	Ground Water Hydrology	4-13
			4.2.3.1 Hydrologic Setting	4-13
			4.2.3.2 Ground Water Occurrence	4-18
			4.2.3.3 Ground Water Usage	4-18
			4.2.3.4 Hydraulic Conductivity	4-20
			4.2.3.5 Ground Water Quality	4-21
	4.3	Air Re	sources	4-23
		4.3.1	Regional Characteristics	4-23
			4.3.1.1 Climatic Conditions	4-23
			4.3.1.2 Air Quality	4-25
		4.3.2	Site-Specific Characteristics	4-27
			4.3.2.1 Climatic Conditions	4-27
			4.3.2.2 Air Quality	4-28

PAGE NO.

4.4	Vegetation	4-30
	4.4.1 VCR Mining Area	4-30
	4.4.1.1 Characteristic Species	4-30
	4.4.1.2 Sensitive Plant Species	4-33
	4.4.2 Highway 78 Realignment	4-34
	4.4.2.1 Characteristic Species	4-34
	4.4.2.2 Sensitive Plant Species	4-35
4.5	Wildlife	4-35
	4.5.1 Introduction	4-35
	4.5.2 Biological Setting	4-36
	4.5.3 Characteristic Species	4-36
	4.5.4 Species of Special Concern	4-38
	4.5.4.1 General	4-38
	4.5.4.2 Desert Tortoise	4-39
4.6	Visual Resources	4-41
	4.6.1 VCR Mining Area	4-41
	4.6.1.1 Visual Management	4-41
	4.6.1.2 Regional Characteristics	4-42
	4.6.1.3 Project Site Characteristics	4-43
	4.6.1.4 Seen Areas	4-43
	4.6.2 Highway 78 Realignment	4-44
	4.6.2.1 Visual Management	4-44
	4.6.2.2 Regional Characteristics	4-44
	4.6.2.3 Project Site Characteristics	4-4 4
4.7	Cultural Resources	4-45
	4.7.1 Historic Period	4-45
	4.7.2 Prehistory and Archaeology	4-45
	4.7.3 Cultural Resources Inventory	4-46
	4.7.3.1 VCR Mining Area	4-46
	4.7.3.2 Highway 78 Realignment	4-47
	4.7.4 Resource Evaluation	4-48
4.8	Land Use	4-49
	4.8.1 Land Use Plans and Policies	4-49
	4.8.1.1 Imperial County General Plan	4-49
	4.8.1.2 Bureau of Land Management	4-50
	4.8.2 Existing Uses	4-51
	4.8.3 Recreational Use	4-51
4.9	Transportation	4-52
4.10	Noise	4-52
	4.10.1 Regional Characteristics	4-52
	4.10.2 Site Characterization	4-53
4.11	Socioeconomics	4-53
	4.11.1 Population	4-53
	4.11.2 Employment	4-55
	4.11.3 Housing	4-55

5.0

POTENTIAL ENVIRONMENTAL IMPACTS5-15.1 Geology and Soils5-15.1.1 Seismicity5-15.1.1.1 VCR Mining Area5-15.1.1.2 Highway 78 Realignment5-15.1.1.3 Cumulative Effects5-25.1.2 Soils5-25.1.2.1 VCR Mining Area5-25.1.2.2 Highway 78 Realignment5-25.1.2.3 Cumulative Effects5-25.1.3 Erosion Potential5-35.1.3.1 VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 VCR Mining Area5-5	
5.1 Geology and Soils5-15.1.1 Seismicity5-15.1.1 VCR Mining Area5-15.1.1.2 Highway 78 Realignment5-15.1.1.3 Cumulative Effects5-25.1.2 Soils5-25.1.2.1 VCR Mining Area5-25.1.2.2 Highway 78 Realignment5-25.1.2.3 Cumulative Effects5-25.1.3 Erosion Potential5-35.1.3.1 VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 LVCR Mining Area5.1.4 LVCR Mining Area5.1.4 LVCR Mining Area5.55-5	
5.1.1Seismicity5-15.1.1.1VCR Mining Area5-15.1.1.2Highway 78 Realignment5-25.1.1.3Cumulative Effects5-25.1.2Soils5-25.1.2.1VCR Mining Area5-25.1.2.2Highway 78 Realignment5-25.1.2.3Cumulative Effects5-25.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.1.1VCR Mining Area5-15.1.1.2Highway 78 Realignment5-15.1.1.3Cumulative Effects5-25.1.2Soils5-25.1.2.1VCR Mining Area5-25.1.2.2Highway 78 Realignment5-25.1.2.3Cumulative Effects5-25.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.1.2 Highway 78 Realignment5-15.1.1.3 Cumulative Effects5-25.1.2 Soils5-25.1.2.1 VCR Mining Area5-25.1.2.2 Highway 78 Realignment5-25.1.2.3 Cumulative Effects5-25.1.3 Erosion Potential5-35.1.3.1 VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 WCR Mining Area5-5	
5.1.1.3 Cumulative Effects5-25.1.2Soils5-25.1.2.1VCR Mining Area5-25.1.2.2 Highway 78 Realignment5-25.1.2.3 Cumulative Effects5-35.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.2Soils5-25.1.2.1VCR Mining Area5-25.1.2.2Highway 78 Realignment5-25.1.2.3Cumulative Effects5-25.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.2.1VCR Mining Area5-25.1.2.2Highway 78 Realignment5-25.1.2.3Cumulative Effects5-25.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.2.2 Highway 78 Realignment5-25.1.2.3 Cumulative Effects5-25.1.3 Erosion Potential5-35.1.3.1 VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 WCR Mining Area5-5	
5.1.2.3 Cumulative Effects5-25.1.3 Erosion Potential5-35.1.3.1 VCR Mining Area5-35.1.3.2 Highway 78 Realignment5-35.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 VCR Mining Area5-5	
5.1.3Erosion Potential5-35.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.3.1VCR Mining Area5-35.1.3.2Highway 78 Realignment5-35.1.3.3Cumulative Effects5-45.1.4Mineral Resources5-55.1.4VCR Mining Area5-5	
5.1.3.2 Highway 78 Realignment5.55.1.3.3 Cumulative Effects5-45.1.4 Mineral Resources5-55.1.4 VCR Mining Area5-5	
5.1.4 Mineral Resources 5-5 5.1.4 VCR Mining Area 5-5	
5.1.4 Milleral Resources 5.1.4 VCR Mining Area 5-5	
5 1 4 2 Highway 78 Realignment 5-6	
5.1.4.2 Inglively 76 Realignment 5-7	
5.2 Water Resources 5-7	
5.2 Water Use 5-7	
5.2.1.1 VCR Mining Area 5-7	
5.2.1.2 Highway 78 Realignment 5-7	
5.2.1.3 Cumulative Effects 5-8	
5.2.2 Ground Water Hydrology 5-8	
5.2.2.1 VCR Mining Area 5-8	
5.2.2.2 Highway 78Realignment 5-9	
5.2.2.3 Cumulative Effects 5-9	0
5.2.3 Surface Water Hydrology	0
5.2.3.1 VCR Mining Area	0
5.2.3.2 Highway /8 Realignment	1
5.2.3.3 Cumulative Effects $5-1$	1 1
5.2.4 Ground Water Quality	1
5.2.4.1 AICa $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$ $5.2.4.1$	4
5.2.4.2 VCC mining inginvery 70 K anglinicity $5.2.4.3$ Cumulative Effects $5-1$	4
5.2.7.5 Cumulative Effects $5-1$	4
5.3 1 Fugitive Dust Impacts 5-1	4
5.3.1.1 VCR Mining Area 5-1	4
5.3.1.2 Highway 78 Realignment 5-1	_

PAGE N	<u>NO</u>
--------	-----------

	 5.3.1.3 Cumulative Effects 5.3.2 Fuel Use Emissions 5.3.2.1 VCR Mining Area 5.3.2.2 Highway 78 Realignment 5.3.2.3 Cumulative Effects 	5-15 5-15 5-15 5-15 5-16
5.4	Vegetation 5.4.1 VCR Mining Area 5.4.1.1 Characteristic Species 5.4.1.2 Sensitive Species	5-16 5-16 5-16 5-16
	5.4.1.3 Vegetation/Surface Water 5.4.2 Highway 78 Realignment 5.4.2.1 Characteristic Species 5.4.2.2 Sensitive Species	5-10 5-17 5-17 5-17 5-18
5.5	5.4.2.3 Vegetation/Surface Water 5.4.3 Cumulative Effects Wildlife	5-18 5-18 5-19
	5.5.1 VCR Mining Area 5.5.1.1 Characteristic Species 5.5.1.2 Species of Special Concern 5.5.1.3 Desert Tortoise	5-19 5-19 5-19 5-20
	 5.5.2 Highway 78 Realignment 5.5.2.1 Characteristic Species 5.5.2.2 Species of Special Concern 5.5.2.3 Desert Tortoise 	5-20 5-20 5-21 5-21
5.6	5.5.3 Cumulative Effects Visual Resources 5.6.1 Introduction 5.6.2 Alternative I	5-21 5-22 5-22 5-25
	5.6.2 Alternative 1 5.6.2.1 Viewpoint #1 5.6.2.2 Viewpoint #2 5.6.2.3 Viewpoint #3 5.6.2.4 Viewpoint #4 5.6.2.5 Viewpoint #5 5.6.2.6 Viewpoint #6 5.6.2.7 Highway 78 Realignment	5-25 5-25 5-25 5-28 5-28 5-31 5-31 5-33
5.7	5.6.3 Alternative II 5.6.4 Summary Cultural Resources	5-33 5-39 5-39
5.8	5.7.1 VCR Mining Area 5.7.2 Highway 78 Realignment 5.7.3 Cumulative Effects Land Use 5.8.1 VCR Mining Area	5-39 5-39 5-40 5-40 5-40
	5.8.2 Highway 78 Realignment5.8.3 Cumulative Effects	5-41 5-41

_ _

PAGE NO.

	5.9 Transpo	ortation	5-42
	5.9.1	Regional Effects	5-42
	5.9.2	VCR Mining Area	5-43
	5.9.3 H	Highway 78 Realignment	5-44
	5.9.4	Zappone and Vista Mine Roads	5-44
	5.9.5 (Cumulative Effects	5-45
	5.10 Noise		5-45
	5.10.1	VCR Mining Area	5-45
	5.10.2	Highway 78 Realignment	5-46
	5.10.3	Cumulative Effects	5-46
	5.11 Socioed	conomics	5-47
	5.11.1	VCRMiningArea	5-47
		5.11.1.1 Employment	5-47
		5.11.1.2 Housing	5-48
		5.11.1.3 Economics	5-48
	5.11.2	Highway 78 Realignment	5-49
		5.11.2.1 Employment	5-49
		5.11.2.2 Economics	5-49
	5.11.3	Cumulative Effects	5-50
	5.12 Service	s and Utilities	5-50
	5.12.1	VCR Mining Area	5-50
	5.12.2	Highway 78 Realignment	5-51
	5.12.3	Cumulative Effects	5-51
	5.13 Public a	and Employee Safety	5-51
	5.13.1	VCR Mining Area	5-51
		5.13.1.1 Public Safety	5-51
		5.13.1.2 Employee Safety	5-52
	5.13.2	Highway 78 Realignment	5-53
		5.13.2.1 Public Safety	5-53
		5.13.2.2 Employee Safety	5-53
	5.13.3	Cumulative Effects	5-53
6.0	MITIGATIO	N MEASURES	6-1
	6.1 Geology	and Soils	6-1
	6.1.1	Seismicity	6-1
		6.1.1.1 VCRMiningArea	6-1
		6.1.1.2 Highway 78 Realignment	6-2
	6.1.2 \$	Soils	6-2
	6.1.3 l	Erosion Potential	6-2
		6.1.3.1 VCR Mining Area	6-2
		6.1.3.2 Highway 78 Realignment	6-3
	6.1.4	Mineral Resources	6-4
		6.1.4.1 VCR Mining Area	6-4

6.1.4.2 Highway 78 Realignment 6-4

vi

.

		<u>NAGED.</u>
6.2	Water Resources	6-4
	6.2.1 Water Usage	6-4
	6.2.2 Ground Water Hydrology	6-5
	6.2.3 Surface Water Hydrology	6-5
	6.2.3.1 VCR Mining Area	6-5
	6.2.3.2 Highway 78 Realignment	6-5
	6.2.4 Ground Water Quality	6-6
	6.2.4.1 VCR Mining Area	6-6
	6.2.4.2 Highway 78 Realignment	6-6
6.3	Air Resources	6-6
	6.3.1 VCR Mining Area	6-6
	6.3.2 Highway 78 Realignment	6-7
6.4	Vegetation	6-7
	6.4.1 VCR Mining Area	6-7
	6.4.2 Highway 78 Realignment	6-8
6.5	Wildlife	6-8
	6.5.1 VCR Mining Area	6-8
	6.5.2 Highway 78 Realignment	6-11
6.6	Visual Resources	6-11
	6.6.1 VCR Mining Area	6-11
	6.6.2 Highway 78 Realignment	6-12
6.7	Cultural Resources	6-13
	6.7.1 VCR Mining Area	6-13
	6.7.2 Highway 78 Realignment	6-14
6.8	Land Use	6-15
	6.8.1 VCR Mining Area	6-15
	6.8.2 Highway /8 Realignment	6-16
6.9	5.9 Transportation	
	6.9.1 VCR Mining Area	6-16
c 10	6.9.2 Highway /8 Realignment	0-1/
6.10	NOISE	0-18
	6.10.1 VCR Mining Area	0-18
C 11	6.10.2 Highway 78 Realignment	0-18
0.11	Socioeconomics	0-18
0.12	Dublic and Employee Health and Safaty	0-18 6 10
0.15	6 13 1 VCP Mining Area	6 10
	6 13 1 1 Public Safety	6-19 6-10
	6 13 1 2 Fmnlovee Safety	6-19 6-10
	6 13 2 Highway 78 Realignment	6-20
	6 13 2 1 Public Safety	6-20
	6.13.2.2 Employee Safety	6-20
	0.15.2.2 Employee Safety	0-20

PAGE NO.

7.0	UNAV 7.1 7.2 7.3 7.4	VOIDAB Mineral Land Us Vegetati 7.3.1 V 7.3.2 V Visual H	LE ADVERSE IMPACTS Resources se on/Wildlife Habitat Vegetation Wildlife Resources	7-1 7-1 7-2 7-2 7-2 7-3 7-4
8.0	OTHI 8.1	ER REQ Relation Environ	UIRED CONSIDERATIONS aship Between Local Short-Term Uses of the ment and Maintenance and Enhancement of productivity	8-1 8-1
	8.2	8.1.1 8.1.2 E 8.1.3 Irreversi	Potential Adverse Effects Economic Benefits Mitigations and Reclamation ible Environmental Changes Resulting From the	8-1 8-1 8-1 8-2
	8.3 8.4]	Growth- Energy (Inducing Effects of the Proposed Action Consumption and Conservation	8-2 8-3
9.0	STAF	F AND	CONSULTANTS	9-1
	PER: 9.1 9.2	SONS A Staff an Persons 9.2.1 9.2.2 9.2.3 9.2.3 9.2.4 9.2.5	ND ORGANIZATIONS CONTACTED d Consultants and Organizations Contacted County of Imperial Bureau of Land Management State of California Gold Fields Mining Corporation Gold Fields Operating Co Mesquite	9-1 9-2 9-2 9-2 9-2 9-3 9-3
10.	0 RE	FEREN	CES	10-1
API	PENDI	X A:	List of Permits and Approvals	
AP	PENDI	XB:	Responses to Notice of Preparation	
AP	PEND	X C:	General Wildlife Assessment of the VCR Mining Project	
AP	PENDI	XD:	VCR Mining Project Desert Tortoise Report	
AP	PENDI	X E:	Vegetation Support Material	
AP	PEND	IX F:	BLM Contracts and Agreements for Sand and Gravel Withdrawal Near the Proposed VCR Project	
AP	PENDI	X G:	Mesquite Project Conditional Use Permit Conditions Potentially Applicable to the VCR Mining Project	

FINAL EIR/EA ADDENDUM

LIST OF TABLES

TABLE NO.

TITLE PAGE NO.

1.1	Comparison of VCR and Mesquite Projects	1-4
2.1	VCR Mining Project Summary Table	2-7
2.2	Estimated Initial Construction and Operations Schedule	2-9
2.3	Summary of Potential Environmental Effects and Mitigation Measures	2-10
3.1	Approximate Mine Pit Dimensions	3-6
3.2	Estimated Operations Personnel	3-19
3.3	Estimated Equipment Requirements	3-21
4.1	Active and Potentially Active Faults	4-8
4.2	Soil Characteristics	4-10
4.3	Summary of Wells	4-16
4.4	Summary of Select Ground Water Quality Data	4-22
4.5	Selected Climatic Parameters	4-24
4.6	Imperial County Population and Housing Characteristics	4-54
4.7	Imperial County Employment Selected Statistics, 1978-1987	4-56
5.1	Summary of Results - Analysis of Mesquite Mine Ore, Protore and Overburden	5-13

LIST OF FIGURES

FIGURE NO.	TITLE	<u>PAGE NO</u> .
1.1	Regional Project Location Map	1-2
2.1	Project Vicinity Map	2-2
2.2	Project Site Location - Alternative I	2-3
2.3	Proposed Highway 78 Realignment in Relation to Area Highways	2-4
2.4	Project Site Location - Alternative II	2-6
3.1	Facilities Arrangement for Alternative I	3-3

LIST OF FIGURES (Continued)

FIGURE NO.	TITLE	<u>PAGE NO</u> .
3.2	Facilities Arrangement for Alternative II	3-4
3.3	Preliminary Arrangement for Crusher/Conveyor Facilities	3-9
3.4	Highway Realignment - Typical Plan and Profile	3-12
3.5	Highway Realignment - Typical Road Cross-Sections	3-13
3.6	Conceptual Arrangement of Overpass/Underpass Structure	3-15
4.1	Geologic Map	4-3
4.2	Seisrnicity and Faulting	4-6
4.3	Land Status Map	4-12
4.4	Amos-Ogilby Hydrogeologic Unit	4-14
4.5	Location of Vicinity Wells	4-17
4.6	Ground Water Elevation Map	4-19
4.7	Atmospheric Stability Distribution Summary	4-26
4.8	Wind Direction Frequency Distribution (Wind Rose)	4-29
4.9	Vegetation Wildlife and Cultural Resources Inventory Areas	4-31
4.10	Vegetation Types	4-32
5.1	Viewpoint Locations for Visual Analysis	5-23
5.2	Viewpoint #1 (Both Alternatives)	5-26
5.3	Viewpoint #2 - Alternative I	5-27
5.4	Viewpoint #3 - Alternative I	5-29
5.5	Viewpoint #4 - Alternative I	5-30
5.6	Viewpoint #5 - Alternative I	5-32
5.7	Viewpoint #6 - Alternative I	5-34
5.8	Viewpoint #7 - Alternative II	5-35
5.9	Viewpoint #8 - Alternative II	5-36
5.10	Viewpoint #9 - Alternative II	5-37
6.1	Employee and Construction Workers Procedure Card	6-9
6.2	Desert Tortoise Awareness Sign	6-10

LIST OF PLATES

PLATE NO.

TTTLE

I.1	General Arrangement of Alternative I (on Topography)
I.2	General Arrangement of Alternative I (on Photograph)
II.1	General Arrangement of Alternative II (on Topography)
II.2	General Arrangement of Alternative II (on Photograph)

EXECUTIVESUMMARY

ES.1 BACKGROUND

The approximate 2,000-acre VCR Mining Project is a proposed gold mining facility in a virtually unpopulated portion of eastern Imperial County, as shown in Figure ES. 1. The project would be adjacent to the eastern boundary of the existing Mesquite gold mining and processing project (Imperial County Conditional Use Permit No. 684-84 and U.S. Bureau of Land Management [BLM] Plan of Operations CAMC 81188/261). Except for a primary crusher, the proposed VCR project does not include ore processing facilities. The project would involve only mining and crushing of ore. Subsequent processing for gold extraction would take place at the adjacent Mesquite processing area No changes to the existing approvals for the Mesquite project are proposed.



PROJECT LOCATION MAP

- Most of the VCR project is located on Public Domain Land managed by the BLM. A small portion is on fee land owned by Gold Fields Mining Corporation, parent company of Gold Fields Operating Co. (GFOC), the applicant for the VCR project. GFOC has operated the Mesquite project since its startup in 1985.
- 3. This EIR/EA is being prepared as a joint State and Federal environmental document based on an existing Memorandum of Understanding between the lead agencies, Imperial County and the BLM. The California Department of Transportation (Caltrans) will be a responsible agency for portions of the project, which could include relocation of about 8.5-miles of Highway 78. The existing highway alignment traverses both the Mesquite and proposed VCR project areas.

ES.2 THE PROPOSED ACTION AND ALTERNATIVES

- Two alternative configurations are analyzed in this document for the proposed VCR project. The "preferred' alternative (Alternative I) includes relocating about 8.5 miles of Highway 78 to the south, around both the VCR and Mesquite projects. The "backup" alternative (Alternative II) does not include complete re-routing of the highway, but would rely on local realignments within the project areas where the existing highway conflicts with the extraction of ore. Alternative II would become the preferred option only if relocating of the highway were determined to be infeasible.
- 2. Table ES. 1 summarizes the key elements of the VCR project for the two alternatives analyzed. During the project's anticipated 20-year life, an estimated 40 to 50 million tons of ore would be mined. GFOC plans to mine the combined Mesquite and VCR projects at an average annual rate of 4.5 million tons per year (MTY), the presently permitted production level for the existing processing facility.

TABLE ES.1 VCR MINING PROJECT SUMMARY TABLE

ITEM	ALTERNATIVE I	ALTERNATIVE II	
Mine Pits	Four open pit mines, which would include portions of the existing highway.	Four open pit mines, with limitations due to the existing highway.	
Overburden and Protore S tockpiles	Yes, to maximum height of about 270 feet.	Yes, to maximum height of about 270 feet.	
Primary Crusher, Conveyor, and Mobile Equipment Repair Shop	Initially will use existing Mesquite facilities. An additional crusher conveyor and repair shop may be constructed in the future.	Yes. Would be installed as a part of initial project construction.	
Highway 78 Modifications	Relocated south of project.	Possible limited realignment at overpass/ underpass and/or mine pit extensions.	
Unpaved Zappone Road Modifications ⁽¹⁾	Entirely abandoned.	Realigned, if required.	
Unpaved Vista Mine Road Modifications ⁽¹⁾	Abandoned north of the relocated highway.	None.	
Transmission Line Relocation(l)	Yes.	Yes.	
Project Access	New access road from Highway 78 realignment	Use of existing Highway 78 intersection	

⁽¹⁾Locations of existing roads and transmission line are shown in figures from Chapter 3.0 of the EIR/EA.

3. The **8.5-mile** highway realignment, shown in Figure ES.2, would be about 1.2 miles longer than the existing road, However, it would be constructed according to current standards with wider paving and higher design speeds than the existing highway. Therefore, travel between Brawley and Blythe, the closest common destination along this portion of Highway 78, would not be noticeably affected.



PROJECT VICINITY MAP

- 4. The proposed VCR Mining Project would provide initial employment of 35 to 50 employees, the majority of whom would be from the existing local population. Ultimately, the VCR project would also extend the employment of an additional 250 to 270 Mesquite project employees for at least several years. Only minor requirements of municipal services are anticipated.
- 5. The proposed project includes a Reclamation Plan developed in accordance with the California Surface Mining and Reclamation Act of 1975 (SMARA) and the Federal requirement of 43 CFR Part 3809. The plan will be accomplished in three phases, corresponding to the completion of activities associated with initial construction, operations, and ultimate facility shutdown.

- In addition to the preferred alternative (Alternative I) and the "backup" alternative (Alternative II), several other alternatives were considered for the project, but not adopted. These alternatives included:
 - Underground and strip mining techniques, considered as a substitute for the proposed open pit mining method. Both alternative mining methods were determined to be infeasible for the VCR orebodies.
 - Backfilling of the pits, considered as an alternative to surface disposal of the overburden in stockpiles, and determined to be infeasible.
 - Alternatives to truck and conveyor transport of ore determined to be infeasible.
- 7. Several alternative highway realignment routes were also considered The proposed route was selected because it: (1) bypasses both the VCR and Mesquite projects, thereby minimizing impacts to the existing and planned project areas, (2) avoids crossing major washes, and (3) would not affect the U.S. Navy Chocolate Mountains Aerial Gunnery Range north of the proposed project.
- 8. Alternative sites for the mine pits were not considered because the orebodies are fixed. The basic locations of the overburden stockpiles are also fixed, by the locations of the pits and project boundaries, operating costs and, in one instance, by the desire to avoid a cultural feature.
- 9. Project postponement is not considered feasible, because such action would eliminate the potential to optimize the combined mining and processing of the VCR project ore with the Mesquite project ore. This would substantially reduce the economic size of the project and the related socioeconomic benefits. The No Action Alternative would eliminate the project and would be inconsistent with 43 CFR Part 3809 and adopted County policies regarding recovery of economic mineral resources.

ES.3 EXISTING ENVIRONMENT. POTENTIAL IMPACTS. AND MITIGATION MEASURES

- 1. The potential project impacts and mitigation measures are summarized in Chapter 2.0 and discussed in detail in Chapters 5.0 and 6.0 of the EIR/EA. The topics considered include:
 - . Geology, Mineral Resources, and Soils
 - · Water Resources
 - · Air Resources
 - . Vegetation
 - Wildlife
 - . Visual Resources
 - Cultural Resources

- Land Use
- . Transportation
- Noise
- . Socioeconomics
- Services and Utilities
- Public and Employee Safety
- 2. No officially listed threatened and endangered species are located at the site, and sensitive species are at low densities. Therefore, no significant impact to vegetation or wildlife would result from the project as it is designed. Also, in most cases, the mitigation measures planned for the project would mitigate potential adverse impacts to minor levels.
- 3. There would be beneficial socioeconomic impacts associated with the project and beneficial transportation impacts associated with the proposed highway realignment under Alternative I. Socioeconomic benefits would result from employment, purchases of goods and services, and tax contribution. Under Alternative I, transportation benefits would result both from the highway being realigned outside of the Mesquite and VCR project areas and from the improvement in design of the new roadway. The new roadway would be constructed at GFOC's expense to current Caltrans standards which have been upgraded subsequent to construction of the existing alignment.
- 4. Chapter 7.0 discusses several unavoidable adverse impacts which could occur to mineral resources, land use, vegetation/wildlife habitat, and visual resources. The following paragraphs summarize these items.
- 5. If the highway were not realigned or if local realignments (under Alternative II) were not possible, an estimated 2.1 million tons of gold bearing ore could be lost, with an adverse effect on associated socioeconomic benefits of mining. Substantial effects to sand and gravel resources in the area are not anticipated.

- 6. It would not be possible to return the VCR mining area to a "natural condition" at the completion of operations. Therefore, the project would be expected to limit most non-mining uses on about 1,500 acres modified by the mine pits and overburden stockpiles.
- 7. The project would affect about 1,500 acres which support a sparse distribution (about 5%) of creosote bush scrub community type of vegetation. This vegetation includes one plant, the fairy duster (<u>Calliandra eriophylla</u>), which is considered by the California Native Plant Society to be "Rare in California, common elsewhere." It is determined that the net loss of vegetation would not be substantial because:
 - The affected area represents only a small fraction of nearby areas with similar vegetative conditions.
 - Most of the surrounding undisturbed land is not expected to be affected by future mining.
 - The fairy duster would be expected to reestablish in portions of the disturbed area when mining activities are completed.
- 8. Although the VCR mining area and proposed highway realignment corridor contain no unique habitat features, wildlife inventories have found evidence of use of the site by the desert tortoise (Gopherus agassizii). The desert tortoise is considered a "Sensitive: Species" by BLM, a "Protected Species" by the California Department of Fish and Game, and is found to warrant inclusion on the list of Threatened and Endangered Species by the U.S. Fish & Wildlife Service. The VCR mining area has been classified as having the lowest category of tortoise densities established by the BLM. The area does not constitute critical habitat for the desert tortoise, and site-specific inventories have confirmed their low density. The impact of the proposed action on tortoises would be minor, and mitigation measures would be implemented to alleviate impacts on individual tortoises.
- 9. The overburden stockpiles resulting from the proposed VCR project would cause a noticeable visual effect which would become greater over the anticipated 20-year operations period.
 Because the VCR project would be located adjacent to the similar, currently active Mesquite project, the overall visual effect would be less than that of the same project in a previously undisturbed area. The extent of visibility of the stockpiles would depend upon which

alternative were selected. Under Alternative I, the stockpiles would be most visible from the approximate **2-mile** portion of highway realignment which would parallel the eastern boundary of the VCR mining area. Under Alternative II, the overburden stockpiles would be visible from a closer perspective, and on both sides of Highway 78 for about 3.5 miles which would traverse the mining areas.

10. Chapter 8.0 discusses the relationship between local short-term uses of the environment and maintenance and enhancement of long-term productivity as a result of the proposed VCR Mining Project. In addition to the effects summarized above, this analysis considers economic benefits, mitigations and reclamation, irreversible environmental changes, growth-inducing effects, and energy consumption aspects of the proposed project.

ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT VCR MINING PROJECT IMPERIAL COUNTY, CALIFORNIA

1 .O INTRODUCTION

1.1 PROJECT BACKGROUND AND LOCATION

- The proposed VCR project location is in eastern Imperial County, about 35 miles east of Brawley and 6.5 miles northeast of the Glamis Store (see Figure 1.1, Regional Project Location Map). The project area is in a virtually unpopulated portion of the old Mesquite Mining District, with only one residence within a radius of about six miles. The northwest comer of the area is crossed by State Highway 78, and the northern boundary is within one-half mile of the U.S. Navy Chocolate Mountains Aerial Gunnery Range. No part of the proposed project area touches the gunnery range.
- Adjacent to the west of the proposed VCR mining area is the Mesquite Gold. Mine and Ore Processing Facility. This facility has been operated for several years by Gold Fields Operating Co. (GFOC)-Mesquite, a subsidiary of Gold Fields Mining Corporation (GFMC). The first ore was removed from the Mesquite project Big Chief mine pit in late 1985, and gold processing was initiated in March 1986. The Mesquite project will continue to operate for a period of about 20 years under: (1) Imperial County Conditional Use Permit (CUP) No. 684-84 issued April 1985, and (2) U.S. Bureau of Land Management (BLM) Plan of Operations CAMC 81188/261, issued in January 1985. In preparation of that CUP, the Imperial County Planning Department adopted Environmental Impact Report (EIR) -SCH #84040408 on December 12, 1984. That EIR was prepared as a combined Environmental Assessment (EIR/EA) as part of the BLM Plan of Operations approval process.
- GFOC has continued to conduct a mineral exploration and testing program in the eastern Imperial County area, under a Plan of Operations originally approved by the BLM on June 10, 1981. Subsequent amendments to that Plan of Operations cover the new area, called the VCR mining area, located east of the Mesquite project. Results of exploration activities indicate the presence of a fragmented orebody with significant gold and minor silver values. The gold occurs essentially in free or native form in minute size and amount in the micro-fractures of a metamorphic rock.



- 4. Additional reserves associated with the VCR Mining Project are estimated to be between 40 and 50 million tons and represent sufficient potential to develop a new mining project which would provide additional ore for processing at the existing Mesquite project heap leach and gold recovery facilities. However, the VCR Mining Project is on a parcel of land separate from the Mesquite project and so would require adoption of a separate Conditional Use Permit and Plan of Operations, for which this EIR/EA has been prepared. Land use, water requirements, and operating procedures previously permitted for the Mesquite project would not be modified.
- 5. With the addition of ore available from the VCR project, GFOC plans to operate the existing processing operations at an average annual rate of 4.5 million tons per year (MTY), with ore from both the Mesquite and VCR project mining pits. Individual facilities would be capable of greater short-term production rates to allow for variations in ore quality, market conditions, and/or makeup for periods of maintenance shutdowns. Maximum processing levels for prolonged periods are expected to be maintained below 5.0 MTY. A summary of major elements of the proposed VCR and existing Mesquite projects is presented in Table 1.1.
- 6. Two alternative arrangements for the proposed VCR project are analyzed in this EIR/EA document.(') Both alternatives would include:
 - Development of four open-pit mines, including necessary ramps, haul roads, overburden storage areas, and related facilities. It is anticipated that approximately 110 to 165 million tons of overburden and protore (presently uneconomical ore) material and 40 to 50 million tons of ore would be removed during the anticipated 20-year life of the project.
 - Abandonment or realignment of Zappone Road, which passes through the VCR mining area.
 - Realignment of a portion of an existing 92 kV power line through the project area. One or two poles might have to be added or moved to accommodate realignment of Highway 78.

⁽¹⁾ Two alternative project configurations are analyzed in this document. The "preferred" alternative (Alternative I) would include the relocation of Highway 78 to the south of the mining area. A "back up" alternative (Alternative II) is also analyzed so that it would become the approved arrangement in the event relocation of the highway were determined to be infeasible. These descriptions are consistent throughout this document.

TABLE1.1

COMPARISON OF VCR AND MESQUITE PROJECTS

PROJECT COMPONENT	PROPOSED VCR PROJECT	EXISTING MESQUITE PROJECT	TOTAL
Estimated Disturbed Area	1,500 acres	2,300 acres	3,800 acres
Number of Pits	4 pits	2 pits	6 pits
Maximum Pit Area (all pits combined)	700 acres	300 acres	1,000 acres
Maximum Pit Depth	450 feet	450 feet	N/A
Ore Production per Year (in millions of tons, MTY)	1.5-4.5 MTY	3.0-4.5 MTY	4.5 MTY (Average)
Ore Processing Facilities	No	Yes	N/A
Number of Employees	35-50 ⁽¹⁾	215-220	250-270
Estimated Life of Mine	20 years	20 years	20 years

(1) The VCR project would also extend the employment period of the majority of Mesquite project employees for at least several years.

- 7. If Highway 78 is realigned (Alternative I) the project would also include:
 - Placement of the existing Mesquite project water supply line along a crossing beneath the roadway, and modification of a portion of an existing overhead power line which extends from the existing Mesquite project to the GFOC well field to the south.
 - Construction of a new project access road extending north from the realigned Highway 78 to the ore processing and administration area.
 - Provide a new route for access to the gravel withdrawn area, extending north from the realigned Highway 78 to the previous highway alignment, if necessary.
- 8. The project also might include initial construction and installation of a primary crusher, conveyor, and mobile equipment repair shop should realignment of Highway 78 prove infeasible. If the highway were realigned, construction of these facilities would be delayed until later in the project or, they might not be required for the entire project life.
- 9. Detailed descriptions of two alternative arrangements for the proposed project, both with and without the Highway 78 realignment, are presented in Chapter 3.0.

1.2 ENVIRONMENTAL PROCEDURES

- This EIR/EA has been prepared in compliance with: (1) the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000, et seq.), (2) Imperial County procedures for implementing the CEQA Guidelines, as amended (California Administrative Code, Section 15000, et seq.), (3) the National Environmental Policy Act (NEPA), (4) BLM procedures for implementing the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500, et seq.), and (5) regulations for Surface Management of Public Lands under U.S. Mining Laws (43 CFR Part 3809).
- 2. This document has been prepared as a joint EIR/EA, as encouraged by both the CEQA Guidelines and NEPA for purposes of efficiency and to avoid duplication. At the local level, this approach has been facilitated by a "Memorandum of Understanding (MOU) for Surface Mining and Reclamation Coordination in Imperial County." This MOU between the County of Imperial and California Desert District Office of the BLM has been in effect since September 28, 1981.

3. The adjacent Mesquite facility was permitted in accordance with County and BLM requirements and procedures. The EIR/EA prepared for that project (Mesquite Project EIR/EA 1984)⁽²⁾ was utilized in preparation of this document. Also, for the VCR project, a Conditional Use Permit Application and Plan of Operations was prepared and submitted to the County and BLM, dated May 22, 1987. These two documents are hereby incorporated by reference.

1.3 INTENDED USES OF THE EIR/EA

- This document will be used by the Imperial County Planning Commission and Board of Supervisors in their consideration of the Conditional Use Permit Application for the VCR Mining Project. For this purpose, the County is the Lead Agency for CEQA compliance.
- 2. The BLM will use the EIR/EA to take action on the proposed Plan of Operations for the VCR project. For this purpose, BLM is the lead agency for NEPA compliance.
- 3. Also, as a responsible agency, the California Department of Transportation (Caltrans) will use the EIR/EA to evaluate the potential environmental effects of the proposed realignment of a portion of State Highway 78 for one of the major project alternatives addressed in Section 2.2.1, Proposed Project Alternatives.
- 4. Other Local, State, and Federal agencies may also use this document as necessary in their consideration of the proposed project and approval of other permits (see Appendix A, List of Permits and Approvals).

1.4 INITIAL STUDY AND NOTICE OF PREPARATION

1. In May 1987, the Imperial County Planning Department conducted an Initial Study in response to the Conditional Use Permit Application for the proposed VCR Mining Project and identified the need to prepare an EIR. In cooperation with the El Centro Resource Area office of the

⁽²⁾ References are presented in alphabetical order in Chapter 10.0.

BLM, the County issued a Notice of Preparation (NOP) to approximately 60 agencies, organizations, and interested individuals. The 30-day response period for the NOP ended on July 1, 1987.

- 2. The County received six responses to the NOP, which were utilized in preparation of the EIR/EA, as noted below. The responses are included as Appendix B.
- 3. Responses to the NOP are listed below. The parenthetical comment after each respondent identification indicates sections in this document, or other actions, taken as a result of that response.
 - Imperial Irrigation District Charles L. Shreves, General Manager (see Sections 3.2.7, 5.12.1)
 - United States Marine Corps D.K. Isaly, Lt. Col., U.S. Marine Corps (see Section 1.1)
 - California Division of Mines and Geology Dennis J. O'Bryant, Environmental Program Coordinator (The requested information was forwarded to the Division of Mines and Geology on July 8, 1987)
 - California Department of Fish and Game Fred Worthley, Regional Manager, Region 5 (see Sections 3.2.3, 4.4, 4.5, 5.2.1, 5.4, 5.5)
 - Imperial County Department of Public Works
 S. Harry Orfanos, Director of Public Works (see Sections 3.2.5.1, 3.2.6)
 - California Department of Transportation James T. Cheshire, Chief, Environmental Planning Branch (An informal review with Caltrans personnel was conducted in July 1987)

1.5 EFFECTS FOUND NOT TO BE SIGNIFICANT

1. The County's Initial Study identified a number of specific areas of potential environmental concern where no environmental impacts were anticipated. However, in view of the scope and level of interest of the proposed project, the areas of known environmental concern were investigated in preparation of this EIR/EA.

2. As the substantive environmental record for the proposed VCR project, this EIR/EA will provide the basis for BLM's evaluation as to whether: (1) an EIS will or will not be required for the proposed project (40 CFR Part 1501.4), and/or (2) a finding of no significant effect can be issued (40 CFR Part 1508.13).

1.6 TERMS USED TN THIS REPORT

- 1. Several terms used to refer to various aspects of the proposed project appear repeatedly throughout the text and in the figures. For purposes of clarity and ease of review, they are defined and/or explained below:
 - VCR Mining Area

Approximately 2,000 acres to be developed with mine pits, overburden stockpiles, haul roads, and, as necessary, crusher, mobile equipment maintenance shop, and highway overpass/underpass.

• Highway 78 Realignment Study Corridor

An approximately 8.5-mile long, 500-foot wide corridor within which vegetation, wildlife, and cultural resource inventories were conducted for the proposed highway realignment. The proposed realignment right-of-way is located in this corridor.

• Alternative I

The preferred alternative, which includes development of the mining facilities within the VCR mining area plus realignment of Highway 78 within the highway study corridor.

• Alternative II

The backup alternative, which includes development of the mining facilities, if it is determined that realignment of the highway is not feasible.

• Disturbed Area

Area consisting of about 1,625 and 1,500 acres for VCR project Alternatives I and II, respectively, which would be physically changed by the addition of proposed project facilities.

• Mesquite Project

An existing operating gold mine and processing facility located adjacent to and west of the proposed VCR project. It consists of: (1) the Mesquite mining area north of existing Highway 78, and (2) the Mesquite processing area, south of Highway 78.

. Cumulative Disturbed Area

Approximately 3,800 acres of land which would be changed by development activities of both the existing Mesquite and proposed VCR projects.

2. Terms used to describe the proposed operation and existing conditions are discussed in Chapters 3.0 and 4.0.

1.7 REPORT ORGANIZATION

- 1. This EIR/EA is organized to facilitate review by the Bureau of Land Management and Imperial County, as the two lead agencies, and by Caltrans, as a responsible agency. The lead agencies, of course, are concerned with the various aspects of the proposed project. Caltrans, however, is primarily concerned with the proposed realignment of Highway 78, addressed under one of two alternative configurations proposed.
- 2. In order to permit realignment of a State highway, as proposed for the VCR project, Caltrans may require an EIR, commensurate with the responsibilities of a State agency and in compliance with CEQA. It is anticipated that this document will fulfill such requirement and that a separate document will not need to be prepared by Caltrans. The format of this EIR/EA has been arranged to clarify the discussions pertinent to the highway realignment and to facilitate Caltrans review.

2.0 SUMMARY OF THE PROPOSED ACTION AND ITS ENVIRONMENTALEFFECTS

2.1 INTRODUCTION

- This chapter has been prepared to comply with CEQA Guidelines which specify that an EIR contain "a brief summary of the proposed action and its consequences" (Section 15 123). Detailed discussions of the material in this chapter are presented in other parts of this document, as follows:
 - Chapter 3.0, Description of the Proposed Action and Its Alternatives
 - Chapter 5.0, Potential Environmental Impacts
 - Chapter 6.0, Mitigation Measures
 - Chapter 7.0, Unavoidable Adverse Impacts

2.2 PROJECT SUMMARY

2.2.1 PROPOSED PROJECT ALTERNATIVES

 GFOC proposes to build a new mining facility, called the VCR Mining Project, adjacent to and east of the existing Mesquite Gold Mine and Ore Processing Facility at the location shown in Figure 2.1, Project Vicinity Map. As proposed, the VCR project would be arranged according to one of two basic alternatives.⁽¹⁾ The preferred Alternative I includes relocating approximately 8.5 miles of State Highway 78 to the south and east of the proposed VCR and existing Mesquite projects (see Figure 2.2, Project Site Location - Alternative I and Figure 2.3, Proposed Highway 78 Realignment in Relation to Area Highway). This arrangement would rely on use of the existing Mesquite primary crusher for ore from the VCR pits, although an additional primary crusher might be constructed in the future. A temporary portable crusher might also be utilized during the initial operating period.

⁽¹⁾ Two alternative project configurations are analyzed in this document. The "preferred" alternative (Alternative I) would include the relocation of Highway 78 to the south of the mining area. A "backup" alternative (Alternative II) is also analyzed so that it would become the approved arrangement in the event relocation of the highway were determined to be infeasible. These designations are consistent throughout this document.






- Tentative approval of the backup Alternative II is being sought by GFOC in the event that the preferred alternative cannot be developed because the highway realignment is not feasible. This contingency is necessary because final approval for the highway relocation is made by the California Transportation Commission after the environmental reviews have been completed.
- 3. Alternative II is based upon the highway remaining essentially in its present location, although an overpass or underpass structure might be constructed to permit ore to be transported across the highway. Under this alternative, portions of Highway 78 within the VCR mining area might be realigned to enable the underlying ore to be recovered. This alternative is illustrated in Figure 2.4, Project Site Location - Alternative II, and would likely include construction of an additional primary crusher in the VCR project area during initial site development. Under Alternative II, the environmental impacts would be similar with or without local realignments of Highway 78.
- 4. The land area which initially would be disturbed or otherwise directly affected by development of the proposed mining area and construction of ancillary facilities would amount to approximately 625 acres for Alternative I or 500 acres for Alternative II. It is estimated that, for either alternative, an additional area of about 50 acres would be disturbed in each successive year during project operations. Total area disturbed over the life of the VCR project (about 20 years) would amount to about 1,625 acres under Alternative I or 1,500 acres under Alternative II.

2.2.2 PROJECT ELEMENTS

- 1. Under either Alternative I or Alternative II, the primary components of the VCR Mining Project would consist of four mine pits (Vista, Cherokee, Rainbow, and Gold Bug), related haul roads, overburden and protore (presently uneconomic ore) storage stockpiles, and ore crushing and conveying facilities. These and other project elements which may be included are summarized in Table 2.1, VCR Mining Project Summary Table. Locations' of each pit are described in Chapter 3.0.
- 2. As indicated by the facilities and activities in the summary table, the most noticeable difference between the two alternatives involves the realignment of State Highway 78. The designs also include some differences in overburden pile locations, in order to realize the most efficient operation for either alternative.



ITEM	ALTERNATIVE1	ALTERNATIVE II			
Mine Pits	Including Areas at Highway	Limited by Highway			
Overburden and Protore Stockpiles	Yes	Yes			
Primary Crusher and Conveyor	Allowed for	Yes			
Mobile Equipment Repair Shop	Allowed for	Yes			
Highway 78 Modifications	Relocated South of Project	Possible Limited Realignment at Overpass/ Underpass and/or Mine Pit Extensions			
Zappone Road Modifications	Entirely Abandoned	Realigned, if required			
Transmission Line Relocation	Yes	Yes			
Project Access	New Access Road from Highway 78 Realignment	Use of Existing Highway 78 Intersection			
Flood Diversion Facilities	Yes	Yes			
Construction and Operations Personnel and Equipment	Yes	Yes			
Water and Power Requirements	Yes	Yes			

VCR MINING PROJECT SUMMARY TABLE

2.3 PROJECT SCHEDULE

- 1. Construction of the VCR Mining Project is scheduled to occur over a period of about 8 to 16 months, beginning in October 1987. The proposed schedule for the various activities during the first few years is shown in Table 2.2, Estimated Initial Construction and Operations Schedule. Mining of the Rainbow and Gold Bug pits probably would not be started until several years after project startup. However, explorations drilling and detailed pit design would be ongoing throughout the life of the operation, and GFOC might mine from any of the pits at various times over the life of the project to suit ore quality, market conditions, and/or project materials handling requirements.
- 2. Project operations are expected to begin concurrently with construction activities. Initial operations would involve stripping the overburden from the Cherokee and Vista pits. Mining ore from the Cherokee pit is planned to begin before construction of other VCR facilities would be complete. This would be possible because the Cherokee pit is located north of Highway 78, and its ore could be crushed at the existing Mesquite primary crusher.

2.4 SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECT'

1. For ease of reference, this section is presented in tabular form (see Table 2.3, Summary of Potential Environmental Effects and Mitigation Measures). The table is organized similar to the format of the textual discussion of the items addressed in Chapter 5.0.

TABLE 2.2 ESTIMATED INITIAL CONSTRUCTION AND OPERATIONS SCHEDULE VCR MINING PROJECT

ACTIVITY		1987		1988											
		NOV	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	DCT.	NOV.	DEC.
Begin Cherokee Pit Overburden Stripping	Х														
Mining of Cherokee Pit Ore ⁽¹⁾															
Haul Road and Drainage Control Construction								-	-						
Overburden Stripping of Vista Pit															
Crusher and Conveyor Construction, if Required ⁽²⁾															
Mining of Vista Pit Ore ⁽³⁾															
Highway 78 Realignment or Overpass/Underpass Construction ⁽²⁾															
Rainbow Pit ⁽⁴⁾															
Gold Bug Pit ⁽⁴⁾															
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⁽¹⁾ Mining of the Cherokee pit may continue intermittently over the life of the project, depending on actual ore **quality** and mining conditions.

A crusher/conveyor would be constructed under Alternative II. Under Alternative I, the decision to include a crusher/conveyor would be made after several years of operation.

⁽³⁾ For Alternative I, Vista pit mining will be delayed until highway realignment construction is completed, or a temporary portable crusher will be used to avoid the need for crossing the existing highway while it is still being used.

(4) Initial planning is based on mining at the Rainbow and Gold Bug pits beginning about five years after VCR project startup. That schedule may be modified to suit actual ore quality and mining conditions.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

1.0 GEOLOGY AND SOILS

1.1 V<u>CR Mining Area</u>

1.1.1 Consequences of potential seismic activity at faults in the project vicinity.

1.1.2 Erosion due to modification of natural drainage and infiltration characteristics, and artificially constructed slopes.

MITIGATION MEASURES

- 1a. Structures and facilities are required to meet current applicable seismic safety standards.
- 1b. Artificial slopes would be constructed at the angle of repose and benched as necessary to prevent excessive soil movement.
- 2a. Access and haul roads would be constructed of **onsite** materials and primarily follow natural contours.
- 2b. Overburden and **protore** stockpiles would be constructed at the natural angle of repose and top surfaces would be sloped to control runoff.
- 2c. Inactive dumps would be sprayed with a chemical binder/dust suppressant, if practical.
- 2d. Storm water diversion facilities would be designed to minimize alteration of natural drainage patterns.

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

1. Mitigable-no significant adverse effect.

2. Mitigable-no significant adverse effect.

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SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

MITIGATION MEASURES

3a. **Protore** would be separated from overburden to the extent

3b. Highway 78 realignment would allow recovery of ore adjacent to and beneath the existing highway.

4a. Slopes in the mine pits would be

4b. Unstable pit wall slopes would be stabilized by blasting and/or excavation, benched, if necessary, and

cleared of loose rock.

design specific to the configuration and rock conditions of each wall.

practical.

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

1.1 VCR Mining Area (Continued)

1.1.3 Loss of potentially economic ore.

1.1.4 Slope instability in the mine pits.

- 1.2 Highway 78 Realignment
 - 1.2.1 Consequences of slope **move**ment resulting from potential seismic events.
 - 1.2.2 Erosion at existing drainages due to alteration of natural drainage patterns.
- 1. Artificially constructed slopes, would be designed to avoid substantial slope movements.
- 2. Diversion channels would be designed to minimize modifications to existing drainage patterns.

- 1. Mitigable-no significant adverse effect.
- 2. Mitigable-no significant adverse effect.

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

3. Mitigable-no significant adverse effect.

4. Mi tigable-no significant adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

- 1.2 <u>Highway 78 Realignment</u> (Continued)
 - 1.2.3 Erosion at highway realignment due to storm flows.
 - 1.2.4 Collection of sand and gravel in dips, minor erosion of road shoulders.
 - **1.2.5** Potential loss of gravel resource due to highway construction and alignment.

2.0 WATER RESOURCES

2.1 VCR Mining Area

2.1.1 Seepage of ground water may occur in one or more of the open pits, lowering ground water levels.

- 3. Highway **design** would include wide, shallow dips with increased pavement width and concrete erosion cut-off walls.
- 4. Routine maintenance by Caltrans, as for the existing alignment.
- 5a. Appropriate barren material from mine pits would be available to BLM, as feasible.
- **5b.** Access to gravel withdrawn area would be provided.

- 3. Mitigable-no significant adverse effect.
- 4. Mitigable-no significant adverse effect.
- 5. Mitigable-no significant adverse effect.

Mitigable-no significant adverse

effect.

- 1a. Seepage is estimated to be less than 22 gpm, 1. and is expected to evaporate naturally during project operation and after abandonment.
- 1b. **Drawdown** of the water would be very localized. No effect is anticipated on existing or potential wells outside the project **boundaries**.
- **Ic.** Temporary dewatering at mine pits, if necessary.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

2.1 VCR Mining Area (Continued)

- 2.1.2 Increase in runoff and potential for downstream flooding.
- 2-13
- 2.1.3 Degradation of ground water quality due to potential fuel spillage in mine pit.

2.2 Highway 78 Realignment

- 2.2.1 Alteration of surface drainage pattern.
- 2.2.2 Erosion or siltation in diversion structures.

MITIGATION MEASURES

- 2a. Storm water diversion structures would **be** designed to minimize interruption to natural drainage paths.
- 2b. Access and haul roads would be constructed of **onsite** materials and graded to existing contours.
- 3. If fuel spillage should occur, oil stained soil or rock would be removed and disposed of appropriately.
- 1. Diversion structures would control flows across the highway and be designed to minimize changes to natural flow conditions in other areas.
- 2. Diversion structures would be designed to maintain normal runoff velocities and allow an adequate margin for minor erosion or siltation.

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

2. Mitigable-no significant adverse effect.

3. Mitigable-no adverse effect.

- 1. Mitigable-no significant adverse effect.
- 2. Mitigable-no significant adverse effect..

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

E'OTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

3.0 AIR RESOURCES

- 3.1 VCR Mining Area
 - 3.1.1 Adverse air quality effects due to fugitive dust emissions.

3.1.2 Decrease in ambient air quality due to fuel emissions.

3.2 Highway 78 Realignment

3.2.1 No adverse effects are anticipated.

- 1a. As designed, project emissions would be maintained below applicable Ambient Air Quality Standards.
- 1b. Water sprays would be provided at crusher and conveyor transfer points for dust suppression. Surfactants may be added to enhance dust control, if necessary.
- 1c. Access and haul roads would be sprayed with water on a regular basis, or alternative dust suppressants would be used.
- 1d. Dust emissions would be monitored for the duration of project operation and control measures improved, if appropriate.
- 2. Low sulfur fuels will be used to reduce SO₂ emissions.
 - None required.

1. No significant adverse effect.

- 2. Mitigable-no significant adverse effect.
- 1. No adverse effects.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTALEFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

4.0 VEGETATION

- 4.1 VCR Mining Area
 - 4.1.1 Loss of about 1,500 acres, with estimated 5% cover of Creosote Bush Scrub.

4.1.2 Loss of populations of Fairy Duster, located primarily in washes and **runnels** that cross the project site. (CNPS "Rare in California, common elsewhere")

- Ia. No mitigations are available for the net loss of vegetation. However, construction and operational activities would be confined to the immediate development area.
- lb. Revegetation research or test program may be conducted in conjunction with the Mesquite program.
- 2a. No mitigation is available for the initial loss of Fairy Duster populations on the project site.
- 2b. Potential revegetation/research program may include Fairy Duster. Fairy Duster has been observed to re-establish on formerly disturbed mining areas within the project area.

1. Unavoidable. However, no significant effect. Vegetation is neither critical as habitat, nor unique.

2. Unavoidable. However, no significant adverse effect. Fairy Duster populations may re-establish on inactive and reclaimed areas of the site.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

4.2 Highway 78 Realignment

4.2.1 Loss of about 125 acres with estimated 5% cover of Creosote Bush Scrub.

MITIGATION MEASURES

la. No mitigation available for net loss of vegetation.

1 b. Construction disturbance would be confined to a corridor approximately 120 feet wide. Some natural revegetation would occur on unpaved areas.

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

 Unavoidable. However, no significant adverse effect. Vegetation is neither critical as habitat nor unique. No Fairy Duster was found within the 500-foot highway realignment study corridor.

2-16

5.0 WILDLIFE

5.1 VCR Mining Area

- 5.1.1 Development will directly affect potential Desert Tortoise habitat, which has been estimated at the low end of the density range of 0 to 20 tortoises/mi.² (BLM "sensitive" species, CDFG "protected" species, USF&WS proposed "threatened" species).
- la. If required by agencies, a tortoise relocation program would be implemented.
- 1 b. Employees and construction workers would be trained in the identification and proper handling of tortoises.
- lc. Excluding security personnel, employees would not be permitted to carry firearms.

1. Unavoidable adverse effect, but not significant, due to low levels of tortoise population.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

- 5.1 VCR Mining Area (Continued)
 - 5.1.2 Disturbance to wildlife and loss of habitat.
- 2-17

- 2a. Fencing and barriers would be established to discourage wildlife from entering the active mining area.
 - 2b. Construction and operation activities would be limited to currently active areas within the project boundaries.
- 2. Unavoidable. No significant effects, due to low densities and limited variety of species.

- 5.2 Highway 78 Realignment
 - 5.2.1 Disturbance of about 125 acres of wildlife habitat, including potential tortoise habitat,
- 1. Construction workers would be instructed on proper handling of a tortoise encounter.

1. Unavoidable. No significant effect, due to low densities and limited varieties of potentially affected species.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

- 6.0 VISUAL RESOURCES
- 6.1 VCR Mining Area
 - 6.1.1 Visibility of overburden stockpiles from a distance and from Highway 78 will present noticeable additions to the existing landscape.
 - 6.1.2 Visibility of far edges of mine pits from the highway.
 - 6.1.3 Visibility of overpass if constructed under Alternative II.
- 6.2 Highway 78 Realignment
 - 6.2.1 Visibility of mining pits from proposed realignment.
 - 6.2.2 Visibility of overburden piles from proposed highway realignment.

- 1a. Realignment of Highway 78, if feasible, would reduce the impact by increasing the distance to the closest receptor.
- lb. Vegetation would be planted as screening at toe of slopes adjacent to the highway.
- 2. Berms would be placed along areas of public use to restrict visibility to the extent feasible.
- 3. Surfaces would be painted to blend with surrounding desert environment, as appropriate.
- 1. Berms would be located to restrict motorist visibility of the mine pits.
- 2a. Vegetation would be planted in key areas, providing partial screening of visual effects.
- 2b. The proposed realignment is a mitigation in itself because passing views of facilities would effect only one side of the realigned road.

- 1. Partially mitigable-remaining unavoidable adverse effect is not significant.
- 2. Mitigable-no significant adverse effect.
- 3. Mitigable-no significant adverse effect.
- 1. Mitigable-no significant adverse effect.
- 2. Partially **mi** tigable-remaining unavoidable adverse effect is not significant.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

- 6.2 Highway 78 Realignment (Continued)
 - 6.2.3 Visibility of previous alignment under Alternative I.

7.0 CULTURAL RESOURCES

7.1 VCR Mining Area

7.1.1 The proposed development will affect two sites considered potentially eligible for the National Register.

7.1.2 Previously identified and fenced geoglyphs in southwest portion of VCR mining area could be affected by relocation of a segment of existing 92 kV power line.

MITIGATION MEASURES

- 3a. Abandoned portions of the existing highway would be removed, and the old road bed scarified and planted.
- 3b. Berms would be constructed near each end of the realignment to obstruct views of previous road bed.
- Ia. A Cultural Resources Management Plan (CRMP) would be prepared and implemented to mitigate the effects of project development on potentially eligible sites. The CRMP would be approved by BLM, SHPO, and the Advisory Council, and a Finding of No Adverse Effect proposed
- lb. Other noneligible sites would be collected because of their scientific/educational value.
- 2. These areas would be avoided during construction activities.

LEVELOFANTICIPATED SIGNIFICANCE AFTER MITIGATION

3. Mitigable-no significant adverse effect.

1. Mitigable-no significant adverse effect.

2. Mi tigable-no significant adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

MITIGATION MEASURES

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

7.2 Highway 78 Realignment

- **7.2.1** The proposed realignment will affect four sites which are potentially considered eligible for the National Register.
- 7.2.2 Singer Geoglyphs Area of Critical Environmental Concern (ACEC) could be affected by proposed highway realignment.

8.0 LAND USE

8.1 VCR Mining Area

- 8.1.1 Proposed project essentially limits future re-use of the mine pit and overburden stockpiles for purposes other than natural resource recovery and possibly research.
- 1 a. Overburden and any mineral resources contained therein may be stockpiled for potential future use.
- 1 b. Low grade mineralization in and around the pit and potential mineralization below the pit are natural resources that may be recoverable in the future.
- Ic. Applicant would provide for establishment of a research site at the decommissioned project, if appropriate.
- 1. Partially mitigable-remaining irreversible commitment of land resources would not have a significant adverse effect. Project site does not represent significant or unique land use resource in the region in terms of recreation or visual resources.

- 1. A Cultural Resources Management Plan (CRMP) would be prepared and implemented to mitigate the effects of the realignment on potentially eligible sites. The CRMP would be approved by BLM, SHPO, and the Advisory Council, and a Finding of No Adverse Effect proposed.
- 2. Measures, such as flagging of construction limits would be taken to assure that geoglyphs within the ACEC are avoided by highway construction activities. Once built, the highway would be several hundred feet from the nearest geoglyph.

- LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION
- 1. Mitigable-no significant adverse effect.

2. Mitigable-no significant adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

8.1 VCR Mining Area (Continued)

8.1.2 Potential public safety problem related to unauthorized ORV use of the reclaimed site.

8.2 Highway 78 Realignment

8.2.1 Interference with use of roadways in the vicinity.

MITIGATION MEASURES

- 2a. BLM "Routes of Travel" program would be used to restrict and prohibit vehicle access.
- 2b. Measures in proposed Reclamation Plan would discourage unauthorized entry and minimize potential hazard of remaining facilities.
- 1a. At-grade intersection at Vista Mine Road would be provided to maintain access to county road system.
- 1 b. Unpaved road to existing gravel withdrawn area would be provided.

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

2. Mitigable-no significant adverse effect.

1. Mitigable-no significant adverse effect.

9.0 TRANSPORTATION

9.1 VCR Mining Area

- 9.1.1 Under Alternative ii, destination trips to and from the project site will increase turning movements to and from Highway 78 at the project entrance.
- 1. The existing Mesquite project entrances/exits would be used for the VCR project under Alternative II. This would result in the most effective traffic circulation and minimal disruption of through traffic on Highway 78. Design of this intersection has been approved by Caltrans.
- 1. Mitigable-no significant adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

9.1 VCR Mining Area (Continued)

9.1.2 Under Alternative II, project operations will require occasional highway crossings of heavy, slow-moving equipment..

- 9.1.3 Under Alternative II, there may be local realignments of Highway 78 to permit maximum ore recovery.
- 9.1.4 Potential for dirt or rock to fall from Highway 78 overpass which may be constructed under Alternative II.

MITIGATION MEASURES

- 2a. The need for such crossings would be minimized, as vehicle repair and fueling stations would be located on both sides of the highway. To the extent possible, equipment would be dedicated to use on only one side of the highway.
- 2b. When equipment crossing is necessary, warnings and traffic control will be provided as appropriate.
- 3. Design and construct such realignments to Caltrans standards and approval.
- 4. **Overpass** would be designed to Caltrans specifications and would contain potential minor spillage from haul trucks.

Mitigable-no significant adverse

LEVELOFANTICIPATED SIGNIFICANCE

AFTER MITIGATION

2. Mitigable-no significant adverse effect.

- 3. Mitigable-no significant adverse effect.
- 4. Mitigable-no adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

9.2 Highway 78 Realignment

- 9.2.1 Periodic congestion due to traffic turning onto project access road from Highway 78.
- 9.2.2 Interference with existing roadway system.
- 9.2.3 Additional travel distance and length of road to be maintained, due to about 1.2 additional miles of highway between Brawley and Blythe, California.

- 1. Highway would be designed with extra width and turning lanes at access road intersection.
- 2. Access to existing gravel withdrawn area and Vista Mine Road would be provided.
- 3a. The design speed for the new road would be higher than for the existing highway so that travel times would be about the same.
- 3b. The shoulders for the new alignment would be paved, improving overall safety in the event of emergencies or accidents.
- 3c. The pavement and subbase for the new alignment would be substantially better than the existing highway pavement. 'Therefore, maintenance requirements for the overall realigned roadway are not expected to change.

- 1. Mitigable-no significant adverse effect,
- 2. Mi tigable-no significant adverse effect.
- 3. Mitigable-no significant adverse effect.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTALEFFECTS

MITIGATION MEASURES

LEVEL OF ANTICIPATED SIGNIFICANCE AFTER MITIGATION

10.0 NOISE

10.1 General

- 10.1.1 Construction and operation of the mine pits and stockpiles would generate single event noise from blasting and there would be ongoing noise associated with vehicles and equipment operation.
- 1a. Blasting would be limited to daylight hours and occur for durations of no longer than one hour.
- 1b. Highway 78 has been identified as the only sensitive receptor location. The transitory nature of potential exposure and **onsite** mitigations would minimize **offsite** effects.
- Ic. The highway realignment for Alternative I may be considered a mitigation measure relative to potential project-related noise effects.

1. Mitigable-no significant adverse effect.

11.0 SOCIOECONOMICS

- 11.1 General
 - 11.1.1 Socioeconomic effects are expected to be beneficial.
- 1. None required.

1. No adverse effect.

1. No adverse effect.

12.0 SERVICES AND UTILITIES

- 12.1 General
 - 12.1.1 No significant effects are anticipated. 1. None required.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

MITIGATION MEASURES

LEVELOFANTICIPATED SIGNIFICANCE AFTER MITIGATION

- 13.0 PUBLIC AND EMPLOYEE HEALTH ANDSAFETY
- 13.1 VCR Mining Area
 - 13.1.1 Potential accidents associated with unauthorized entry to the mining area.
- 2-25
- 13.1.2 Potential accidents associated with entry onto the reclaimed mine site.
- 13.1.3 Employee safety concerns include industrial safety and industrial hygiene issues.
- 1. Perimeter of VCR mining area would be fenced and posted with warning signs to prevent unauthorized entry. Sixteen to 24-hour operations and 24-hour security would provide effective deterrents.
- 2. Reclamation Plan would minimize potential hazards.
- 3a. Medical, fire suppression, and communications equipment maintained at adjacent Mesquite property would be available as needed.
- 3b. VCR project would comply with applicable MSHA standards for achievement of a safe working environment.

1. Mitigable-no significant adverse effect.

- 2. Mitigable-no significant adverse effect.
- 3. Mitigable-no significant adverse effect.

SUMMARY OF **POTENTIAL ENVIRONMENTAL EFFECTS** AND MITIGATION MEASURES VCR MINING PROJECT (Continued)

POTENTIALLY SIGNIFICANT ENVIRONMENTAL EFFECTS

13.2 Highway 78 Realignment

- 13.2.1 Public safety concerns regarding roadway.
- 13.2.2 Interference with through traffic due to vehicles turning onto mine access road.
- 13.2.3 Employee safety-related concerns regarding turning from highway onto mine access road.

MITIGATION MEASURES

- 1. Highway realignment would be designed to Caltrans specifications, including paved shoulders which are not present on the existing highway.
- 2. Highway would be designed with extra width at turn location. Turn lanes, to Caltrans specifications, would also be provided.
- 3a. Highway would be designed with extra width at turn location.
- 3b. Turn lanes, to Caltrans specifications, would be provided.

LEVEL OF ANTICIPATED SIGNIFICANCE AFIER MITIGATION

- 1. Mitigable-no significant adverse effect.
- 2. Mitigable-no significant adverse effect.
- 3. Mitigable-no significant adverse effect.

3.0 DESCRIPTION OF THE PROPOSED ACTION AND ITS ALTERNATIVES

3.1 INTRODUCTION

1. Section 3.2 presents a description of the two alternatives⁽¹⁾ for the proposed project which are analyzed in this document. Other alternatives which were initially **evaluated**, but not adopted, are discussed in Section 3.3.

3.1.1 PROJECT LOCATION

- 1. The proposed project site consists of the VCR mining area and the **proposed** Highway 78 realignment corridor, as follows:
 - VCR Mining Area for both Alternatives I and II⁽¹⁾. Portions of Sections 3, 4, 9,10, 15, T13S, R19E, SBBM.
 - Highway 78 Realignment Corridor for Alternative I. Approximate 120-foot-wide corridor traversing portions of : Sections 23, 24, 25, 26, T13S, R18E, SBBM. Sections 2, 10, 11, 15, 19, 20, 21, 22, 29, 30, Tract 38, T13SR19E, SBBM.
- The VCR mining area is proposed to be located adjacent to the eastern boundary of the existing Mesquite gold mining and processing facilities. The existing facilities would be used to process ore mined from the proposed VCR project.

3.1.2 CONSISTENCY WITH COUNTY AND BLM LAND USE PLANS

 The proposed VCR project is consistent with County and BLM land use plans and policies. A Conditional Use Permit (CUP) is required to operate in the S-Open Space zone and the Recreation area designation of the County Ultimate Land Use Plan (see Section 4.8.1.1). The proposed project is generally consistent with the extractive lands designation identified for

⁽¹⁾**Two** alternative project configurations are analyzed in this document. The "preferred" alternative (Alternative I) would include the relocation of Highway 78 to the south of the mining area. A "backup" alternative (Alternative II) is also analyzed so that it would become the approved arrangement in the event relocation of the highway were determined to be infeasible. These designations are consistent throughout this document.

much of the area in the Open Space Element to the County General Plan. The Conservation Element of the County General Plan encourages development of economic mineral resources in the context of sound environmental management. The proposed project is designed to be consistent with the objectives of the Conservation Element.

2. The proposed project is consistent with the BLM Multiple Use, Class M (Moderate Use) classification of the site. The mine pits and overburden stockpiles will alter the visual character of the site to the extent that it could be inconsistent with BLM objectives for encouraging scenic-related recreational uses. However, a well-maintained mining operation and, in the future, reclaimed mine site, could become a point of interest in such an area which is designated Multiple Use and includes provisions for extractive uses.

3.2 DESCRIPTION OF THE PROPOSED ACTION

- 1. The components of the preferred Alternative I, with the highway realigned, are shown in Figure 3.1 and Plates I. 1 and 1.2. The components of the backup Alternative II, without the highway realignment, are shown in Figure 3.2 and Plates II. 1 and II.2. To minimize repetition in the project description, the facilities are described in the following sequence, which is similar as that presented in Table 2.1:
 - Mine Pits and Mining Operations
 - Overburden and Protore S tockpiles
 - Primary Crusher and Conveyor
 - Mobile Equipment Repair Shop
 - Highway 78 Modifications
 - Zappone Road and Vista Mine Road Modifications
 - Transmission Line Relocation
 - Project Access
 - Flood Diversion Facilities
 - Construction and Operations Personnel and Equipment
 - Water and Power Requirements
 - Waste Disposal
 - Reclamation Plan

Special notations are made in each section where substantial differences in the facilities or activities would occur as a result of implementing one or another of the two alternatives analyzed. Also, separate subsections are provided when special comments relating only to the highway are appropriate.





NOTES

1. PORTIONS OF OVERBURDEN DISPOSAL PILES MAY BE DESIGNATED FOR PROTORE STORAGE THOSE PORTIONS OF THE PILESCOULD BE RECLAIMED FOR GOLD RECOVERY IN THE FUTURE. EXIL BOU

and the second second

- 2. THE CONFIGURATIONS SHOWN FOR THE VISTA AND CHEROKEEPITS ARE ESTIMATED INITIAL PITS BASED ON DETAILED EXPLORATION AND METALLURGICAL TESTING. THE DOTTED LINES SHOWING "MAXIMUM PIT LIMITS" ARE BASED ON THE EVIDENCE OF MINERALIZATION FROM MORE WIDELY SPACED BORINGS. THE ACTUAL EXTENT OF EACH PIT WILL DEPEND ONDETAILED EXPLORATION, PROCESSING IMPROVEMENTS, AND MARKET CONDITIONS.
- 3. FINAL EXPLORATION AND DESIGN OF THE RAINBOW AND GOLD BUG PITS WILL OCCUR DURING THE FIRST SEVERAL YEARS OF VCR PROJECT OPERATIONS, THE INDICATED GEOMETRY IS BASED ON PRELIMINARY MINERALIZATION EVALUATIONS.
- 4. HAUL ROAD CONFIGURATIONS FOR THE VCR PROJECT WILL CHANGE FROM TIME TO TIME TO SUIT INTERMEDIATE PIT AND OVERBURDEN DISPOSAL PILE CONFIGURATIONS THE HAUL ROAD PATTERN SHOWN ILLUSTRATES THE ARRANGEMENT ANTICIPATED WHEN THE INDICATED PIT CONFIGURATIONS ARE REACHED.
- 5. THE NORTHWEST EXTENSION OF THEVISTAPIT MINERALIZATION AND THE WEST EXTENSION OF THE GOLD BUG MINERALIZATION MAY CONNECT INTO MINERALIZATION WHICH IS PLANNED FOR MINING AT A SEPARATE PIT AT THE EXISTING MESOUITE PROJECT.
- 6. THE EXISTING HIGHWAY 78 ALIGNMENT PROHIBITS MINING OF SUBSTANTIAL ORE RESERVES AT THE VISTA AND CHEROKEE PITS AND IS EXPECTED TO AFFECT SUBSTANTIAL RESERVES AT THE GOLD BUG AND RAINBOW PITS. ALSO, ME PRESENT ALIGNMENT AFFECTS RECOVERY AT THE EXISTING MESOUITE MINING OPERATION. THEREFORE, FOR ALTERNATIVE II, BETWEEN ONE AND TWO MILES OF THE ROAD MAY BE LOCALLY REALIGNED TO SUIT THE PIT CONFIGURATIONS AND THE FUTURE OVERPASS/UNDERPASS.
- 7. FOR ALTERNATIVE II. ZAPPONE ROAD WOULDBE RELOCATED AROUND THE EASTERN SIDE OF THE VCR PROJECT SO THAT IT RECONNECTS TO THE EXISTING VISTA MINE ROAD. IF THIS RELOCATION IS NOT RECURIED BY THE COUNTY OR BLM, GFOC WOULD RECUEST THAT ZAPPONE ROAD AND MCST OF VISTA MINE ROAD BE ABANDONED ENTIRELY.



REVISED 8/25/87

3.2.1 MINE PITS AND MINING OPERATIONS

- 1. The VCR project "mine" would consist of four pits, the Vista, Cherokee, Rainbow, and Gold Bug. The pit sizes shown in Figures 3.1 and 3.2, and Plates I.1, I.2, II.1, and II.2 are the best estimates, including the maximum potential size, based on present exploration and planning data. The ultimate configurations would be subject to final design decisions and ore and market conditions at the time of mining. The approximate dimensions and characteristics of the pits are summarized in Table 3.1, Approximate Mine Pit Dimensions.
- 2. Mining operations would consist primarily of:
 - Drilling and blasting of rock.
 - . Hauling overburden to a disposal area.
 - Hauling ore to a crushing facility or storage pile, or possibly, directly to a heap leach pad at the adjacent Mesquite facility.

The material would be hauled from the pits in large mining trucks (50- to 100-ton capacity) which would dump to the overburden stockpiles, ore stockpiles, into a crusher dump hopper, or directly onto a leach pad at the adjacent Mesquite processing facility.

- 3. Mining activities would utilize three general types of explosives: (1) Class A dynamite and boosters, (2) ANFO ammonium nitrate/fuel oil mixture, and (3) water-resistant slurries. High explosives and detonators will be stored in secured magazines located on the adjacent Mesquite property. Use of explosives will be limited to daylight hours. Blasting periods will last less than one hour and typically will last only several seconds. Explosives have been used at the Mesquite facility for several years with no observed or recorded problems (Eacret 1987).
- Initial ore production from the VCR pits is expected to be about 1.5 million tons per year (MTY). Later, the average production rate would be increased to an eventual average of 4.5 MTY, concurrent with depletion of reserves at the Big Chief pit (Mesquite project).
- 5. Initial mine activities are planned for a 20 hour per day, six day per week schedule. Depending upon production levels, however, activities could be ongoing, 24 hours per day, seven days per week.

TABLE 3.1

APPROXIMATE MINE PIT DIMENSIONS" VCR MINING PROJECT

***** (ALTER	NATIVE I		ALTERNATIVE II					
HEM	VISTA ⁽⁴⁾ CHEROKEE ⁽⁴⁾ RAINBOW ⁽³⁾ GOI PIT PIT PIT PIT			D BUG 🕅 PIT	VISTA ⁽⁴⁾ PIT	CHEROKEE ⁽⁴⁾ PIT	RAINBOW ⁽⁵⁾ PIT	GOLD BUG ^ල . PIT		
Area (Acres)	170-500	10-15	85-130	10-15	165-495	9-14	80-125	10-15		
Estimated Length (ft.)	5,000-8,000 1	,400-1,600 3,5	500-5,000 1,0	00-1,500	4,500-7,500	1.000-1.30	3,200-4,700	1,000-1,500		
Estimated Width (ft.)	2,000-3,000	600-900	1,000-1,20	0 8001,000	2,000-3,000	600-9,000 1,0	00-2,000	600-800		
Estimated Maximum Depth	450 feet	200 feet	300 feet	Undeveloped	450 feet	200 feet	300 feet	Undeveloped		
Overburden and Protore Volume ⁽⁶⁾	80-110	2-3	20-30	18-22	75-105	2-3	18-28	16-20		
Ore Volume ⁽⁶⁾	26-33	0.9-1.1	8.5-12.5	4.5-5.5	25-32	0.8-1.0	8-12	4-5		

(1) The individual dimensions are based on 1987 planning data. The actual pit dimensions will be determined from designs undertaken throughout the operating life of the facility, which will consider actual ore characteristics, operating costs, and market conditions.

A The Alternative I values do not include an estimated 1.0 million additional tons of ore which can be recovered from the existing Mesquite project if the highway is realigned. This data is provided for information purposes only. Potential effects at the Mesquite project are not discussed in detail or analyzed in this document.

- (3) Alternative II estimates do not incorporate relocation of short segments of the highway at individual pits. If local relocation occurs, more ore could be recovered The additional amount would depend upon highway & sign and final pit configurations.
- (4) The minimum values represent proven ore reserves **The** maximum values include estimates of ore based on evidence of mineralization.
- **D** The values for the Rainbow and Gold Bug pits are based on evidence of mineralization.
- ⁽⁶⁾ Million tons.

- 6. Dust control at the mine pits and on the haul roads will be accomplished by spraying with water. Non-toxic surfactants may be used at some locations to reduce the required frequency of water spraying.
- 7. A fence will be used to enclose the mining, haul road, and overburden disposal areas. The minimum fence will be barbed wire, although a seven-foot high cyclone fence would be used in some areas. The final fence design will be acceptable to the BLM. Also, berms would be constructed at existing roadways, if required to prevent unauthorized entry. BLM will, at GFOC expense, initiate a route of travel program and an area closure in order to minimize hazards to the public.

3.2.2 OVERBURDEN ANDPROTORE STOCKPILES

- 1. Most of the overburden will be placed in the nearest storage pile. During construction, however, some may be used as fill for the haul and service roads, storm drainage berms, or crusher/conveyor backfill. Protore, which has some gold mineralization, but which cannot be economically processed at this time, will be stockpiled separately when possible. It would be available for gold recovery at some later date should economic conditions or improvements in processing technology make recovery feasible.
- 2. The overburden and protore stockpiles would be of varying sizes, ranging individually up to about 200 acres and covering a combined area of about 650 acres. The stockpiles will have a total capacity from about 110 to 165 million tons of rock. They would be built to a maximum height of about 270 feet, and the tops sloped to control drainage. The final sizes and configurations of the overburden stockpiles would ultimately depend on the amount of material removed from each pit. These factors would be determined by final production and design decisions.

3.2.3 PRIMARY CRUSHER AND CONVEYOR

 Construction of a primary crusher to reduce the size of run-of-mine size ore to be suitable for conveyor transport is a key element in the plans for Alternative II. A new crusher is not initially required for Alternative I, which would use the existing Mesquite primary crusher, Alternative I does, however, incorporate the provision for future construction of a primary crusher and conveyor, possibly after the first 5 to 10 years of the VCR Mining Project. Also, a temporary portable crusher could be used for the initial period of Alternative I if mining of the Vista Pit were required prior to abandonment of the existing highway.

- 2. The new primary crusher (see Figure 3.3, Preliminary Arrangement for Crusher/Conveyor Facilities) would be located southwest of the Vista pit, as illustrated in Figures 3.1 and 3.2. It is anticipated that this would be a 48-inch x 60-inch jaw crusher with a design capability of about 1,000 tons per hour. The crusher would be housed in a partially buried concrete structure with a configuration similar to the crusher building at the existing Mesquite project.
- 3. Crushed ore from the crusher discharge conveyor would be transferred to an overland belt conveyor for delivery to either the coarse ore stockpile or secondary crusher at the existing Mesquite processing facilities. The conveyor would be about 2,500 feet long, and there would be provision for mine traffic to pass underneath a portion of the belt. Conveyor design capacity would be about 1,000 tons per hour.
- 4. The ore to be transported by the conveyor would be sprayed with an engineered dust-suppressant system at selected control points in the dumping, crushing, conveying, and stockpiling circuit. Surfactants, which would not create a hazardous or toxic condition, might be used to enhance dust control. Details of the dust control system would be approved by the Imperial County Air Pollution Control District (APCD).
- 5. After the ore is transferred to the Mesquite project, it would be processed at the existing facilities, Changes in permitted Mesquite facilities would not be required to accommodate the VCR ore.

3.2.4 MOBILE EQUIPMENT REPAIR SHOP

1. A mobile equipment repair shop would be built under Alternative II, or in the event a primary crusher were constructed under Alternative I. This would be an approximately 5,000 square foot, pre-engineered building, located south of the existing Highway 78 alignment, near the primary crusher, approximately as shown in Figure 3.3. The building would be used primarily for minor servicing of mobile mining equipment. It would have a truck repair bay, maintenance shop, tool room, lunch room, office, and restroom and change facilities. There also would be a



REVISED8/7/87

small concrete decant structure for removal of oil, grease, and solids from wash water. The clarified water would be evaporated in a retention pond, used for dust control, or disposed of in another acceptable manner.

2. As discussed in Section 3.2.11, water for non-potable uses would be provided by pipeline from the existing Mesquite project. Bottled water or water from the Mesquite project water treatment facility would be used for domestic purposes. Power would be provided by an overhead power line from the existing Imperial Irrigation District (IID) substation at the Mesquite project.

3.2.5 HIGHWAY 78 MODIFICATIONS

1. This project element represents the major difference between Alternatives I and II. The two alternatives are addressed in separate subsections.

3.2.5.1 Alternative I. with Highway 78 Realignment

- Under the preferred Alternative I, the project would involve the permanent realignment of an approximate 8.5mile segment of State Highway 78 between Glamis and Ogilby Road, a portion of which currently bisects the Mesquite and proposed VCR project areas. This would entail abandonment of this portion of right-of-way CA-17922 and issuance of a new right-of-way along the 8.5mile stretch. The purposes of the realignment would be to:
 - Route through traffic to the south of the existing and proposed mining areas.
 - Avoid interferences between the highway and mining operations.
- 2. About 8.5 miles of new, two-lane highway would be built as shown in Figure 3.1, according to plans approved by Caltrans. Upon acceptance of the road by Caltrans, the right-of-way would be transferred to Caltrans.
- 3. The new highway segment would be upgraded from the standards of the present alignment to current Caltrans specifications for projected traffic volumes. A comparison of existing conditions and design requirements for the realignment follows:
<u>CRITERIA</u>

Right-of-Way Width

Design Speed Traveled Pavement Width Paved Shoulder Width Roadway Structural Section 45 mph 24 feet None Field mix asphalt over compacted subgrade

REALIGNED ROADWAY

100-foot minimum. with wider sections at drainage facilities 60 mph 24 feet 6-8 feet Estimated to be: 0.35 feet asphalt over 0.45 feet gravel subbase

The realignment would add about 1.2 miles of highway to the total distance. of about 90 miles between Brawley and Blythe, California.

- An example plan and profile and typical cross-sections of the proposed realignment are shown 4. in Figure 3.4, Typical Plan and Profile and Figure 3.5, Typical Road Cross-Sections. The realigned highway profile would be designed to be as close to existing grade as possible, while satisfying drainage control and design speed requirements. In areas without an adjacent drainage channel, slopes from the road shoulders would form a small embankment which would be graded to "blend' with the natural topography. Based on the preliminary design for the road, the steepest outside slope at the few locations where the embankment height exceeds 5 feet would be at a relatively flat slope of 5: 1 (horizontal to vertical). The minimum distance to the toe of a slope is planned to be 15 feet.
- 5. Grading of the proposed highway road bed would require relatively minor "cuts," typically less than a few feet in depth. The maximum height of fill would not be expected to exceed about 10 feet. This would occur only for several short stretches, where the proposed corridor crosses existing washes. Usually, the road surface will be within 1 to 3 feet of the natural grade. The design of the combined drainage control and road are arranged to result in a balanced cut and fill condition.
- Where a drainage channel is excavated adjacent to the highway, the slope **would** typically be a 6. relatively flat 5: 1. Also, the ditches would be wider than required, to allow for some erosion and deposition to occur without the need for frequent maintenance.
- 7. Where the proposed realignment connects to the existing highway, the existing asphalt would be removed, and the existing road bed would be scarified to avoid the potential for drivers to

100 feet

EXISTING

ROADWAY

600 55 ELEVATION, FEET 4 ガニは á **出報**得 ØE 500 84.00 P 675 + 00 645 + 00 850 + 00 855 + 00 880 + OG 995 + 00 670 + 00 **880 + 00** T. ACCESS FICA 100 100 XR/W

PRELIMINARY DESIGN. ENVIRONMENTAL SOLUTIONS. INC. 1987







TYPICAL ROAD SECTION



SOURCE:

PRELIMINARY DESIGN, ENVIRONMENTAL SOLUTIONS, INC. 1987



NOTES:

1. SEE PLAN FOR LOCATION OF SIDE DITCHES. DITCH WIDTH AND TOTAL HEIGHT WILL BE DETERMINED TO SUIT RAINFALL RUNOFF VOLUMES AND BALANCED CUT AND FILL REQUIREMENTS.

2. PROVIDE 2' DEEP V-DITCH IN CUT SECTIONS.

FIGURE 3.5

HIGHWAY REALIGNMENT TYPICAL ROAD CROSS-SECTIONS

VCR MINING PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

mistakenly miss the new alignment. Also, berms with shallow slopes would be placed along the old route about 200 feet from the connecting point to reduce the visual impact from the abandoned alignment.

8. Concurrent with this option would be the abandonment of the existing Highway 78 alignment through the project area. This abandonment would include asphalt removal and scarification of the road bed in areas which will not be used as roadways, covered by overburden, or excavated as part of Mesquite and VCR operations. GFOC will provide a new project access, as discussed in Section 3.9 and a new route for access to the BLM's existing Gravel Withdrawn Area. These two roads are shown in Figure 3.1.

3.2.5.2 Alternative II, without Highway 78 Realignment

- For this backup alternative, the basic existing alignment of Highway 78 would not be modified. However, an overpass or underpass might be constructed to facilitate movement of ore trucks across the highway. Alternatives being considered for the overpass/underpass are shown in Figure 3.6, Conceptual Arrangement for Overpass/Underpass Structure. Coincident with construction of such a facility would be the temporary or permanent local realignment of portions of Highway 78 within the construction area. This would also entail a modification of portions of right-of-way CA-17922. The extent of realignment would depend on the final configuration of the structure, which would be approved by Caltrans.
- 2. If constructed, the overpass/underpass would be built entirely at the expense of GFOC, but to specifications approved by **Caltrans.**
- 3. Also, if feasible, portions of Highway 78 which pass through the project areas would be realigned to permit ore recovery adjacent to or beneath the existing highway. The total length of highway affected, including conflicts at the existing Mesquite project, would be about 2.5 miles. Figure 3.2 illustrates the area which may be affected.





3.2.6 ZAPPONE ROAD AND VISTA MINE ROAD MODIFICATIONS

- 1. The preferred Alternative I would require abandonment of the existing unpaved Zappone Road alignment, which is within the proposed VCR project mining area. In its existing configuration, Zappone Road provides access to fee land on Section 16 and access to the northern portion of Vista Mine Road. GFOC has either purchased or signed contracts of purchase to Section 16 and no longer requires access to that section. For the Alternative I configuration, a portion of the unpaved Vista Mine Road between the new Highway 78 alignment and Section 16 would also be abandoned to reduce the potential for unnecessary public traffic to enter Section 16 or the mining area. The portion of Vista Mine Road to the south of the new highway alignment would not be abandoned.
- 2. For the backup Alternative II, Zappone Road would be realigned around the east side of the proposed project and a new right-of-way issued, if realignment were required by the County or BLM.

3.2.7 TRANSMISSION LINE RELOCATION

- For both alternatives, about 7,000 feet of the existing Imperial Irrigation District (IID) 92 kV transmission line would require relocation (and amendment to right-of-way CA- 17 187) along the southern boundary of the VCR Mining Project, as illustrated in Figures 3.1 and 3.2, and Plates I. 1, I.2, II. 1, and II.2. This would minimize interferences between mining, overburden disposal, and power line operation,
- 2. The new alignment would consider results of the cultural resources inventories. Special consideration would assure that the alignment would not conflict with a geoglyph which was identified in this area during studies for the original Mesquite project. Approval of the realignment route would be obtained from the BLM and the IID, owner and operator of the line.
- 3. No surface disturbing modifications would be required at the western end of the 92 kV line which presently stops at the existing Mesquite substation. GFOC plans to cooperate with the IID and the BLM in establishing a power line access corridor, if the facilities are extended toward the west at some time in the future.

3.2.8 PROJECT ACCESS

- For Alternative I, a new access route to both the existing Mesquite and proposed VCR projects would be provided from the relocated highway, as illustrated in Figure 3.1 and Plates I. 1 and 1.2. Most of the southern portion of this access road would be on GFOC fee property. The portion immediately north of the new highway would extend west of GFOC fee land and onto BLM land, in order to avoid conflicts with a natural wash area which would cross the highway at this location.
- 2. The northern portion of the new access road would extend around a historic wagon trail which was fenced during development of the Mesquite project. It would then turn eastward, wrapping around the south flank of existing hills which are situated immediately west of the existing Mesquite project Administration Building and processing plant.
- 3. For Alternative II, the VCR project would use the existing Mesquite project intersection at Highway 78 for access. This arrangement would eliminate the need to construct a second intersection within the short distance of highway which traverses the two projects.

3.2.9 FLOOD DIVERSION FACILITIES

3.2.9.1 VCR Mining Area.

- Short sections of water diversion channels and berms would be constructed near the north and east sides of the proposed VCR mining area to carry flows from infrequent rainstorms away from the facilities. To the extent possible, discharges from these channels would be into natural washes which would return the water to approximately the same portion of the desert where it presently flows.
- 2. In the vicinity of the existing Mesquite processing facilities, diversion channel designs would comply with Regional Water Quality Control Board (RWQCB) requirements to convey flows from the 100-year recurrence storm.

3.2.9.2 Highway 78 Realignment

- 1. Drainage for the realigned highway also would be designed to convey the 1 **00-year** storm, in a manner approved by Caltrans. Preliminary design analysis for the road shows that drainage could be adequately controlled by providing four wash crossings along the new highway alignment. These would be located to minimize changes in natural conditions by returning the flow into the larger existing washes which naturally carry the most runoff.
- 2. Ditches constructed adjacent to portions of the highway would be made extra wide so that they could collect some siltation or some erosion could occur without the loss of capacity or the need for excessive maintenance by Caltrans. Also, where washes cross the highway, special erosion protection provisions would be provided to minimize the potential for damage to the pavement, even for very large storms.

3.2.10 CONSTRUCTION AND OPERATIONS PERSONNEL AND EQUIPMENT

- 1. About 50 to 75 workers would be involved during construction associated with either of the VCR project alternatives. This temporary force would build to the maximum level over a period of several months. The total construction period is anticipated to be about 8 to 16 months.
- 2. Pre-production stripping would be started concurrently with construction and would involve about 30 to 40 workers. These would be permanent employees who would remain for subsequent mining activities.
- It is expected that about 35 to 50 new employees would initially be hired as a result of the VCR Mining Project. Ultimately, the number of jobs resulting directly from the VCR project would be about 250 to 270, when ore production is shifted from the Mesquite project to the VCR project.
- 4. Table 3.2, Estimated Operations Personnel, summarizes: (1) the approximate number and types of employees expected to be hired initially as a result of the VCR project, and (2) the number of present GFOC employee positions which would be extended for at least several years as a result of the VCR project. Based on records maintained for the existing Mesquite project, it is estimated that about 70 to 80 percent of the employees would be from the local area.

TABLE 3.2

ESTIMATED OPERATIONS PERSONNEL ⁽¹⁾ VCR MINING PROJECT

TASK/POSITION	INITIAL HIRES AS A RESULT OF VCR <u>PROJECT</u>	GFOC MESQUITE STAFF WHOSE EMPLOYMENT PERIOD WILL BE EXTENDED DUE TO VCR PROJECT
Management, Administration and Engineering	5-9	55
Mine Operation	12-18	60
Mine Maintenance	6-7	40
Security Guards (Contract)	o-3	10
Plant Operations and Maintenance	12-13	50
TOTA	L 35-50	215 ⁽²⁾

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⁽¹⁾ Actual employment may vary according to hours of operation and tonnage being mined during a particular period.

⁽²⁾ This is an approximate number. The total is expected to vary between about 215 and 220.

5. Various equipment would be utilized, depending upon **final** design decisions. For the proposed project, there would be primarily mine and ore handling equipment, consisting of various types and sizes of trucks and loaders, plus bulldozers, graders, drills, water trucks, and blasting equipment (see Table 3.3, Estimated Equipment Requirements).

3.2.11 WATER AND POWER REQUIREMENTS

- 1. Water requirements specifically for the VCR project are small, primarily for dust control. Some additional water would be required at the existing Mesquite facility for processing the additional ore. The existing GFOC well field, and the BLM right-of-way CA-19129, would be used for these purposes. Due to operating efficiencies, the total volume to satisfy both the Mesquite and VCR project water requirements is not expected to exceed the originally estimated volume for the Mesquite project alone. The requirement for both projects is far below the capacity of the three existing wells. Water for the VCR project would be piped from the existing Mesquite storage tank and distribution system to the VCR facilities. No changes or modifications to GFOC estimates of maximum water requirements stated in the Mesquite Project EIR/EA are anticipated.
- Power requirements would be provided from an existing 92 kV IID power line, which passes through the proposed project, to an IID substation located near the Mesquite project entrance. That line and substation, designed and recently constructed at GFOC expense to serve the Mesquite project, have the capacity to also serve the VCR project with no impact to other IID customers.
- 3. Minor modifications may be required relative to the realignment of Highway 78 for Alternative I where:
 - The existing Mesquite water supply line would intersect the new alignment (e.g., placing the water pipeline in a containment pipe and amending right-of-way CA-19129).
 - A 13.2 kV overhead power line to the GFOC well field crosses the new alignment (e.g., raising the line at the road).

TABLE 3.3

ESTIMATED EQUIPMENT REQUIREMENTS VCR MINING PROJECT

EQUIPMENT	NUMBE	R FACILITY
Loader(s)	1-2	
Haul Trucks	3-7	
Grader	1	Mine
Rubber Tire Dozer	1	
Crawler Dozer	1	
Water Truck	1	
Drill	1	

Crusher Feeder	1	
Primary Jaw Crusher	1	Crusher
Water/Surfactant Spray System	1	
		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Belt Conveyor Systems	2	Conveyors
Conveyor Dust Suppression Spray System	1	Conveyors

• The existing 92 **kV** power line crosses the new alignment (e.g., **relocating** 1 or 2 poles). Such relocation would occur within the highway realignment study corridor and so would have been included in the cultural resources, wildlife, and vegetation inventories. Amendment to right-of-way CA- 17 187 may be required.

Arrangements for each of these activities would be approved by Caltrans and the BLM. Modification of the 92 kV line would be coordinated with the IID.

### 3.2.12 WASTE DISPOSAL

### 3.2.12.1 Sewage Disposal

- 1. A sewage collection and disposal system would be constructed under Alternative II or in the event that a primary crusher and/or mobile equipment repair shop were constructed under Alternative I. The facilities would be located near the crusher and repair shop south of the existing alignment of Highway 78, as shown in Figure 3.3.
- 2. The system would consist of sewer lines from the crusher and/or repair shop to a septic tank and leach field. The system would be adequately designed and constructed to accommodate the workers who would be assigned to the two facilities.

### 3.2.12.2 Solid Waste

- 1. Structures and materials used in project construction are designed to remain functional for the duration of facility operation. Upon completion of the project and reclamation of the VCR mining area, waste materials would be disposed of in an appropriate manner.
- 2. Daily domestic refuse would be collected **onsite** in suitable containers. Trash collection and disposal would be either on acceptable GFOC disposal site on fee land, or contracted with a local sanitation company, depending on material characteristics. The contractor would obtain a commercial hauling permit in order to dispose of the refuse at one of the County landfills. The amount of solid waste anticipated **from** the VCR project is not expected to be significant.

#### **3.2.13 RECLAMATION PLAN**

#### 3.2.13.1 Introduction

- The VCR Mining Project Reclamation Plan has been developed according to the requirements of the California Surface Mining and Reclamation Act of 1975 (SMARA) and the reclamation requirements of 43 CFR Part 3809. SMARA indicates that "reclamation of mined lands as provided in this chapter will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed land" (Section 27 11 [b]). BLM's regulations for the Surface Management of Public Lands under US. Mining Laws require operations under an approved Plan of Operations to be reclaimed according to the standards given in the regulations (43 CFR Part 3809.1-1). The regulations provide that reclamation includes reasonable measures to prevent unnecessary or undue: degradation of Federal lands, and that "Reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization" (43 CFR Part 3809.0-5[j]).
- 2. The reclamation program does not comprise just a procedure or set of procedures to be implemented at the end of the project. Instead, it commences early in the project with goals and objectives which would be refined and implemented throughout the operating period. The following factors have been considered in determining appropriate reclamation for the site-specific conditions of the VCR Mining Project:
  - The Reclamation Plan must be compatible with the existing climate and site resources. The critical feature of the VCR site is its arid nature, receiving approximately three inches of annual precipitation, with about 100 inches per year of evaporation. The second feature of importance is the nature of the site, with shallow, gravelly, and essentially barren surface soils.
  - The majority of the VCR site is situated on public domain lands administered by the BLM. These lands are presently zoned S-Open Space by the County of Imperial. Current land uses are primarily mining and recreation. Much of the area has previously been disturbed by mining activities conducted during the past 100 years.
  - Due to the lack of surface soils, limited rainfall, and general non-availability of an abundant and economic water supply, the area is not considered suitable for agricultural purposes. Further, its relatively remote location diminishes its suitability for other development uses.

- Information about reclamation, which is being developed for the adjacent Mesquite project, will be directly applicable to the VCR project. This includes the employee tortoise education program and the vegetation research program.
- 3. Based on the current mine plan concept, the Reclamation Plan would apply to activities occurring over a period of about 20 years. If substantial changes in operations were implemented, the Reclamation Plan would be reviewed to determine if modifications were appropriate. It would be amended as necessary to reflect changes in operations, including the operational period, prior to final reclamation of the site. The reclamation of certain disturbed areas, which will not be re-disturbed, will be ongoing from initial construction and extend through the life of the mining operation. Although in part overlapping, three phases of reclamation are considered for planning purposes and discussed in the following sections.

### 3.2.13.2 Phase I - Project Development Period

- In Phase I, access restriction measures in the form of berms at access roads, fences, and/or gates will be utilized to protect the public. At GFOC expense, the BLM will provide closure signs where appropriate at existing access trails. GFOC will place warning signs along the perimeter fence, as necessary to prevent accidental entry.
- 2. An employee tortoise education program and signs, as developed for the Mesquite project, will be utilized to instruct employees and construction workers at the VCR Mining Project on avoidance and notification procedures to protect tortoises in areas of activity,
- 3. During Phase I, GFOC will arrange with the BLM to allow members of the public, with a proper permit, to salvage plant material, specifically various cacti, within areas to be initially disturbed.
- 4. This phase will also mark the implementation of the required cultural resources mitigation measures. Where mining and processing operations may disturb cultural resources, qualified professionals will perform the required mitigation in accordance with approved plans. Land disturbances will begin after archaeological sites and similar sensitive areas have been located and marked for avoidance.

# 3.2.13.3 Phase II - Completed Operational Areas

- An experimental program for reestablishing natural vegetation is being developed at the adjacent Mesquite project. The results of this program will be utilized at the VCR site to implement Phase II. Efforts in Phase IX will include reclaiming surface areas which are disturbed during construction but are not required for project operation. Such areas will include road banks on access roads and the vacated portion of project utility corridors. Reclamation will begin after construction is completed. Reclamation procedures will generally consist of scarifying embankment and cut slopes and other disturbed areas to encourage the natural reestablishment of indigenous vegetation.
- 2. Overburden disposal areas generally will be constructed with slopes at the natural angle of repose. Because there is no available topsoil and little rainfall, these areas will depend on natural revegetation processes to assure compatibility with the desert environment. If the planned vegetation research program at the Mesquite project verifies a benefit from spraying of chemical binder-dust suppressant on completed overburden pile slopes, that procedure will also be used to encourage natural seed development at completed areas of the VCR Mining Project. GFOC will evaluate the use of color additives with a dust suppressant to lessen the visual effects (i.e., darken) the stockpiles.

## 3.2.13.4 Phase III - Final Reclamation

1. This phase will begin upon cessation of mining operations. Measures discussed below will be taken to protect the public health and safety by minimizing potentially hazardous conditions and to preserve the resources of the area.

## Mine Pits

1. Upon completion of mining operations, access to the mine pits will be restricted with fences, signs, and berms at access roads in a manner directed by the BLM. Unstable wall slopes will be treated by excavating or blasting the unstable material and depositing the debris on the pit floor or wide benches. Normally, pit faces will be left open for potential future mining uses unless safety conditions or mining sequences require them to be covered. Ramp access roads will be left in place.

2. Hydrologic investigations completed thus far indicate that significant amounts of water will not collect in the mine pits upon cessation of mining. Depending on the relationship of actual seepage rate to evaporation rate, the quality of the small amounts of water which may collect is expected to be representative of ground water in the area, although if accumulation occurs, salinity may increase due to evaporation. The pits are not expected to fill, and recreational use would not be appropriate. (See Section 5.2.2 for additional discussion.)

#### S tockpiles and Roadwavs

- The slopes of overburden stockpiles will remain at the material's angle of repose at abandonment. The top surfaces of the stockpiles will be graded as necessary for proper drainage, and to avoid erosion on the steeper slopes. Drainage ditches will be provided around the stockpile perimeters when required to control erosion.
- 2. Roads that may have long-term beneficial use to the public will be left in place. Selection of these roads will be made in cooperation with the County, BLM, and/or other appropriate regulatory agencies prior to completion of operations. Other roads will be graded to reflect natural contours and/or ditched to control erosion.

#### **Buildings and Structures**

 Buildings and structures will be dismantled and removed from the site. Concrete footings and slabs may remain for future use or will be covered with not less than 12 inches of soil, or as determined by the County and/or BLM. Aboveground utilities, with the exception of the main water supply line and water tanks or storage reservoirs, will be removed. Underground lines and sewer systems will be capped below grade and covered. Fencing will remain unless removal is approved by the County or BLM.

### 3.2.13.5 Bonding

1. A suitable financial guarantee (surety bond or other), acceptable in form and amount to the County of Imperial, will be provided by GFOC in an amount sufficient to cover the costs of the proposed reclamation program.

### 3.2.13.6 Restoration of Disturbed Surface Areas

1. Proposed restoration measures will be directed toward encouraging the natural reestablishment of indigenous vegetation, using procedures to be determined by the research program for the adjacent Mesquite project. More elaborate revegetation measures are not feasible or appropriate, due to the limited quantity and quality of available topsoil and the absence of sufficient water. Artificial irrigation of vegetation is not proposed.

# 3.3 <u>ALTERNATIVES CONSIDERED BUT NOT FURTHER ANALYZED</u>

# 3.3.1 INTRODUCTION

- 1. Several alternatives relative to various aspects of the proposed project were considered during the project development phase. Those which were adopted are included in both the preferred Alternative I and the backup Alternative II. The following were evaluated but not included in either of the proposed project alternatives:
  - Alternative Technologies, including mining techniques, overburden disposal, and ore conveyance.
  - Alternative Locations, or sites, for overburden and protore storage piles.
  - Postponement of the project.
  - No Action or No Project alternative, as required by State (CEQA) guidelines and Federal CEQ regulations.
- 2. In addition, several alternative routes were considered during the Highway 78 realignment evaluations. These are briefly summarized in Section 3.3.6.

### 3.3.2 ALTERNATIVE TECHNOLOGIES

### 3.3.2.1 Mining: Techniques

#### Proposed. Open Pit Procedure

- 1. Characteristics of the VCR orebody were evaluated by GFOC to determine the optimal mining technique for the proposed project. The metaliferous deposit occurs in consolidated rock material, disseminated at an ore grade of less than 0.05 ounces of gold per ton of rock. The orebodies underlie up to about 60 feet of overburden which must be excavated and disposed of at surface disposal piles before the tops of the ore deposits can be reached. Then the ore and non-mineralized interburden exists in layers and zones of variable size to the full depth of the pit, up to several hundred feet.
- 2. In response to the disseminated nature of the deposit, and the massive configuration of the orebody, the proposed open pit mining method is considered the only viable method.

### Strip Mining

1. Strip mining is typically applied to shallow deposits of minerals such as coal, potash, or uranium, which often occur in seams and advance horizontally. Such deposits are sedimentary in nature and usually flat-lying, "tabular" deposits that extend over a substantial area. Strip mining is practical for such deposits because their recovery generally requires shallow excavation over a relatively large and contiguous area. In strip mining only a portion of the overburden and ore are initially mined. Then, an adjacent portion of the ore and overburden is mined and the overburden excavated in this latter stage is used to fill the hole from the prior, relatively shallow excavation. This method is not practical for deposits, such as those at VCR which are relatively deep with respect to their **areal** extent. Because of the configuration of the VCR orebodies, strip mining is not feasible.

### Underground Mining

1. Underground mining is typically suited to deep mineral deposits of high grade concentration that can be mined from consolidated "veins" or "seams." Such deposits generally require

removal of a relatively small volume of the host material in order to recover the mineral values, In the case of high grade "veins," values are typically confined to one or many discrete structural discontinuities such as joints or fractures in a competent host rock. Underground tunnels can be excavated along these deposits leaving most of the host rock in place to support the overburden. This method of mining is not applicable to disseminated orebodies such as those at the proposed VCR mining project.

- 2. In the case of a deep "seam" such as a high grade coal deposit, underground mining is possible if the coal "seam" is structurally competent, so pillars of the coal left in place are adequate to support the overburden. The ratio of commodity which can be mined to commodity which must be left in place to support the overburden is proportional to the structural adequacy of the material and the amount and type of overburden. Because of the fractured and friable nature of the VCR orebodies, substantial amounts of material would need to be left in place to support the overburden. The structural needs of this type of underground mining would significantly decrease the mineral recovery from the low grade disseminated ore deposit at the VCR site. Because of the mobility of the rock, safety and cost considerations would make underground mining of this formation infeasible.
- 3. Underground mining is not feasible for the VCR orebodies because: (1) there are no zones of high grade ore, (2) the majority of the disseminated ore would have to be left in place to provide support, and (3) the friable nature of the rock would require excessive support costs to provide adequate worker safety.

### 3.3.2.2 Qverburden Disposal

### Proposed Procedures

1. Overburden may be disposed of on the ground surface or as backfill in the open pits. Environmental concerns associated with the proposed surface disposal of overburden are land use, visual impacts, habitat loss, and public safety. The only potential alternative to the proposed permanent surface placement of overburden is backfilling of the mine pit(s).

#### **Backfilling**

- Backfilling a mine pit is primarily used to reclaim strip mines where the mineral exists in one or several relatively well defined layers so that the overburden can be simultaneously removed from one area and replaced in an adjacent previously mined area, thereby minimizing costly double handling (see Section 3.15.2.1). It is normal and generally most practical to replace overburden material back into the shallow cuts of such mines,
- 2. Open pit mines, such as those proposed for the VCR orebodies, generally are not suitable for backfilling from both operational and economic standpoints. Extensive backfilling would first require surface storage of the overburden, then replacement of material in the pit after mining is completed. In the opinion of most mining experts, the cost of backfilling with all of the overburden would render a large open pit mining operation economically infeasible. More specifically, Imperial County's technical consultant (CH2M Hill) for review of the Mesquite project estimated the cost of backfilling pits at that existing project to be over 300 million dollars. Similar costs would occur for the VCR project.
- 3. As an alternative to surface overburden stockpiles, backfilling reduces the visual and land use effects. However, during project operations, the stockpiles must be constructed as with surface disposal. Therefore, they still would be present for the duration of the project, with corresponding visual, land use, and habitat impacts. Potential public safety aspects of the overburden at the completion of project operations are addressed in Section 13.14, Reclamation Plan.
- 4. An additional significant consideration in evaluating the relative merits of backfilling relates to the conservation of mineral resources and energy conservation. The backfilling alternative would be in conflict with one of the primary purposes of Federal and State mining-related statutes, which is to insure that the maximum use is made of material prior to its disposal as a waste. The 1975 California Surface Mining and Reclamation Act (SMARA) - Public Resources Code 27 11 states:

"The extraction of minerals is essential to the combined well-being of the State and to the needs of the society ... It is the intent of the Legislature to create and maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that the production of minerals are encouraged, while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment."

### SMARA also states the following:

"... reclamation of mined lands as provided in this chapter will permit the continued mining of minerals and will provide for the protection and subsequent beneficial use of the mined and reclaimed land (Section 2711[b]).

- 5. The protection of remaining mineralization at a reclaimed mine site is further emphasized by Federal regulations, such that "Reclamation may not be required where the retention of a stable highwall or other mine workings is needed to preserve evidence of mineralization" (43 CFR Part 3809.05[j]). The Federal regulations for Surface Management of Public Lands under U.S. Mining Laws focus on an approved Plan of Operations and reclamation as a means to prevent "unnecessary or undue degradation" (43 CFR Part 3809.0-5[k]).
- 6. The quantity of gold mineralization remaining outside but close to the final wall of the VCR pits is estimated at over a quarter million ounces although the protore is extremely low grade (GFOC estimate 1987). In addition to the pit wall, stockpiles of protore would also remain. Should the economic climate improve and/or process technology advance, these gold resources would become a viable reserve that could be extracted. Backfilling the pit could preclude the opportunity for future recovery of the "leaner" mineralized reserves in the pit walls and floor, thereby resulting in the loss of major amounts of mineral resources at a location where the necessary processing and transportation infrastructure would be in place.

- 7. Backfilling would also entail inefficient use of energy in the mining process. Consumption of energy in the backfilling of the pits would consume over 15 million gallons of diesel fuel, assuming the same fuel economics as utilized by GFOC in their current mine planning. The significant energy and cost savings available for recovery of mineralization in the overburden dumps/stockpiles would be lost, in addition to the mineral resources, when energy is expended to backfill the pits with the overburden dumps. Additionally, it should be noted that backfilling may not totally remove the overburden piles. Material "swells" in its unconsolidated form, after blasting, and hence, several million tons would still be remnant on the surface in overburden piles after the pits were entirely backfilled.
- 8. The preceding evaluation indicates that the potential loss of natural resources and economic disadvantages of backfilling are greater than potential environmental advantages. Backfilling is not considered a feasible alternative to the proposed project. Due to the economics, backfilling the pits is essentially a No Action alternative for GFOC.

### 3.3.2.3 Ore Convevance

- 1. The proposed project involves truck transport of the ore from the mine pits to a primary crusher, and conveyor transport from the crusher to the crushed ore stockpile. There is not a feasible alternative for truck transport of the ore from the mine to the crusher.
- 2. Truck transport and slurry pipeline alternatives were considered for the proposed conveyor system from the new crusher to the process area under Alternative II. However, neither of these options would provide a feasible means of raising the crushed ore to the top of the stockpile. Therefore, a conveyor is considered to be the only feasible option for crushed ore transport.

### 3.3.3 ALTERNATIVE SITES

### 3.3.3.1 Mine Pits

1. Because the **orebody** location is fixed, there is no geographical location option for the mine pits. However, depending upon whether Alternative I or **II** is adopted, the pit configurations

may vary. Under Alternative I, the Cherokee and Rainbow pits would extend further to the south and northwest, respectively. In the event Alternative II is adopted, the pit locations may be limited, due to constraints associated with local realignments of short sections of the existing highway at each pit.

## 3.3.3.2 Overburden Stockpiles

- 1. The major considerations in selecting locations for the overburden stockpiles are: (1) minimum truck haul distance from the mine, (2) adequate storage capacity, (3) requirements to control upstream and downstream drainage areas, (4) avoidance of sensitive environmental resources, as feasible, and (5) the absence of potential economic mineral reserves in the storage area.
- 2. Overburden storage sites north of Highway 78 are limited to the area between the Cherokee and Gold Bug pits and the project boundary. The proposed locations of the overburden stockpiles south of Highway 78 are configured to accommodate potential maximum pit limits while staying within the project boundaries. The proposed facilities have been designed to satisfy these various constraints as well as to minimize the total land area used and maximize operational efficiency.
- 3. Despite the site planning efforts associated with locating the overburden stockpiles, the visual impact of their location adjacent to both the existing highway and the proposed realignment, plus the land area involved, warrant examination of alternative sites. Possible locations are: (1) offsite, (2) in the open pits by backfilling, and (3) elsewhere onsite. Offsite disposal of rock and overburden is unacceptable because of the potential significant increase in truck transport costs, corresponding increases in fuel consumption and vehicle emissions, and the fact that comparable land area would still be covered. Backfilling the mine pits has been evaluated and is not considered a viable alternative for the entire project. The alternative to use other onsite areas is not viable because of the constraints discussed above and limitations in the project size.

### 3.3.4 POSTPONEMENT OF PROPOSED ACTION

- 1. Another alternative to the project as proposed is to postpone it for one or more years. The most likely effect of delay would be postponement of the impacts discussed in Chapter 5.0. It is unlikely, however, that either the type or extent of the impacts would change as a result of postponement.
- 2. A delay in development of the VCR resource could extend mining-related employment in the area. However, fewer employees would be involved, resulting in fewer persons being employed. More likely, however, the postponement would reduce GFOC's ability to optimize production from the combined Mesquite and VCR projects, so that the proposed project would be smaller, with reduction in potential socioeconomic benefits. The ability to mine lower grade material (VCR) with higher grade material (Mesquite) maximizes the conservation of natural resources, because the lower grade material might otherwise not be economic.
- 3. A further result of project postponement could be a future decision not to develop the VCR resource, i.e. the No Action alternative. Such decision could result from substantive changes in the world gold market, in the GFOC corporate position, or in resource development constraints. Such decision would eliminate the anticipated adverse impacts and maintain the existing surface configuration at the site. However, such action would also eliminate the project's beneficial economic effects. These include County taxes, project-related purchases of goods and services, and additional employment, with its attendant primary and secondary economic and growth effects.
- 4. For the above reasons, project postponement is not considered a feasible alternative to the proposed action.

### 3.3.5 NO ACTION ALTERNATIVE

1. Implementation of the No Action or No Project alternative would mean that the VCR resource would not be developed and is inconsistent with the 43 CFR Part 3809 regulations.

- 2. Under this alternative, the site would remain in its present state. However, since the area is presently zoned S-Open Space by the County and is a Class M (Moderate) BLM area, it would continue to be subject to increasing mineral development pressure. Surface disturbances which have been created by mineral exploration and historic mining events would remain. The site would be available for future mine development attempts or for other uses within the limits of its land use designation.
- 3. With continued pressure for mineral development in the eastern Imperial County area, the development of smaller, uncoordinated mining operations could occur. Such development would likely result in a less efficient use of land and mineral resources than is possible with a large operation such as the proposed VCR project, as well as less opportunity for coordinated environmental mitigation and reclamation. For example, independent development of the VCR reserves could result in the need for one or more additional processing facilities, separate from the existing Mesquite facilities.
- 4. Should the No Action alternative be selected and the VCR resource not be developed, certain employment and economic benefits would not accrue to the local/regional community. The No Action alternative would also be inconsistent with adopted County and Federal policies regarding recovery of economic mineral resources.

# 3.3.6 HIGHWAY 78 REALIGNMENT ALTERNATIVES

- 1. The Highway 78 realignment proposed under Alternative I was selected from several options which were considered. The selected route is the most southerly of the alignments considered because it lies entirely outside of the area which has been permitted for heap leach processing at the Mesquite project.
- 2. The alternative alignments considered were:
  - A shorter southern route which would start at the same eastern point as the selected route, but with the western portion about one mile north of the selected route.

- A southern route which would connect to Ogilby Road to the east instead of turning north and connecting to Highway 78.
- A northern route along the north boundary of the VCR and Mesquite projects.

The following paragraphs discuss the reasons these alternatives were not chosen.

- 3. The shorter southern route could cut through an area planned for future Mesquite project heap leach pads. That arrangement would have required that the Mesquite project be expanded onto additional land to replace the lost processing area, or possibly that the amount of ore to be processed would ultimately have been reduced. These conditions were both determined to be unacceptable and, therefore, the shorter route was determined to be infeasible.
- 4. The route connecting to Ogilby Road was determined to be infeasible. Ogilby Road is a County highway. This realignment would require that a portion of Ogilby Road be converted to State highway. The procedures associated with such a change could involve such additional time and costs that it would be infeasible relative to the proposed project. Also, this alignment would have caused the new road construction to cross several very large washes which convey large flows from the Chocolate Mountains.
- 5. The northern route is infeasible because it would be located on the Chocolate Mountains Aerial Gunnery Range. Also, the topography to the north of the mining projects would require extensive grading, including blasting of rock, in order to provide an alignment which would satisfy Caltrans standards.

### 4.0 DESCRIPTION OF THE EXISTING ENVIRONMENT

### 4.1 GEOLOGY AND SOILS

- 1. Within this section, information which is not specifically cited is based on data from the following, as referenced in Chapter 10.0.
  - Mesquite Project EIR/EA 1984.
  - Sergent, Hauskins & Beckwith 1984.
  - Gold Fields Mining Corporation (GFMC) 1987.
  - Environmental Solutions, Inc. 1987.

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

#### 4.1.1 GEOLOGIC SETTING

- The proposed VCR project lies near the boundary of two geomorphic provinces, the Colorado Desert to the west and the Mojave Desert to the east. The VCR site shares the characteristics of both provinces. The region is characterized by structural trends expressed as northwest trending mountain ranges separated by valleys. The dominant feature in the area is the Salton Trough, a large northwest/southeast trending structural depression that extends from near Palm Springs to the head of the Gulf of California.
- 2. The floor of the **Salton** Trough and the gently sloping bajadas at the trough margins are part of the Colorado Desert Province (California Division of Mines and Geology 1952). The mountains east of the **Salton** Trough, including the Chocolate, Cargo Muchacho, Picacho, and Palo Verde Mountains, are part of the Mojave Desert Province (California Division of Mines and Geology 1952). The VCR site is located at the upper margin of the bajada where the transition to the rugged topography of the Chocolate Mountains begins. The site is therefore characterized by a gently sloping (about 60 to 100 feet per mile) alluvial surface, occasionally interrupted by isolated outcrops of basement rock or bedrock.

- 3. The Chocolate Mountains reach a maximum elevation of about 2,500 feet at Mount Barrow, about six miles north of the project area. The mountains are composed of Precambrian to Mesozoic age basement rocks. These are overlain by Tertiary and Quarternary Age non-marine sediments and volcanic units which are exposed in the foothills. The materials comprising the outcrops in the project area are essentially the same as the units exposed in the mountains and foothills to the north.
- 4. The bajada southwest of the site is a gently sloping surface of coalesced alluvial fans. Alluvial units of three different ages are exposed, differentiated according to the degree of dissection and the development of desert pavement and varnish (Dillon 1975). The topography slopes toward the southwest and, other than the presence of an intricate braided network of shallow, incised channels, is relatively featureless. The bajada terminates at the Algodones Dunes, about seven miles southwest of the project site.

# 4.1.2 STRATIGRAPHY

- The information in this section is based largely on unpublished data compiled by GFMC (1987) and Environmental Solutions, Inc. (1987), including an abundance of site-specific subsurface data compiled since publication of the Mesquite Project EIR/EA (1984). The most noticeable revision to the stratigraphy information contained in the Mesquite Project EIR/EA is the presence of Bear Canyon Conglomerate, which is found at a relatively shallow depth in the project area. The existence of the Bear Canyon Conglomerate is documented by:
  - Exposures at the existing Mesquite project mine pit, construction related excavations, and several naturally occurring outcrops (see Figure 4.1, Geologic Map, for outcrop locations).
  - "Down hole" data recorded by Environmental Solutions, Inc. (1987) during drilling of ground water and vadose zone monitoring wells at the existing Mesquite facility.
  - A geotechnical core drilled and logged by Environmental Solutions, Inc. (1987).
  - Dillon (1975) and Morton (1977) (see Section 10.0, References).





The Bear Canyon Conglomerate was not detected during the original geotechnical investigation for the Mesquite Project EIR/EA, and instead was interpreted to be variably cemented alluvium or gravel, apparently because of the disturbed nature of the samples which were taken from boreholes drilled with air rotary techniques. The importance of the Bear Canyon Conglomerate is discussed in Section 4.2.3, Ground Water Hydrology.

- 2. A total of four lithologic units, plus very recent alluvium, have been defined near the proposed project. From youngest to oldest, these units include intermediate and older alluvium, a conglomerate bedrock unit (the Bear Canyon Conglomerate), and undifferentiated igneous and metamorphic basement rocks. As indicated on Figure 4.1, each of these are exposed within the proposed mining area.
- 3. The Intermediate Alluvium unit (possible Early to Mid-Holocene [Dillon 1975]) is represented by the low surfaces of dissected fans, low terraces, and abandoned channels, with moderately well developed desert pavement and varnish. It consists of poorly consolidated, interbedded sand, gravel, and silt. The gravel clasts are angular to subangular, ranging up to cobble size. Bedding is poor to well developed, porosity is high, and permeability is considered moderate. The estimated thickness ranges from 10 to 20 feet.
- 4. The Older Alluvium (Pliocene and Pleistocene Age [Dillon 1975]) is represented by the higher standing terraces and dissected fan aprons, with well developed desert pavement and varnish. Texturally, the older alluvium is similar to the intermediate age alluvium except for a higher degree of cementation and induration. The older alluvium is poorly to moderately consolidated by clay induration and high caliche impregnation. Porosity is moderate, and permeability is moderate to low. Based on the geotechnical borings (Sergent, Hauskins & Beckwith1984), these materials are considered very dense (probably due to cobbles and gravels). The thickness of the older alluvium varies from zero at its northern extreme at the flank of the Chocolate Mountains to thousands of feet deep toward the center of the Imperial Valley. The increase in thickness is accompanied by occasional lateral facies changes to lacustrine (lake) deposits,
- Intermediate and older alluvium cover the majority of the site. However, only a thin veneer is present. The combined thickness of the alluvium in the project area is not expected to exceed 30 feet. Below this depth, conglomerate bedrock or basement rock is encountered. Several

miles south of the project area, near the existing Mesquite production well field, an east-west trending basement high separates this zone of shallow bedrock and basement rock from the thick alluvial deposits of the Imperial Valley (Environmental Solutions, Inc. 1987). At the production well field location, thickness of the alluvium is at least 940 feet.

- 6. The bedrock unit underlying the older alluvium is the Bear Canyon Conglomerate. It is Upper Miocene (Dillon 1975) or possibly Lower Pliocene (Morton 1977) in age and consists of non-marine sedimentary rocks with interbedded basalt flows. The sedimentary units consist of highly stratified and variably indurated sandstone, conglomerate, and breccia. Cementation varies from good to poor and is provided by calcium carbonate and/or a clayey matrix. A considerable amount of fibrous gypsum exists within the shallower gravelly beds. The conglomerate unit characteristically daylights as low-lying rounded hills beyond the high mountainous relief of the Chocolate Mountains. In the area of the proposed project, the thickness of the conglomerate unit is dependent upon the configuration of the buried basement rock which the conglomerate unconformably overlies. Within the proposed VCR mining area, the thickness varies from zero at basement rock outcrops to an estimated 800 feet.
- 7. The basement consists of Oligocene to Precambrian age igneous and metamorphic rocks. Foliation in the metamorphic members is well developed, and in outcrop this unit is fresh to moderately weathered. At the surface, the rock can appear to be highly fractured and jointed. At depth, however, these discontinuities can be expected to be fewer in number and tight, due to confinement by the overlying units. Within the proposed VCR mining area, depth to basement rock varies from zero at outcrops (Figure 4.1) to an estimated 800 feet.
- The gold which is to be mined occurs in the metamorphic members of the basement in essentially free or native form. It is concentrated in microfractures in minute sizes and amounts.

#### 4.1.3 REGIONAL SEISMICITY

 The Imperial Valley is at the southern end of the San Andreas Fault system, probably the most studied and best known fault system in the United States (see Figure 4.2, Seismicity and Faulting). As shown in the figure, the major faults that potentially could affect facilities at the


project site include the southern section of the San Andreas Fault, the Sand Hills Fault (which may be an extension of the San Andreas), the Imperial Fault (and the associated Brawley Fault zone), the Superstition Hills Fault, the San Jacinto Fault, and the Elsinore Fault (Mesquite Project EIR/EA 1984). Estimated maximum credible earthquake (MCE) magnitudes and a fault activity rating for each fault are presented in Table 4.1, Active and Potentially Active Faults. An MCE magnitude is a compilation of several seismic ratings which enumerate the strength of a maximum potential seismic event on a fault.

- 2. Also shown in Figure 4.2 are epicenters of historically recorded earthquakes within the study area, generated by a National Oceanic and Atmospheric Administration (NOAA) computer search of its record base (Sergent, Hauskins & Beckwith 1984). The maximum recorded events are associated with the Imperial Fault, including a moment-magnitude (M) 6.5 event on October 15, 1979, and a Richter magnitude 7.1 event in 1940. Most historic activity of magnitude 4.5 or larger is apparently associated with the Imperial Fault.
- 3. Effective peak horizontal ground accelerations (EPA) generated by a Maximum Credible Earthquake (MCE) along each of the potentially active fault zones were estimated in order to evaluate the potential impact of such an event at the project site. These acceleration values incorporate sustained long-term acceleration, velocity of a specific point in time, and displacement. EPA values are in "g" (gravity) units, which are referenced to a normal gravity value of 1.0 g. Excluding the unlikely occurrence of a major event along the Sand Hills Fault (considered inactive in the engineering sense without recognized Quatemary movement) the onsite acceleration is estimated to be 0.12 g or less (Sergent, Hauskins & Beckwith 1984). If the Sand Hills Fault is considered active, the onsite acceleration for the MCE is estimated to be 0.35 g (Sergent, Hauskins & Beckwith 1984). Seismic zoning studies indicate that these values represent EPA's having a 90% probability of not being exceeded in 20 and 170 years, respectively (Mesquite Project EIR/EA 1984).

#### 4.1.4 PROJECT AREA SEISMICITY

 No known active faults traverse the project area. However, an inactive fault zone traversing the proposed mining area was cited by Sergent, Hauskins & Beckwith (1984 [from Crowell 19751). This fault zone is not active in the engineering sense, because it is a pre-Quatemary

## TABLE 4.1

## **ACTIVE AND POTENTIALLY ACTIVE FAULTS(1)** VCR PROJECT AREA

<u>FAULT</u>	<u>MCE⁽²⁾</u>	FAULT ⁽³⁾ ACTIVITY <u>RATING</u>	<u>REFERENCE</u>
San Andreas (Southern Section)	7.5	1	Hileman and others 1971
Sand Hills	7.5	6	Jennings 1974 ⁽⁴⁾
Imperial-Brawley	7.0	1, 2, 3	Hileman and others 197 1
Superstition Hills	7.0	1, 2	Hileman and others 1971
San Jacinto	7.5	1, 2, 3	Hileman and others 1971
Elsinore	7.5	4	Lamar and others 1973; Mann 1955

#### NOTES:

- ⁽¹⁾ After Greensfelder 1972.
- ⁽²⁾ Maximum Credible Earthquake.
- ⁽³⁾ Fault Activity Ratings:
  - 1 = Surface rupture during a historic earthquake.2 = Presently occurring creep.

  - 3 = Alignment of earthquake epicenters.
  - 4 = Late Quatemary or Holocene displacement.
  - 5 =Quaternary displacement.
  - 6 =Representative fault in a seismically active tectonic province.
  - 7 = Possible source of a major historic earthquake.
- ⁽⁴⁾ Jennings, C.W., Preliminary Fault and Geologic Map of California. California Division of Mines and Geology, Preliminary Report 13, 1974. (Imperial County 1984, Table 4-1)

SOURCE: Sergent, Hauskins & Beckwith 1984.

fault without recognized Quatemary movement (Sergent, Hauskins & Beckwith 1984). No evidence of surface rupture was observed along this fault during the geologic reconnaissance performed by Sergent, Hauskins & Beckwith for the existing Mesquite facility.

2. Significant ground movement resulting from seismic activity has not occurred at the project site since the Mesquite project has been in operation.

## 4.1.5 SOILS

- The soil survey by Borst (1983), conducted for the adjacent Mesquite facility, covered the 1. south 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 and the adjacent VCR project area, and on analysis of aerial photographs, soils in the VCR 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 report by Borst (1983).
- 2. Four major types of soil are present in the project area (Table 4.2, Soil Characteristics). In the order of most to least prevalent, they are:
  - Chuckwalla gravelly loam.
  - Carrizo variant very gravelly loamy sand. Carrizo very gravelly coarse sand.

  - Unidentified sandy loam.

All four are low in nutrients. Further, as indicated in Table 4.2, the most common type, Chuckwalla gravelly loam, contains toxic concentrations of major salts.

- Topsoil in the vicinity of the VCR project is limited to non-existent. Soils present are either 3. barren or support sparse amounts of vegetation. They tend to be in thin layers.
- 4. Soils associated with ephemeral drainages are relatively loose and, therefore, retain the greatest amount of moisture from 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" which reduces the precipitation absorption and percolation to underlying soils.

#### TABLE 4.2

# SOIL CHARACTERISTICS VCR PROJECT AREA⁽¹⁾

	G	ROUND COVER	AGE			
SOIL TYPE	A	cres ⁽²⁾		NH 1000 TEN 1000 (4)		
	VCR Mining Area	Highway 78 Realignment	Relative Percentage ⁽³⁾	NUTRIENTS	SAL15"	GENERAL
Unidentified Sandy Loam	105	9	7	Low	Non-Toxic	Thin, barren, little erosion protection
Chuckwalla Gravelly Loam	630	52	42	Low	Toxic	<b>Desert</b> pavement, barren, low infil- tration capability
Carrizo Very Gravelly Coarse Sand	225	19	15	Low	Non-Toxic	Ephemeral stream channels, high infiltration, sparse shrub and tree vegetation
<b>Carrizo</b> Variant Very Gravelly Loamy Sand	540	45	36	Low	Non-Toxic	As above, with incipient desert pavement
Total Area	1,500	125	100	N/A	N/A	N/A

Notes:

4-10

(1) Soil characteristics from Borst 1984.
(2) Acres of soil types in areas to be disturbed.
(3) Ground coverage percentages are estimates based on Borst 1984.
(4) Surface horizon concentrations of major plant nutrients: Nitrogen, phosphorous and organic matter,
(5) Concentrations of major salts in soil, not necessarily confined to the surface horizon.

#### 4.1.6 MINERAL RESOURCES

- Gold is the primary mineral commodity in the project area. Minor amounts of silver are also present. The orebodies are of a disseminated nature, with the gold and silver concentrated in minute sizes and amounts in microfractures of the basement rocks. The ore is low grade, averaging less than 0.05 ounces of gold per ton of rock. Testing by GFMC of the alluvium and the conglomerate bedrock in the VCR mining area indicates no placer potential. Additional testing will be performed along the proposed highway realignment.
- 2. The only other known mineral commodities in the project area are sand and gravel. As shown in Figure 4.3, the southern boundary of a BLM gravel withdrawn area is traversed by the western portion of the proposed highway realignment.

#### 4.2 WATER RESOURCES

#### 4.2.1 SURFACE WATER HYDROLOGY

- 1. The 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 largely imported irrigation water from the Colorado River, which enters the basin via the All-American Canal. The Coachella Canal, west of the Algodones Dunes, is the closest perennial surface water feature to the project site (i.e., approximately 15 miles southwest).
- 2. The project site is traversed by several small drainage channels or arroyos. These ephemeral drainages originate in the Chocolate Mountains immediately north of the site and drain to the southwest, generally terminating at or near the Algodones Dunes. These channels are normally dry, with surface water flows occurring only during the infrequent thunderstorms that bring precipitation to the area.



#### 4.2.2 SURFACE WATER QUALITY

- The quality of the limited surface waters in the Imperial Valley is below standard. Total dissolved solids (TDS) concentrations average around 1,000 mg/L, approximately twice the recommended TDS drinking water standard (Mesquite Project EIR/EA 1984). The TDS concentration in the Salton Sea is over 38,000 mg/L, more than that of ordinary sea water. The high TDS content is attributable to the practice of "flushing" agricultural fields to remove salts and other minerals that accumulate in the agricultural topsoil (Mesquite Project EIR/EA 1984).
- 2. As noted, there is no surface water in the project area other than ephemeral drainages which carry flow only during infrequent precipitation events. Such flow generally evaporates rapidly or percolates into the shallow soils, where it is transpired by vegetation.

## 4.2.3 GROUND WATER HYDROLOGY

## 4.2.3.1 Hvdrologic Setting

- Hydrologically, the project area was originally included in the Amos Basin (California Department of Public Works, Division of Water Resources 1952), a 300 square-mile area extending south from the Chocolate Mountains (see Figure 4.4, Amos-Ogilby Hydrologic Unit). However, the Amos Basin is poorly defined, and its separation from the adjacent Ogilby Basin to the south was based on ground water usage rather than on geologic or hydrologic factors (Mesquite Project EIR/EA 1984). A more recent designation (California Department of Water Resources 1964) incorporates both the Amos and Ogilby Basins into one combined, 600 square-mile Amos-Ogilby Hydrologic Unit.
- Since publication of the Mesquite Project EIR/EA (1984), Environmental Solutions, Inc. (1987) has performed extensive hydrologic investigations of the Mesquite and VCR project areas. These investigations included compilation and/or review of:
  - Recent site-specific hydrologic and geologic data from exploratory boreholes, geotechnical borings, and production and monitoring wells.
  - GFMC (1987) site-specific geophysical data.



REVISED 525

- Unpublished site-specific geologic and hydrologic reports prepared by private consultants for GFOC prior to publication of the Mesquite Project EIR/EA.
- Published and unpublished regionally oriented literature including Dutcher et al. 1972, Dillon 1975, Loeltz et al. 1975, and Morton 1977.
- 3. The most important result of this subsequent hydrologic investigation was the definition of a minor subbasin which underlies the Mesquite and VCR project areas as shown in Figure 4.4. The subbasin is defined by a zone where low permeability conglomerate bedrock or basement rock is present at shallow depths, and no water-bearing alluvium exists. Within the subbasin, very minor amounts of water are present.
- 4. The southern boundary of this hydrologic subbasin is defined by a buried basement high "ridge" which separates the subbasin area to the north from the main Amos-Ogilby Basin to the south, where substantial amounts of water are present in deep, water-bearing alluvial deposits (Environmental Solutions, Inc. 1987). The existing Mesquite project production wells are located south of the subbasin boundary and, therefore, tap into the deep alluvium of the Amos-Ogilby Basin. Table 4.3, Summary of Wells (see Figure 4.5, Location of Vicinity Wells), indicates these wells have estimated maximum yields of up to 6,000 gpm, compared to wells completed in the subbasin which yield less than 28 gpm.
- 5. The source of ground water recharge to the subbasin which underlies the project area is the limited infiltration of precipitation which occurs in the relatively small upgradient watershed bounded by the drainage divide of the Chocolate Mountains. Because of the high evaporation-precipitation ratio in the area, the limited available watershed, and the low permeability of near surface materials, only minimal recharge occurs.
- 6. In contrast to the subbasin which underlies the project area, the thick, water-bearing alluvial deposits of the Amos-Ogilby Basin store substantial amounts of ground water. The main source of recharge to these deposits is northwestward under-flow from the Colorado River and the All-American Canal in the southeasternmost portion of the Imperial Valley (Loeltz et al. 1975, Dutcher et al. 1972).

## TABLE 4.3

## SUMMARY OF WELLS VCR PROJECT AREA

	WELL IDENTIFICATION	PURPOSE	RATED YIELD	TOTAL DEPTH	PERFORATED DEPTH	SEALED DEPTH	DATE COMPLETED	APPROXIMATE WATER LEVEL (Ft.)	
			(gpm)	(Ft.)	(Ft.)	(Ft.)		DEPTH	ELEVATION
	wr-2	Production/ Upgradient Monitorine	28	442	154-404	N/A	October 1982	185	550
	SM-63		10	477				185	575
ck or basin	SM-241	Production	10	520	N/A ⁽¹⁾	N/A ⁽¹⁾	N/A ⁽¹⁾	200	560
t Bedroo the Subi	Singer Well		15	470				220	575
oleted in tock of	GW-1		Less than 15	430	317-416	0-291		310	280
ls Comp ement R	GW-2	Downgradient Monitoring Well	Less than 10	310	207-305	0-190	October 1985	268	362
Wel Bas	GW-3		1 - 2	310	196-296	0-193		213	437
	GW-4	<b>Upgradient</b> Monitoring Well	2	320	209-309	0-190	October 1986	221	504
	MCR-80	Intended for Large-Scale Production but Insufficient Yield	Less than 26	1.017	<b>402-</b> 1,002	0-50	March 1983	197	523
	GF-1		3,000-6,000	822	506-810	0-20	December 1983	474	79
Ogilby	GF-2	Production 2,300+		908	658-885	0-50	March 1985	462	78
in Amos Iluvium	GF-3A		2,250+	940	690-930	0-50	March 1986	469	77
ompleted Basin A	MBH-1			600	X0-590	O-300		467	81
Wells C	MBH-2	Observation	N/A ⁽¹⁾	640	510-630	0400	November 1984	470	80
	MBH-3			683	510-680	O-400		458	79

⁽¹⁾ Not available or not applicable.



7. The subbasin is hydrologically distinct from the Amos-Ogilby Basin, with water-bearing capacities differing by more than two orders of magnitude, different recharge sources, and different ground water characteristics. Because the VCR project will not affect the Amos-Ogilby Basin (see Sections 5.2 and 6.2), the discussion in the following sections applies only to the subbasin unless otherwise specified

#### 4.2.3.2 Ground Water Occurrence

- As discussed in Section 4.2.3.1, only minor amounts of ground water are present within the subbasin. Ground water which is found ranges in depth from about 200 to 350 feet below the surface (see Figure 4.6, Ground Water Elevation Map). It is contained in the very "tight" conglomerate bedrock or in the fractures and joints of the basement rocks.
- 2. As indicated in Figure 4.6, the ground water gradient below the VCR mining area is generally southwest and rather steep, reflecting the low permeability of the geologic materials. To the southwest of the VCR mining area, a buried valley in the basement rock appears to control the ground water gradient in that area. There, the limited ground water appears to flow slowly southeast and around the apex of a buried basement ridge through the apparent ground water trough.

#### 4.2.3.3 Ground Water Usage

 With the exception of Mesquite project-related uses, the only known historic use of ground water in the subbasin was by Richard and Anna Singer at a well that lies within a claim block sold to GFOC. The Singer Well is drilled into bedrock to a depth of approximately 470 feet. The well produces about 15 gpm and has been used at a rate of about 100 gallons per week for showers, laundry, cooling, and some minor ore processing. The water is not suitable for drinking purposes.





- In addition to the Singer Well, the existing Mesquite facility used ground water from the subbasin for a pilot test facility and exploration drilling. This water was obtained from several low capacity (10-28 gpm) wells which were completed in the bedrock or basement rock. These wells are identified as SM-63, SM-241 and WT-2 in Table 4.3 and in Figure 4.5.
- 3. Since early 1986, when full scale operation of the Mesquite project began, water requirements for that project have been supplied by the Mesquite project production well field located about four miles south of the proposed VCR mining area. The production well field does not tap into the subbasin. It is located south of the subbasin boundary and draws water from the deep alluvial deposits of the Amos-Ogilby Basin. The production well field was located distant from the Mesquite project area because earlier attempts at large scale production wells closer to the project were unsuccessful.

## 4.2.3.4 Hydraulic Conductivity

- Based on data from pumping tests conducted on wells near the Mesquite mine pit, Sergent, Hauskins & Beckwith (1984) estimated the permeability of the basement rock to be less than 5 x 10⁻⁶ cm/sec. Using the permeability of 5 x 10⁻⁶ cm/sec, Sergent, Hauskins & Beckwith estimated that seepage of ground water into the Big Chief mine pit at the Mesquite project would be on the order of 22 gpm when that pit reaches its final configuration. Recently, operations in the Big Chief pit proceeded below the ground water table. Currently seepage to the pit is estimated at 0.5 gpm, and GFOC anticipates that the 22 gpm seepage rate will not be exceeded as operations proceed.
- 2. Based on GFOC's exploration boreholes for both projects, rock conditions in the VCR mining area are anticipated to be similar to those at the Big Chief pit. Therefore, inflows to the VCR pits which penetrate ground water are expected to be similar.
- 3. Within the unsaturated zone, downward movement of moisture is also restricted by the need to increase moisture content above the field moisture capacity (the moisture content at which the capillary and gravity forces are in equilibrium). Sergent, Hauskins & Beckwith (1984)

estimated the field moisture capacity in the project area to be 10 to 15 percent (for the alluvium and the conglomerate bedrock). In situ moisture content is 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). It is likely that the moisture content does not exceed 10 percent at greater depths (Sergent, Hauskins & Beckwith 1984). This in situ moisture deficiency would inhibit downward percolation of infrequent rainfall in the near surface materials.

## 4.2.3.5 Ground Water Quality

- Ground water quality data for the project area consistently show the water quality to be poor, characterized by high values of salinity, TDS, chloride, fluoride, sulfate, and several metals. Selected water quality parameters are summarized in Table 4.4, Summary of Select Ground Water Quality Data. Drinking water and irrigation standards are also indicated where applicable. Those parameters which exceed the indicated standards are printed on the table in bold.
- Ground water in the subbasin also exceeds the following standards not listed in Table 4.4 (St. Clair Research Systems 1984):

<u>Drinking</u>	<u>Irrigation</u>
Turbidity	Boron
Mercury	Chromium
2	Iron
	Manganese
	Zinc
	Sodium

3. In summary, the ground water quality in the area can be described as poor and unsuitable for drinking or irrigational uses.

#### TABLE 4.4

## SUMMARY OF SELECT GROUND WATER QUALITY DATA VCR PROJECT AREA

	pH (units)	SC (umho/cm)	TDS (mg/L)	C1- (mg/L)	F- (3) (mg/L)	SO ₄ ²⁻ (mg/L)	As (2) (mg/L)	$Cr^{(2)}$ (mg/(.)	Fe ⁽²⁾	$Mn^{(2)}$
DRINKING WATER STANDARDS ⁽¹⁾	6.5-8.5	900	500'	250*	1.6	250*	0.05	0.05	0.30*	0.05*
IRRIGATION STANDARDS				773 ⁽⁴⁾	1.0				5.0	
WELL DA'IE										
WT-2										
1 l-22-82	7.88	1,650"	1,000	142	2.5	262	0.05	co.01	0.80	0.08
3-21-83	7.23	1,760	1,004	137	3.1	274	0.014	<0.01	0.56	0.03
2-4-84	8.0	1,660	996	127	1.6	256	0.031	co.01	0.03	co.01
5-4-84	8.4	1,800	997	146	1.32	251				
I-21-85	8.2		1,040	136		256				
10-25-85	7.99	1,630	969	140	1.71	260	0.003	co.01	0.07	0.07
12-12-85	8.36	1,561	938	110	1.58	266	0.026	<0.01	0.2	0.01
SM-63										
11-22-82	7.61	1,560	960	125	1.3	280	0.01	co.01	0.12	0.01
3-21-83	7.14	1.650	992	104	3.3	274	0.014	co.01	1.00	0.02
Singer		,								0104
2-4-84	7.85	2,250	1,328	286	1.6	415	0.005	co.01	0.82	0.06
GW-1										
10-25-85	7.34	3,320	2,128	595	1.5	283	0.007	0.08	33	14
12-12-85	7.52	3,105	2,032	486	1.09	168	0.037	0.14	22	1.7
10-28-86	8.25	3,081	1,819	660	2.2	360	0.075	0.04	3.5	4.1
GW-2										
10-25-85	7.35	3,230	1,960	876	1.7	325	0.001	<0.01	0.19	0.84
12-12-85	7.75	3,485	1,992	863	1.02	330	0.007	<0.01	0.77	0.5
GW-3										
10-25-85	7.92	1,221	869	129	1.3	297	0.002	co.01	0.04	0.04
12-12-85	8.23	1,346	890	134	1.81	292	0.017	co.01	0.39	0.11
CW-4										
10-23-86	8.14	2,027	1,270	309	2.0	342	0.009	0.03	0.04	0.14
MCR 80 1-18-85	7.28	3,306	1,800	609		425			6.8	

(1) California Domestic Water Quality and Monitoring Regulations. California Health and Safety Code and the CAC Title 22.
 (2) Data presented as total (mg/L). Soluble (< 0.45 urn) level data also available.</li>
 (3) 16 mg/L based on annual average air temperature of 73°F (based on Table 4.4 in the EIR/EA. See Chapter 10.0, References).
 (4) State Water Resources Control Board, Publication 3-A, June 1976, Page 183.
 (5) The numbers typed in bold exceed a quality standard.

Recommended secondary drinking water standards. Upper and short-term levels may be higher.
Federal Primary Drinking Water Standard.
(---) Not available or not applicable,

#### 4.3 AIR RESOURCES

#### 4.3.1 REGIONAL CHARACTERISTICS

#### 4.3.1 .1 Climatic Conditions

- The climate for Imperial County is generally very hot and dry during the summer and mild in the winter, with minimal precipitation and little cloudiness. Selected climatic parameters from four regional weather stations and the Mesquite project are shown in Table 4.5, Selected Climatic Parameters. The weather data indicate generally homogeneous characteristics over the region. The areas of greatest relative difference are annual rainfall (1.8" at El Centro vs. 3.5" at Yuma) and percent of winds over 20 mph (2.4% at Holtville vs. 17.9% at the Mesquite Project). Although the percentage differences are substantial, the real differences are slight.
- 2. From late fall to early spring, daytime temperatures are moderate and nights are cool, with prevailing winds from the west and northwest. Most of the annual precipitation occurs during this part of the year, averaging two to three inches annually.
- 3. Summer weather patterns are dominated by the intense thermal low pressure area that forms over the heated interior of the southwestern United States and northern Mexico. The trough becomes strong enough to create a mesoscale sea breeze off the Gulf of California, with prevailing winds from the southeast. This southeast flow meets the northwest flow through Banning Pass somewhere over the Salton Sea, and the combined airstreams move across the Chocolate Mountains eastward toward Arizona. This summer "monsoon" circulation pattern sometimes draws moisture across the desert from as far away as the Gulf of Mexico, with associated summer thunderstorms and flash floods. These thunderstorms are more prevalent in eastern Imperial County along the Colorado River than near the Salton Sea. Consequently, Yuma and Blythe get a little more annual rainfall than El Centro.
- 4. Wind speeds in the region usually are above levels necessary to promote good mixing, thereby precluding stagnation of the air mass. 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 carry away locally generated emissions and minimize the potential for local air pollution nuisance.

## **TABLE 4.5**

	WEATHER STATION ⁽¹⁾							
PARAMETER	Yuma	El Centro	Blythe	Holtville	Mesquite Project			
Station Elevation	213'	-43'	397'	59'	750'			
Average Annual Temperature (OF)	73	74	74	74	N/A ⁽²⁾			
July Max. Temperature (°F)	106	107	108	107	N/A			
Jan. Min. Temperature (OF)	42	43	41	43	N/A			
Days per Year > 89" F	188	174	178	182	N/A			
Days per Year < 32" F	2	3	6	2	N/A			
Mean Relative Humidity	44%	38%	36%	34%	N/A			
Annual Rainfall	3.5"	1.8"	3.2"	2.5"	3.0"			
Days per Year > 0.1" Rain	12	5	12	5	N/A			
Thunderstorm Days per Year	10	4	9	7	N/A			
Winds $> 20$ mph ⁽³⁾	3.0%	8.9%	6.0%	2.4%	17.9%			
Winds > 32 mph ⁽³⁾	0.0%	0.6%	0.4%	0.0%	2.4%			
Annual Evaporation	99.9"	116.91"	118.92"	-	107			

#### SELECTED CLIMATIC PARAMETERS VCR PROJECT VICINITY

(1) Data from Yuma, El Centro, Blythe, and Holtville from Mesquite Project EIR/EA (1984).

Ø N/A - Not available.

⁽³⁾Wind data for the Mesquite project weather station are taken from quarterly Air Quality Monitoring reports and represent readings taken approximately every six days.

5. Vertical dilution in Imperial County is generally good. Strong daytime thermal mixing generally disperses occasional nighttime thermal inversion. Results of the Pasquill stability analysis, as applied to El Centro and Yuma weather data, are shown in Figure 4.7, Atmospheric Stability Distribution Summary. The Pasquill analysis assigns a dispersive capacity rating, ranging from "A" (very unstable air, with a high dispersion capacity) to "G" (very stable air, with a low dispersion capacity). As indicated, there is little difference between the two locations, indicating relatively uniform and generally good dispersion throughout the Imperial County region and eastward into Arizona.

#### 4.3.1.2 Air Ouality

- 1. Sources of air quality information in Imperial County include:
  - Routine monitoring conducted by the Imperial County Air Pollution Control District (APCD), measuring airborne dust at three sites (El Centro, Brawley, Calexico) and gaseous photochemical smog (ozone) at the El Centro station.
  - A regional monitoring program related to geothermal development, conducted by Lawrence Liver-more Laboratories (1976-1978).
  - Miscellaneous special studies with limited scopes, objectives, and durations, conducted by government agencies and private developers.
  - Approximately four years of wind data and 2.5 years of dust monitoring from the Mesquite project site.

The results of these programs are summarized in the following paragraphs.

2. The most important air quality issue in the Imperial County area is that associated with dust in the urban and agricultural areas. Current State standards for dust require the respirable dust (PM₁₀) levels to be below 50 µg/m³ over a 24-hour average. Recently adopted Federal standards (July 1987) are 150 µg/m³ over a 24-hour average and 50 µg/m³ for the annual mean level.



#### EL CENTRO, CA.:

PASQUILL "A" - 4.0% (UNSTABLE AIR,

PASQUILL "B" - 15.4% GOOD MIXING)

PASQUILL "C" - 13.8%

PASQUILL "D" - 27.3%

PASQUILL "E" - 16.8%

PASQUILL "F" - 15.4%

PASQUILL "G" - 7.3% (VERY STABLE AI POOR MIXING)

## YUMA, AZ.:

- PASQUILL "A" 2.2%
- PASQUILL "B" 10.7%
- PASQUILL "C" 16.3%
- PASQUILL "D" 22.8%
- PASQUILL "E" 15.9%
- PASQUILL "F" 21.3%
- PASQUILL "G" 10.9%



- 3. Because PM₁₀ levels are frequently above Federal standards in the agricultural and urban portions of the Imperial Valley, EPA has classified those portions of Imperial County as a Group I Area, requiring preparation of a State Implementation Plan (SIP) indicating how the PM,, emissions condition will be mitigated within a several year period.
- 4. Most non-rural and non-agricultural portions of the County, such as the VCR project area, are classified as Group III. Permitting in these areas should not be directly affected by the Group I planning activities. However, air quality impact modeling for some projects in Group III may require evaluation of potential impacts to the Group I study area. Also, Group III areas will require compliance with the new PM,, standards.
- 5. Ozone levels above the Federal standards do occur in some parts of the County, particularly the northwest. Much of this appears to be a dilution of the "urban plume" from the Los Angeles Basin. Smaller amounts are created locally. Activities in the large Mexicali area also may contribute to periodically elevated ozone levels. Since a substantial portion of violations of the Federal ozone standard is due to outside sources, there is limited potential for pollution control within the County. Nevertheless, the occasional slight violations of the ozone standard make this County, as part of the Southeast Desert Air Basin, a non-attainment area for ozone.
- 6. Limited measurements of other gaseous species, such as nitrogen oxides (NOx), sulfur dioxide (SO,), and carbon monoxide (CO), as well as particulates such as sulfates and lead, were all well below their applicable standards. Isolated violations of the state standard for hydrogen sulfide (H₂S) were observed in areas of geothermal development, but such violations primarily constitute an odor nuisance.

#### 4.3.2 SITE-SPECIFIC CHARACTERISTICS

#### 4.3.2.1 Climatic Conditions

1. Weather conditions at the VCR site are generally expected to be similar to those at the other stations indicated in Table 4.5. The exception would be wind conditions.

- 2. Wind data from the Mesquite site, adjacent to VCR, indicate generally higher velocities and greater directional diversity than the region's dominant bimodal pattern. This is shown on the wind rose from the project site compiled from data collected prior to publication of the Mesquite Project EIR/EA in 1984 (Figure 4.8, Wind Direction Frequency Distribution). There is a predominant flow from the southwest in summer, the southeast in early fall, the northeast in winter, and northwest in spring. This results in a relative balance, with various dominant directions changing by both time-of-day and season. Wind speeds are usually well above stagnation levels, and dispersion conditions are generally good. 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).
- 3. Rainfall has been measured at the adjacent Mesquite site since May 1983. The average annual rainfall from September 1983 to August 1987 was 3.0 inches. Evaporation data also have been collected at the Mesquite site since June 1983. The figures were compared to available records for nearby stations or water use maps to determine the best estimates for evaporation. The mean annual pan evaporation is approximately 153 inches, with the maximum monthly evaporation occurring in May or June at about 23 inches (Mesquite Project EIR/EA 1984). The mean annual pan evaporation corresponds to a lake evaporation of 107 inches, at a pan coefficient of 0.70.

#### 4.3.2.2 Air Quality

1. Particulates are the primary air quality parameter of interest in the remote desert environment. Data from two onsite particulate monitoring stations at the adjacent Mesquite project indicate that, for periods when the wind direction is from offsite, background 24-hour particulate levels are 37.4 and 21.3  $\mu$ g/m³ for total suspended particulates (TSP) and PM,, size particles, respectively. Average 24-hour concentrations of these parameters when the wind direction is from the mining area are 48.0 and 23.4  $\mu$ g/m³, respectively. These monitoring data show that both natural and mining project-related PM,, concentrations are well below both Federal and State standards.



2. Ozone values are not measured in the vicinity of the VCR site, but are expected to be generally lower in eastern than in western Imperial County. It is not anticipated that air quality at the VCR site would experience violation of ozone standards.

#### 4.4 VEGETATION

- The following discussion is based on the results of a botanical study which was conducted for the proposed VCR ruining area and proposed highway realignment during June and July 1987. The study area is shown in Figure 4.9, Vegetation, Wildlife, and Cultural Resources Inventory Areas. The study is on file and available for public review at the Imperial County Planning Department and the El Centro Resource Area office of the BLM.
- 2. The study involved a review of accumulated information on plant communities and associations, sensitive plants, study of aerial photographs, and a thorough search of the study area. The onground inventory utilized the many established roads and berms as gridding devices, and the areas between them were searched extensively on foot (Pritchett 1987). The results of the study are shown in Figure 4.10, Vegetation Types.
- 3. Results of the field inventory indicate that there are no officially listed, threatened or endangered plant species known to exist within the VCR study area.

#### 4.4.1 VCR MINING AREA

#### 4.4.1.1 Characteristic Species

 Vegetation distribution within the VCR mining area is influenced by a complex of braided washes, elevated islands of desert pavement, and hills. Vegetation cover is approximately 5% (LaPré 1987), much of it occurring in washes and runnels. These washes vary in width and depth, having sandy and gravelly soils. The sparse vegetation is due to both the low infiltration of the desert pavement and low nutrient values of those soils which do exist.



- 2. Plants found within the VCR mining area are members of the creosote bush scrub community. Cresote bush (Darreattridentata) is the primary component of this community. u d e bursage (Rembosica dursosa) and Anderson's thombush (Lycium afidersonii). t h e field inventory indicate that there are no officially listed, threatened, or endangered plant species known to exist within the VCR study area.
- 3. Larger, arborescent members of the creosote bush scrub community occur along washes and waterways. Ironwood (<u>Olynea tesota</u>) was the most commonly encountered species. Other species encountered included honey mesquite (<u>Prosopis glandulosa var. torreyana</u>), arrowweed (<u>Pluchea sericea</u>), desert catalpa (<u>Chilopsis linearis</u>), palo verde (<u>Cercidium floridum</u>), catclaw (Acacia greggii), desert lavender (<u>Hyptis emoryi</u>), cheesebush (<u>Hymenoclea salsola</u>), and the California Native Plant Society (CNPS) listed species, fairy duster (<u>Calliandra eriophylla</u>). more complete listing of typical species of the creosote bush scrub community may be found in Appendix E, Vegetation Support Material.

#### 4.4.1.2 Sensitive Plant Species

- The term, "sensitive plant species," refers to those plant species designated as either threatened, endangered, rare, limited in distribution, or lacking sufficient information to properly classify. These designations are made by Federal or State agencies, including the U. S. Fish & Wildlife Service, BLM, and California Department of Fish and Game. In addition, the California Native Plant Society (CNPS) also classifies plant species on the basis of rareness, endangerment, and distribution.
- 2. Through a literature and herbaria search, 13 sensitive plant species were identified as potentially occurring within the VCR mining area. These species are sand food (Ammobroma <u>Conlofan</u>) a ditaxis (Ditaxis californica), desert sunflower (Helianthus neveus_var. tephrodes), flat-seeded spurge (Euphorbia plysperma), rat-tailed cactus (Corvnhantha vivipara var. alversonii), giant Spanish needle (Palafoxia arida var. gigantea), winged cryptantha (Cryptantha haloptera), desert acacia (Acacia smallii), fairy duster (Calliandra eriophylla), Wiggin's croton (Croton wigginsii), deboltia (Cvnanchum utahense), Thurber's pilostyles (Pilostyles Thurberi), and desert unicorn plant (Prioboscides althaefolia). An extensive field inventory revealed that only one of the above species, fairy duster, was actually within the VCR mining area.

- 3. Fairy duster is not listed by either State or Federal agencies. However, CNPS does consider it a sensitive species. It is BLM policy to give special consideration in planning and decision-making processes to those plant species listed by the CNPS.
- 4. The sensitive status of the fairy duster is based on its limited distribution within the state of California. It is found in the vicinity of the Chocolate Mountains in Imperial County, and small parts of San Diego County. Recent information suggests that the fairy duster population in Imperial County is becoming more dispersed (Mesquite Project EIR/EA 1984). Outside of the State, fairy duster is found as far east as Texas and south, into Mexico.
- 5. Field studies determined that a large population of fairy duster does exist within the VCR mining area. Pritchett (1987) estimates the population to be in excess of 1,000 individuals. The plants are found dispersed throughout Sections 4 and 9, but limited to the western portions of Sections 3 and 10. The species is found to be in a wide range of conditions. Some plants appeared to be dry or dead, an expected condition for summer, when the inventory was conducted. Others, however, were thriving, apparently benefitting from water from drilling, or from moisture due to natural, temporary ponding after infrequent thunderstorms. Overall, the species was noted as being vigorous and, based on previous studies, its distribution is seen to be increasing. Some individuals which previously had been mapped in Section 9 were not found, likely due to ongoing mining activities. However, many new plants can be seen in areas which were previously inventoried.

#### 4.4.2 HIGHWAY 78 REALIGNMENT

#### 4.4.2.1 Characteristic Species

1. The proposed highway realignment corridor crosses a complex of braided washes and elevated islands of desert pavement. As occurs within the VCR mining area, the vegetation is creosote bush scrub, with arborescent species of honey mesquite, ironwood, arrowweed, and desert catalpa in the washes. The washes range in width and depth, with gravelly and sandy beds.

#### 4.4.2.2 <u>Sensitive Plant Species</u>

1. Other vegetation which is characteristic of the highway study corridor was also inventoried specifically for fairy duster, which is known to exist in the vicinity. However, the field study within the proposed realignment study **corridor** did not reveal fairy duster or other rare, threatened, or endangered species.

## 4.5 <u>WILDLIFE</u>

## 4.5.1 INTRODUCTION

- The primary input for this section consists of studies of general wildlife and desert tortoise, completed in June 1987 by Tierra Madre Consultants under the direction of Dr. Lawrence LaPré. Reports from these studies, "General Wildlife Assessment of the VCR Mining Project" (LaPré 1987) and "VCR Mining Project Desert Tortoise Report" (LaPré 1987) are included in Appendix D and E. Additional data used in the preparation of this section include:
  - Wildlife information presented in the previous EIR/EA for the adjacent Mesquite project (Mesquite Project EIR/EA 1984).
  - Experiences and observations of Gold Fields Operating Co. (GFOC) relative to the mitigation measures utilized at the Mesquite project.
  - Evaluations of the data by BLM and Caltrans specialists.
- 2. Figure 4.9 illustrates the VCR mining and highway realignment areas for which inventories were conducted. Prior to the field studies, a literature review was conducted of relevant environmental reports, scientific references, field guides, and the California Natural Diversity Data Base. Further, there were discussions with BLM, California Department of Fish and Game (CDFG), and Caltrans for input into the scope of work.
- 3. The wildlife conditions at the VCR mining area and within the highway realignment study corridor are similar, so both are included in a single discussion of the existing environment.
- **4.** Results of field studies indicate that there are no officially listed, threatened or endangered animal species known to exist within the VCR study area shown in Figure 4.9.

## **4.5.2 BIOLOGICAL SETTING**

- 1. As discussed in the General Wildlife Assessment Report (Appendix D), the VCR mining area and the highway realignment corridor are located in a relatively unproductive part of the Colorado Desert. No surface water is present in the area, thereby limiting the activity of many animals. Wildlife which is present is adapted to severe desert conditions of heat, drought, and wind, consisting primarily of common and widespread species.
- 2. Wildlife which has adapted to the area survives in a terrain which is mostly a network of braided washes which cut through well-developed desert pavement, a barren-appearing landscape where the soil surface is covered with small rocks that have been darkened with desert varnish. Few perennial plants are present, and the total plant cover is less than 5%. Annual plants comprise a significant portion of the flora, and a distinct seasonal element is correlated with animal activity. For example, birds utilize the area for nesting in early spring, but tend to disperse to more favorable areas during the summer and fall. Reptiles become most active at night during the spring and summer. Mammals are present year round, with the exception of migratory bats.
- 3. The VCR mining area has been partially disturbed by human activities. Several mineral workings and geological testing programs have disrupted the soil surface near the center so that about 20% of the mining area is no longer useful as habitat (LaPré 1987). Also, State Highway 78 traverses the northwest comer of the area for about two miles. Disturbance near the eastern edge of the mining area is limited to dirt roads and off-road vehicle tracks.
- 4. Along the highway realignment corridor, there is little evidence of recent human disturbance to wildlife habitat. There is, however, debris from years past when the area was part of a World War II military training area

## **4.5.3 CHARACTERISTIC SPECIES**

1. Habitats within the study area are typical of the Colorado Desert. The field study did not reveal **any** unusual or high-use habitat types, or habitats of endangered species, although habitat for

some species of special concern does occur. The wildlife inhabiting the area also are typical. Less common animal species which are restricted to habitats such as cliff faces, sand dunes, wind-blown sands, and oases are not present. Also, permanent aquatic resources are not present, so aquatic fauna are not expected.

- Amphibian species are not observed, although major washes may support populations of the red-spotted toad. The Couch's spadefoot toad has been observed in the largest washes in nearby areas (Mesquite Project EIR/EA1984), but similar washes do not exist in the VCR study area, so the presence of this species is not expected.
- 3. A total of 11 species of reptiles, dominated by various species of lizards, are known to occur in the study area. Night-driving along Ogilby Road resulted in the finding of one leaf-nosed snake, which is expected to occur within the VCR mining area. One isolated rocky knoll in Section 9 provides excellent habitat for reptiles such as the collared lizard, chuckwalla, and speckled rattlesnake. These species are expected to be associated with this specific habitat and, therefore, not widespread throughout the study area. Other reptiles, such as the zebra-tailed lizard, whiptail lizard, and desert tortoise, are more widely distributed and are most abundant in the sandy washes. No evidence of the flat-tailed homed lizard occurs within the VCR mining area. The desert tortoise, discussed in Section 4.5.3.2, was the subject of an intensive inventory conducted in June 1987. Results of the inventory indicate that the tortoise populations in this area are low.
- 4. The mammal species detected are typical of the eastern Colorado desert and consist primarily of nocturnal rodents. Five species were identified by the live-trapping effort, and others were detected by sign during the VCR project inventory studies. The most frequently trapped mammal was the Bailey pocket mouse. A few larger predatory mammals were detected, including coyote, kit fox, and spotted skunk.
- 5. Mule deer (<u>Odocoileus hemionug</u>), referred to locally as burro deer, are extremely uncommon in the vicinity, apparently because water, cover, and food resources are normally inadequate. One set of burro deer tracks was noted during the inventory, indicating that the area is used as an open space resource and that these animals pass through on occasion.

6. Birds of the area consist of common desert residents, such as black-tailed gnatcatcher, verdin, and black-throated sparrow, as well as migratory species that spend the winter. Evidence of nesting was recorded for several species, especially in the ironwood, mesquite, and **palo verde** trees which are located primarily in the washes. Three species of doves were seen, indicating the capacity of this area to support gamebirds.

#### 4.5.4 SPECIES OF SPECIAL CONCERN

#### 4.5.4.1 General

- Several species of vertebrate wildlife considered to be of special concern by resource agencies and/or conservation organizations were identified as occurring or potentially occurring within the study area. These species are of special concern because: (1) their populations are declining, (2) they are especially vulnerable to habitat change, or (3) they have restricted distributions and are naturally rare. These include the desert tortoise, desert kit fox, leaf-nosed bat, burro deer, Couch's spadefoot toad, and black-tailed gnatcatcher. The desert tortoise is discussed separately in Section 4.5.4.2. The others are discussed below.
- 2. Desert Kit Fox (BLM No status, CDFG "Fully Protected Furbearer"). The desert kit fox is a widespread species throughout the deserts of Southern California. It is thought to be on the decline, due to habitat fragmentation, urbanization, and losses to road collisions. Several active dens were located during the wildlife study, including a few natal dens used during the spring. The kit fox is rather common at the VCR mining area.
- 3. Leaf-nosed Bat (BLM No status, CDFG "Uncommon and Threatened" species). The leaf-nosed bat is thought to be a declining species in California due to loss of foraging areas near the coast and disturbance to roost sites throughout its range in Southern California. It is most common in the low deserts of Imperial, Riverside, and San Diego counties. Apparently suitable roosting areas are an essential component of the habitat, with caves and old mines being the most extensively used sites. Several bats were observed during the field inventory, but they were not identifiable. No suitable roost sites exist on the VCR mining area. However, low numbers of the species may utilize the area as foraging habitat.

- 4. Burro Deer (BLM No status, CDFG Game species). No evidence of burro deer exists in the VCR mining area, which apparently provides only marginal habitat. Burro deer may pass through the area on occasion.
- 5. Nelson's Bighorn Sheep (BLM-Sensitive species, CDFG-Big Game species). No evidence of Nelson's bighorn sheep exists in the VCR mining area, and they rarely traverse the desert pavement habitat. The bighorn sheep may traverse the desert pavement when crossing between the Cargo Muchacho and Chocolate Mountains.
- 6. Couch's Spadefoot Toad (BLM No status, CDFG No status). Couch's spadefoot toad is an amphibian adapted to desert conditions of low rainfall and high temperatures. The distribution of this toad includes much of the Southwest from southwestern Oklahoma to southeastern California, as well as stations in Baja California, and mainland Mexico (Stebbins 1966). Three general areas are known for spadefoot sitings in California: the east side of the Algodones Dunes to Buzzards Peak, near Vidal Junction in San Bernardino County (Mayhew 1965), and a disjunct population found in Purgatory Wash, within the adjacent Mesquite project area. No washes of similar size were noted within the VCR mining area, and the likelihood of this amphibian being found there is marginal (LaPré 1987).
- 7. The Black-tailed Gnatcatcher (BLM No status, CDFG Species of special concern) is a very common bird in the VCR mining area. It nests in the washes in palo verde and ironwood trees. This species is subject to population declines due to disturbance of habitat and nest parasitism by cowbirds, but the populations in the VCR area apparently are healthy.

#### 4.5.4.2 Desert Tortoise

 The desert tortoise is considered by the BLM to be a "Sensitive" species, by the CDFG to be a "Fully Protected" species, and is found to warrant inclusion on the list of Threatened and Endangered Species by the U. S. Fish & Wildlife Service. Listing has thus far been precluded, however, by higher priority species. The range of the desert tortoise includes. southern Nevada, southwestern Utah, southeast Arizona to the Mojave Desert, and the eastern side of the Salton Basin in California Although the VCR study area lies outside the BLM designated desert tortoise "crucial habitat" area (BLM 1980), site-specific studies were requested by the BLM. "Crucial habitat" is defined as, "..... Portions of the habitats of sensitive species that if destroyed or adversely modified could result in their being listed as threatened or endangered."

- 2. Fifteen triangular transects were walked for the mining area and highway realignment, following the accepted methodology developed by BLM and described by Nicholson for the adjacent Mesquite project (Mesquite Project EIR/EA 1984). Each transect is 1.5 miles in length, 0.5 mile per side, and assumes a search distance of 10 yards, 5 on each side. Tortoise sign (i.e. scat, shells, burrows, tracks, live animals) are recorded for each leg of the transect and totaled. In order to determine densities from these transects, the sign count is calibrated with an area of known tortoise density. For this study, the BLM's Chuckwalla Valley II permanent study plot was used.
- 3. For six of the transects, no tortoise sign was detected, and for five transects, the maximum sign count was two. About 20% of the VCR mining area has experienced surface disturbance from past mining activity and current exploration activities, and no tortoise sign was found during transect walks in these areas.
- 4. Transect results indicate low tortoise densities, which occur primarily in the major wash systems. These low density conditions agree with the experiences of GFOC at the adjacent Mesquite project. Since construction started in early 1985 and through about two years of operation, that facility has had a formal tortoise training program for construction workers and employees. During that time, with construction and operations occurring over about 1,000 acres, nine tortoises have been relocated, and two mortalities have been recorded.
- 5. Statistical analysis of data obtained from the VCR mining area and highway realignment corridor transects indicates tortoise densities in the 0 to 20 per square mile category, which is the lowest desertwide density range assigned by the BLM. This range is consistent with BLM estimates of tortoise density on a regional basis. At the apparently very low population levels observed, and given the quantity of land in California with comparable densities, the desert tortoise population within the VCR mining area apparently does not constitute a significant resource.

## 4.6 VISUAL RESOURCES

## 4.6.1 VCR MINING AREA

## 4.6.1.1 Visual Management

- 1. The VCR mining area is on BLM-managed land, which includes consideration of the area's value for its visual resources on a scale ranging from Class I to Class V. Class I designates areas of greatest sensitivity, and Class V designates areas of least sensitivity. The project area is located such that it is within two BLM scenic quality units. The approximately 250 acres north of State Highway 78 are within the Chocolate Mountains Bajada scenic quality unit, and the remaining area south of Highway 78, including the area of the proposed highway realignment, is within the American Girl Wash scenic quality unit. Photos of existing views near the project area are presented and discussed in Section 5.6.
- 2. The Chocolate Mountains Bajada unit is a Class II BLM Visual Resource Management Area. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. According to BLM evaluation, the Chocolate Mountains Bajada is part of an area with a "high sensitivity" visual resource value.
- 3. The American Girl Wash unit south of Highway 78 has a "low visual sensitivity" and a Class III designation by the BLM. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
4. The existing Mesquite project has been approved in these same management areas. The visual characteristics at the VCR project would be similar to those presently associated with the Mesquite project, although the **areal** extent of the projects would have some cumulative effects.

# 4.6.1.2 Regional Characteristics

- The project region is characteristic low desert, with sandy soil and sparse vegetation. Visual topographic interest in the area is provided by the Chocolate Mountains, a narrow, northwest-southeast trending range which rises to an elevation of about 2,500 feet. The Chocolate Mountains Bajada and "foothills" rise immediately north of the project site. The other element of visual interest is provided by a large sand dune area about seven miles southwest of the mining area. The "Algodones Dunes" are popular for recreational use of off-road vehicles.
- 2. The Chocolate Mountains Bajada is distinguished by undulating terrain containing a series of parallel drainage channels with accompanying vegetation that adds variety to local scenery. The drainages and vegetation form reddish brown to dark grey and light to dark green lines across the bajada which, with the backdrop of the mountains, increase the area's scenic appeal (BLM 1981). Man-made modifications, conducted in 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.
- 3. The American Girl Wash unit is similar in scenic character to the Chocolate Mountains Bajada unit, with the exception of the greater number of man-made modifications that have occurred, notably, the Mesquite processing facilities. A system of informal (undeveloped) roads crosses much of the area. These roads and other, individual, mining operations and gravel pits contrast with the natural scenic quality of the area.
- 4. Views in the region of these two scenic quality units are expansive, with clear-weather visibility being virtually unlimited. The primary barrier to visibility is the Chocolate Mountains. Otherwise, the main determinants are dust and infrequent inclement weather.

#### 4.6.1.3 Project Site Characteristics

- The visual characteristics of the VCR mining area are consistent with the surrounding area, with the northern portion more like the Chocolate Mountains Bajada unit, and the southern portion more like the American Girl wash unit. This area is characterized primarily by an abundance of dry washes, extending southward, across Highway 78, from the Chocolate Mountains Bajada.
- Adjacent to the west of the proposed mining area is the Mesquite gold mine and processing facility where approximately 3.0 to 4.5 million tons per year of ore are mined and processed. Smaller mineral development activities have occurred within the project site and in the surrounding areas.

## 4.6.1.4 Seen Areas

- The VCR mining area is visible to the public primarily from Highway 78, a rural, low-volume highway (approximately 850 vehicles per day [Caltrans 1987]) which traverses the project site. The Chocolate Mountains Bajada unit can be seen to the north, and the American Girl Wash unit can be seen to the south.
- 2. Certain activities associated with the Mesquite mine and processing facilities are visible to motorists traveling Highway 78. Buildings, facilities, and overburden stockpile areas are visible to the north of the highway. The ore processing area, particularly the coarse ore stockpile, is visible to the south.
- 3. However, given the general expansiveness of the area, the visual impression is still dominated by the natural terrain and vegetation. The evidence of human activity is secondary except along about two miles of Highway 78 which are within the Mesquite project area.

#### 4.6.2 HIGHWAY 78 REALIGNMENT

#### 4.6.2.1 Visual Management

 The proposed highway realignment primarily is on land managed by the BLM, which includes consideration of visual resource values. The realignment corridor is within the BLM American Girl Wash scenic quality unit. This unit extends south for a distance of several miles from the existing Highway 78. It has a "low visual sensitivity" and a Class III designation by the BLM. Highway 78 is not a designated scenic route.

#### 4.6.2.2 Regional Characteristics

- The region in which the proposed highway realignment would be located is low desert, with sandy soil and sparse vegetation. The primary element of visual interest consists of the Chocolate Mountains, which trend northwest-southeast and rise to an elevation of about 2,500 feet.
- 2. The American Girl Wash unit is characterized by undulating terrain and parallel drainage channels or washes. Most of the area's sparse vegetation occurs in and near these washes.
- 3. The area between the existing Highway 78 and proposed realignment is crossed by a number of dirt roads. Other man-made modifications in this area include the Mesquite project processing facilities, and some individual mining operations and gravel pits. The area south and east of the alignment is generally less disturbed, although there are some small mining related disturbances such as the Mesquite production well field.

#### 4.6.2.3 Project Site Characteristics

1. The characteristics along the highway realignment are consistent with the surrounding area, with numerous dry washes and several dirt roads which traverse the area. The topography is relatively flat, and vegetation along the alignment is characteristically sparse. Visually, the area along the northern portion of the proposed realignment is more varied, as it traverses the Chocolate Mountains Bajada, intersecting the existing Highway 78 at the base of the Chocolate Mountains.

**2**, **The** proposed highway realignment traverses an unpopulated area. It may, however, be visible from some locations within both the VCR mining area and the Mesquite processing area.

#### 4.7 CULTURAL RESOURCES

#### 4.7.1 HISTORIC PERIOD

- 1. Mining and military activities have comprised most human activity in the project vicinity during historic time, although the area has been peripheral to human activities since the first Spanish contact in 1540. Yuma was the center of most events during this historic period. Recorded gold mining first occurred around 1780, but was discontinued due to Indian uprisings. Mining resumed after the Mexico Republic was formed in 1823 and continued when the area became a state in 1848. The arrival of the Southern Pacific Railroad in 1877 also stimulated mining in the area. The Mesquite Mining District was closed during World War II, and the U. S. Army used the area as part of a much larger desert training ground. The area was reopened to mining in the 1950's. Interest increased during the 1970's with rising gold prices and the development of heap leaching technology.
- 2. Throughout the VCR mining area and surrounding environs, there is scattered evidence of this previous military and historic mining activity. However, relatively few resources associated with these activities are considered to be potentially eligible for inclusion in the National Register or of research significance (Mooney-LeVine 1987). Further, as a result of historic and recent human activities, the land surface is disturbed to varying degrees, ranging from complete disruption to only minimal impact.

#### 4.7.2 PREHISTORY AND ARCHAEOLOGY

 Seven 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) Pinto, (4) Amargosa, (5) Patayan (Prehistoric Yuman), (6) Historic Yuman, and (7) Historic Euro-American. For the VCR study area, which includes the mining area and highway realignment corridor, only two or three are represented by the cultural resources under consideration. These are briefly discussed below.

- 2. Most of the aceramic lithic assemblages, rock features, and cleared circles within the study area have been assigned to the San Dieguito Complex, dating from 12,000 to 7,000 years before present (B.P.). Based on archaeological evidence, it was not until about 6,000 years later that the study area again saw use by a prehistoric Native American population, the Patayan. This cultural pattern is marked by the introduction of pottery on the lower Colorado River, about 1,200 B.P. The Patayan pattern is typified by small, mobile groups living in dispersed seasonal settlements along the Colorado River flood plain. Long range travel to special resource collecting zones, trading expeditions and, possibly, some warfare are indicated by the numerous trail systems throughout the Colorado Desert that have accumulated ceramic "pot-drops," trail-side shrines, and other evidence of transitory activities.
- 3. Within the VCR study area and vicinity, the presence of trails associated with rock art and pottery scatters indicates that groups living along the Colorado River were traveling west, presumably to exploit the Lake Cahuilla resources during the Patayan II phase and, possibly, visiting the Peninsular Ranges in the Patayan III phase. The former Lake Cahuilla was a large, freshwater lake in the Salton Trough which is believed to have formed and dried up at least three times during the past 2,000 years.

# 4.7.3 CULTURAL RESOURCES INVENTORY

#### 4.7.3.1 VCR Mining: Area

 A cultural resources inventory of the VCR mining area was conducted January 1623 and April 13- 15, 1987, by Mooney-Levine & Associates of San Diego. This activity consisted of a Class III inventory over approximately 2,500 acres in all or portions of Sections 2, 3, 4, 9, 10 and 11, T13S, R19E (see Figure 4.9). The Class III inventory entailed a systematic examination at 20-meter intervals. BLM requested a re-evaluation of Section 9 (Mesquite Project EIR/EA 1984), which resulted in a complete re-examination of that section. The results of these inventories are used to describe the cultural resources present within the proposed VCR mining area (Cook and Underwood 1987). 2. A total of 12 sites and 11 prehistoric isolated artifact occurrences were identified during the studies. Three previously recorded sites could not be relocated **or** appeared to be of a non-archaeological nature. Most of the finds are prehistoric, consisting of trails, lithic scatters and chipping stations, pot drops, a rock ring, and isolates (including a basalt metate). The historic finds consist of bottle fragments of purple glass.

#### 4.7.3.2 Highway 78 Realignment

- A cultural resources inventory along the highway realignment corridor was conducted June 5-8, 1987, by Mooney-Levine & Associates of San Diego (see Figure 4.9). A Class III inventory was conducted over the approximate 8.5mile length of alignment. The study area consisted of a 500-foot wide corridor along a centerline that was staked at 500-foot intervals. A lo-meter transect interval was used throughout to conform to Caltrans survey requirements. The results of the inventory are used to describe the cultural resource environment traversed by the proposed highway realignment.
- 2. A total of seven sites and eight isolated artifact occurrences were identified, primarily within and in the vicinity of the Singer Geoglyphs ACEC. Some of the identified resources are remnants of historic military activities, but the majority are of prehistoric origin. Historic military encampments consist of tent clearings, fire pits, possible latrine pits, and a possible military gun emplacement. Some of these overlap with prehistoric sites.
- 3. The prehistoric sites and isolated archaeological occurrences consist primarily of lithic scatters and chipping stations, a few isolated flakes and scrapers, one pot sherd, and one chalcedony core. There is also a prehistoric trail segment extending in a north-south direction about 1,800 feet west of the ACEC.
- 4. Four of the seven identified sites are considered potentially eligible for inclusion in the National Register (Cook and Underwood 1987). One of the ineligible sites, a small chipping station, will be collected to fully document its presence. The remaining two sites are considered ineligible because of their meager data content.

# 4.7.4 RESOURCE EVALUATION

- 1. The criteria for eligibility to the National Register of Historic Places (36 CFR Part 800) are used to assess the significance of archaeological sites. In summary, sites are potentially eligible to the Register and, therefore, significant in a management sense, if they:
  - (a) are associated with events that have made a significant contribution to the broad patterns of our history;
  - (b) are associated with the lives of persons significant in our past;
  - (c) embody the distinctive characteristics of a type, period, or method of construction, **or** represent the work of a master **or** possess high artistic values **or** represent a significant and distinguishable entity whose components may lack individual distinction; or,
  - (d) have yielded, **or** may be likely to yield, scientific information important to the understanding of prehistory or history.

Criterion (d) implies that, for a site to be eligible, substantive research potential is present that may contribute to understanding prehistory. It need not be unique, but it needs to contain useful data and information. If the site has been seriously damaged, or is otherwise lacking in potential to yield scientific information about the past, it is judged to be ineligible. In a management sense, such a site is insignificant.

- 2. Only two of the 12 identified sites are considered potentially eligible for inclusion in the National Register of Historic Places (Cook and Underwood 1987). One of these eligible sites has been fenced and will be avoided; the other will be mitigated. Eight of the ineligible sites have had their research potential exhausted through the act of recording. The two remaining sites, small chipping stations, will be collected.
- 3. It should be noted that an area of about five square miles, containing several geoglyphs, has been identified in the vicinity of the VCR mining area and proposed highway realignment. Known as the Singer Geoglyphs Area of Critical Environmental Concern (ACEC), the area consists of 2,197 acres and is located in all or parts of Sections 21, 22, 27, 28, 33, and 34 T13S, R19E (see Figure 4.3, Land Status Map). This area contains a number of ground

figures (also called geoglyphs or intaglios) which have been scraped into the desert pavement to reveal lighter colored subsoils. The Singer Geoglyphs are largely curvilinear features which are several inches wide. Several are documented to extend for a distance of several hundred feet. At this time, their age, origin, and meaning are unknown.

4. The geoglyphs considered most susceptible to impacts have been fenced as a joint effort between GFOC, the BLM, and the Imperial Valley College-Barker Museum.

#### 4.8 LAND USE

#### 4.8.1 LAND USE PLANS AND POLICIES

#### 4.8.1.1 Imperial County General Plan

- Land use planning and development in Imperial County is guided by the County General Plan. Three elements address land use goals and objectives applicable to the VCR project: the Ultimate Land Use Plan, the Open Space Element, and the Conservation Element.
- 2. The Ultimate Land Use Plan provides the framework to direct decisions regarding the use of land and other natural resources. Plan policies emphasize the protection of agricultural land from encroachment, an efficient pattern of urban growth, and protection of cultural (prehistoric and historic) sites, topography and other unique land features, and special wildlife habitat and desert plants. It shows the VCR project area as designated for recreation use. There is not a specific designation for extractive uses, but mining industries are permitted, subject to Conditional Use Permit approval.
- 3. The Open Space Element identifies three categories of open space uses: (1) preservation of natural resources, (2) managed production of resources, and (3) outdoor recreation. The proposed VCR mining area is in an area identified as extractive lands, within the S-Open Space

zoning designation. The purpose of the extractive lauds designation is to encourage extraction of mineral and quarry resources, while protecting the natural environment and desert setting. Extractive land uses, including mining, are permitted as a conditional use (Mesquite Project EIR/EA 1984).

4. The Conservation Element also addresses management of the County's mineral resources. It does not identify gold as a recoverable resource, but its general policies on mineral development may be applied to the proposed project. One of the specific objectives of the element is to "encourage the maximum utilization of available mineral resources consistent with the protection of the natural environment." Policies specific to mining or extractive operations include:

Recommendations for review and implementation of development and performance standards to mitigate environmental problems associated with mineral extraction.

The requirement for plans regarding the future use of the land once extraction is completed.

The requirement for adequate mitigation of significant archaeological resources.

Provisions for protection of mineral resources from other land use encroachments (Mesquite Project EIR/EA 1984).

#### Bureau of Land Management

 A portion of the project site is on Federal public lands managed by the BLM for multiple uses and, therefore, is subject to U.S. Mining Laws. The area is also within the BLM California Desert Conservation Area (CDCA). The project site and adjoining areas are classified as Multiple Use, Class M (Moderate Use). In the vicinity of the project site, mining, recreation, and visual resource management are paramount.

#### 4.8.2 EXISTING USES

- Land uses in the general area of the proposed VCR project consist primarily of mineral exploration and development, off-road vehicle and other recreational use, and military activities. The most concentrated year-round land use in the vicinity is the adjacent Mesquite Gold Mine and Processing Facility. The Mesquite project area has been fenced and closed to off-road vehicle traffic and the general public since 1985.
- 2. In past years, a few prospectors in the Mesquite Mining District have established seasonal working domiciles. The original agreements with the claim holders reserved a right to this seasonal use until that use interfered with GFOC construction or mining activities. GFOC is making arrangements to move the one former lessee (Richard and Anna Singer) onto a new location to be developed on fee land.
- 3. The proposed VCR project area is within the old Mesquite Mining District. Historically, activities have been limited primarily to recreational use and prospecting. Recently, there have been large-scale mineral exploration activities, including subsurface drilling and excavation.
- 4. As discussed in Section 4.1.6, the western end of the proposed highway realignment traverses the southern boundary of a BLM gravel withdrawn area.
- 5. The highway realignment has been surveyed, and no evidence of landfills containing hazardous waste was observed.

#### 4.8.3 RECREATIONAL USE

- Recreational activities in the vicinity of the project consist primarily of off-road vehicle use and RV camping, Off-road vehicle use tends to be concentrated in the Algodones Dunes area south of Highway 78, about seven miles southwest of the proposed VCR mining area.
- 2. The VCR mining area itself is little used. There is occasional rock-hounding, scattered site camping, target shooting, and hunting.

#### 4.9 **TRANSPORTATION**

- 1. Imperial County is served by a system of Interstate, State, County, and municipal streets and highways, as shown in Figure 2.4. The major east-west route is Interstate 8, which traverses the southern portion of the County. State Highway 78 is another east-west route which traverses the central portion of the County. It extends through Brawley and, at Glamis, turns northward and continues to Blythe. In the western portion of the County, Highway 78 connects to the portion of Highway 86 which goes to Riverside County.
- 2. The primary north-south routes are Highways 86, 111, and 115, which connect I-8 to Highway 78. The main north-south road which links I-8 to State Highway 78 in the eastern portion of the County is Ogilby Road (County Route S34).
- 3. The primary access to the project area from the larger communities in Imperial County is via State Highway 78, the road which traverses the northwest comer of the proposed VCR mining area. Primary project access from Yuma, Arizona, is via Ogilby Road to Highway 78. Other access to the project area is provided by two unimproved County roads, Zappone Road from the east, and Vista Mine Road from the south.
- 4. Traffic volumes on roadways in Imperial County are relatively high near major communities and low in the outlying agricultural areas. Traffic along Highway 78 through the project area is estimated at about 850 trips per day (Caltrans 1987).

### 4.10 <u>NOISE</u>

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#### 4.10.1 REGIONAL CHARACTERISTICS

 The variety of activities surrounding the project area contribute to widely variable noise events. Human noise is contributed by several activities -- traffic along Highway 78, recreational and off-road vehicles in the Algodones Dunes (primarily weekends and holidays), activities at the Mesquite Gold Mine, scattered small gold mining operations, and weapons use and aircraft noise associated with the U.S. Navy Chocolate Mountains Aerial Gunnery Range. 2. Because of these activities, this rural region experiences both isolated incidents and relatively prolonged periods of noise from human activities. Such activities have been ongoing for a period of years and are anticipated to continue. Noise related to off-road vehicle use of the Algodones Dunes can be expected to increase in intensity and duration, based on anticipated increases in recreational use.

# 4.10.2 SITE CHARACTERIZATION

- The VCR project, although within a generally quiet area of the County, is exposed to significant noise events. There are events of a relatively continuous nature due to traffic along Highway 78 and vehicles operating at the adjacent Mesquite mining and processing facility. There are isolated episodic events of noise from both the Mesquite project to the west and the U.S. Navy gunnery range to the north.
- 2. The Mesquite project regularly conducts blasting activities at the Big Chief mine pit and uses sonic cannons to deter approach by birds and curious wildlife. These noise events are generally intermittent or consist of a single noise event.

#### 4.11 SOCIOECONOMTCS

#### 4.11.1 Population

- Imperial County has a population of about 108,000 (State of California 1987). The major population centers are the cities of El Centro (28,400), Brawley (18,250), and Calexico (18,500). These are shown in Table 4.6, Imperial County Population and Housing Characteristics. There are also some small settlements in recreational areas along the Salton Sea, Colorado River, and in the Algodones Dunes area in the vicinity of the project site. The County's primary population centers, however, are more than 30 miles from the project site.
- The County population increased about 15% between 1980 and 1987 and is projected to increase another 48% by the year 2010 (Southern California Association of Governments 1987). Currently, there are notable seasonal population fluctuations due to agricultural employment and resort/recreational activities.

# TABLE 4.6

# IMPERIAL COUNTY POPULATION AND HOUSING CHARACTERISTICS

LOCATION	<b>TOTAL</b> POPULATION	HOUSING UNITS	SINGLE FAMILY	MOBILE HOMES	OTHERS	PERCENT VACANT
Brawley	18,228	5,743	3,797	204	1,742	6%
Calexico	18,495	4,502	2,852	156	1,494	2%
Calipatria	2,673	800	616	24	160	13%
El Centro	28,377	9,306	5,761	645	2,900	6%
Holtville	4,902	1,493	987	158	348	6%
Imperial	4,116	1,236	908	12	316	1%
Westmorland	1,832	565	449	19	97	9%
Total Incorporated	78,623	23,645	15,370	1,218	7,057	5%
Unincorporated	29,125	11,296	6,037	3,732	1,527	21%
TOTAL COUNTY	107,748	34,941	21,407	4,950	8,584	10%

SOURCE: State of California 1987.

## 4.11.2 Employment

- Employment in Imperial County is primarily dependent on agriculture, as the area, with its year-round growing season, is one of the top five counties in the United States in agricultural production. Agriculture is the County's largest single employer, accounting for 3 1% to 40% of total employment over the past 10 years, and averaging 36% (see Table 4.7, Imperial County Employment). After agriculture, the three largest employers are government, retail and wholesale trade, and services, together accounting for almost 50% of total employment. They are largely dependent on agricultural revenues.
- 2. Although mining is the County's smallest employment category, it has increased from about 100 persons in 1980 (State of California 1987) to about 525 in May 1987 (Imperial County 1987). Previously, the mining sector has involved sand and gravel, clay, stone, gypsum, small-scale mining of precious metals, and geothermal. It now includes large commercial operations such as the Mesquite mining and ore processing facility. Employment related to mining accounts for about 2% of total County employment.
- 3. Due to the cyclical nature of the agricultural industry, agricultural employment is tied to growing season and harvest patterns and varies widely. Since other County employment is mostly related to agriculture, it follows a similar pattern, varying about 20% annually. Between 1974 and 1983, unemployment increased from 12% to 35%. Since that time, however, it has decreased, to 22% during May 1987 (Imperial County 1987).

#### 4.11.3 Housing

Housing in Imperial County consists of about 70% single-family dwellings and about 30% multi-family units. Most of the multi-family units are located in the larger, incorporated communities. On a county-wide basis, about 86% of the housing is permanent, and about 14% consists of mobile homes. Most of the permanent housing is in the larger communities, with most of the mobile homes in the unincorporated areas (State of California 1987). Since 1980, housing is estimated to have increased by about 9%, in both the incorporated and unincorporated areas. The County vacancy rate averages about 10%, ranging from 13% in Calipatria to 1% in Imperial. The vacancy rate is 6% in Brawley, Holtville, and El Centro (see Table 4.6, Imperial County Population and Housing Characteristics).

# TABLE 4.7 IMPERIAL COUNTY EMPLOYMENT SELECTED STATISTICS 1978-1987

	1978 ^(a)	1979 ^(a)	1980 ^(a)	198 <b>1</b> (a)	1982 ^(a)	1983 ^(a)	1984 ^(a)	1985 ^(a)	1986 ^(a)	(May) 1987ゆ
Total All Industries	38,050	39,550	42,000	39,600	38,950	36,300	35,950	34,675	35,175	36,075
Total Agricultural	14,550	15,200	16,750	13,750	14,300	14,250	12,700	10,750	11,200	11,900
Total Non-agricultural	23,500	24,350	25,250	25,850	24,650	22,050	23,250	23,950	23,975	24,200
Mining			100	200	250	250	475	650	550	525
Wholesale Trade	1,500	1,700	1,650	1,650	1,650	1,500	1,600	1,500	1,350	1,350
Retail Trade	5,450	5,550	5,750	6,050	5,650	5,100	5,350	5,675	5,425	5,350
Services	3,450	3,700	3,750	3,950	3,900	3,500	3,850	3,850	4,175	4,075
Government	8,300	8,550	9,100	9,300	8,950	7,850	7,950	7,900	8,025	8,350

#### NOTES:

(a) Provided by State of California.(b) Provided by Imperial County Employment Development Department.

- 2. There are no communities near the project area, although there are some scattered, single-family dwellings, primarily associated with various individual mining operations. The settlement of Glamis is about seven miles southwest of the proposed project, but housing there is generally not available.
- 3. Other than in Imperial County, housing within commuting distance of the proposed project is in Yuma, Arizona, a city of about 46,800 with an approximate 17% housing vacancy rate (Yuma Metropolitan Planning Organization 1985).

## 4.12 MUNICIPAL SERVICES AND UTILITIES

## 4.12.1 SERVICES

- Most community services related to the proposed project are provided by either Imperial County or local municipal governments. County services are headquartered in El Centro, the County seat.
- 2. The VCR project would be within a sparsely inhabited area of the County where the local population base is insufficient for maintaining separate 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 project, is the closest community providing a full range of public services. The next closest is Yuma, Arizona, about 40 miles to the east.

3. The County has three solid waste disposal sites in the vicinity of the proposed VCR project, with estimated operating lives of about 10 to 50 years (Mesquite Project **EIR/EA** 1984). The operating characteristics of the landfills are as follows:

LANDFILL	SIZE (acres)	DAILY USE (tons/day)	REMAINING CAPACITY ( c u .	ESTIMATED <u>LIFE (y<del>c</del>ars)</u>
Brawley	52	68	1,250,000	$\pm 10$
Holtville	40	19	800,000	± 20
Palo Verde	40	0.5	565,000	± 50

#### 4.1.2.2 UTILITIES

- 1. Most agricultural and potable water for use in Imperial County is obtained from the Colorado River via the All-American Canal. The Imperial Irrigation District (IID) is largely responsible for conveying water to the valley. In sparsely populated, outlying rural areas, including the region around the project site, water for domestic use is provided by individual ground water wells. However, the well water is generally not potable, so bottled water is used for drinking.
- 2. There are public sewer services in the larger communities, provided by municipal governments or special districts. In less densely populated areas, individual sewage disposal systems are more common. The scattered dwellings in the vicinity of the project site rely on individual sewage disposal methods.
- 3. Electric power is provided to the most populous areas of the County by IID. Electric power is provided to the adjacent Mesquite project site via a six-mile, 92 kV transmission line constructed for IID at Gold Fields' expense. Power to supply the needs of the VCR project, and for the crusher in the event it is eventually constructed, would be available from the Mesquite 161/92 kV tap substation.
- 4. There are no natural gas lines in the vicinity of the VCR project site. Bottled gas is available from local distributors.

#### 5.0 POTENTIAL ENVIRONMENTAL IMPACTS

#### 5.1 GEOLOGY AND SOILS

#### 5.1.1 SEISMICITY

#### 5.1.1.1 VCR Mining Area

- 1. Because of the nature of the underlying geotechnical profile (see Section 4.1.2) and the depth to ground water, regional seismicity is not expected to cause extensive ground movement at the project site. As a result of implementation of current seismic safety standards in building design (see Section 6.1.1.1), the effect of potential ground movement on project structures would be minimal. Similarly, since slopes of overburden and **protore** storage piles would be at the natural angle of repose, minor sloughing may occur during a seismic event, but sloughing of extensive portions of the piles would be unlikely. The pit slopes are designed with a planned degree of safety, which includes consideration of vibrations due to blasting. Seismic events could cause similar conditions which, in the case of large events, could result in sloughing or rock falls.
- 2. No impacts due to surface rupture are anticipated because there are no known active faults within the project site.
- 3. Mining of the proposed pits would not be expected to affect either the physical geology of known faults in the region or regional seismicity.

#### 5.1.1.2 Highway 78 Realignment

- 1. Ground movement would be the only anticipated effect of seismicity on the proposed highway realignment. However, it is expected that the effects of such movement would be minimal.
- 2. No impacts due to surface rupture would be anticipated because no known active faults cross the realignment corridor.

#### 5.1.1.3 Cumulative Effects

- 1. As with the VCR project site and the proposed highway realignment corridor, the existing Mesquite project area does not overlie any known active faults. Therefore, **no** significant impacts due to ground movement or surface rupture would be expected in the vicinity of the two projects.
- 2. The combined Mesquite and VCR facilities would not be expected to affect either the physical geology of known faults in the region or regional seismicity.

# 5.1.2 SOILS

#### 5.1.2.1 VCR Mining Area

1. The impact of mining on soils in the proposed VCR project area would be negligible. As described in Section 4.1.5, the project site contains virtually no topsoil. Where surface soils do exist, they are thin and gravelly.

#### 5.1.2.2 Highway 78 Realignment

1. The highway realignment corridor also contains virtually no topsoil. The soils which do exist are thin and gravelly. Therefore, impacts to soils as a result of the highway realignment would be negligible.

#### 5.1.2.3 Cumulative Effects

1. As with the VCR mine area and the highway realignment corridor, the Mesquite project area contains virtually no topsoil. The soils which do exist in the combined project areas are thin, gravelly, and of poor quality. Therefore, the cumulative impact to soils in the area would be minor.

#### 5.1.3 EROSION POTENTIAL

#### 5.1.3.1 VCR Mining Area

- 1. Three of the four soil types in the VCR mining area have minimal or no erosion potential (Borst 1983). The one soil type susceptible to displacement (unidentified sandy loam) comprises the smallest percentage of the four (estimated at about 7% of the total soil present). This type of soil generally occurs on the steeper slopes which are naturally erosion prone. In light of the mitigation measures discussed in Section 6.1.3.1, changes to natural patterns of soil erosion due to the VCR project would be minimal.
- 2. Runoff of precipitation may cause minor erosion on slopes of the overburden and **protore** storage areas. However, based on observations at the adjacent Mesquite facility, and the coarse-grained nature and high infiltration characteristics of the dumped material, the potential for erosion of the slopes is expected to be minimal.
- 3. In order to control run-on to the VCR mine area, short segments of diversion structures (dikes and trenches) would be constructed near the eastern and northern boundaries of the project site. There is some potential for increased erosion where these diversion channels redistribute storm flows into existing downgradient washes. However, these diversion facilities would intercept flows from only a few relatively small upgradient washes and would discharge at locations approximating the existing flow locations. Therefore, impacts of downgradient flow would be minimal. Because of the area's minimal precipitation, high evaporation rate, high infiltration rate within the washes, and the shallow existing grade, it is expected that flows would occur in the diversion facilities infrequently, similar to the flows in the natural washes. Since changes in runoff conditions would be minimized, changes in natural erosion in the downgradient washes would not be substantial.

#### 5.1.3.2 Highway 78 Realignment

 The storm flow diversion facilities associated with the highway realignment corridor would intercept drainage from a variety of natural washes and redistribute the flows into downgradient washes. This may increase the volume of runoff in some downgradient washes, at least for short distances until it is redistributed through the natural braided wash configuration. However, the channels would be designed to minimize changes in the natural flow conditions. Also, since changes in drainage patterns are a common and natural occurrence in the alluvial fan environment, impacts due to project related erosional conditions would not be much different than those which occur naturally.

- 2. Except for several dips designed for controlled drainage crossings, the proposed highway would be elevated from one to several feet above the surrounding grade, and embankment slopes would be relatively shallow. Because diversion channels would be constructed immediately upgradient of the proposed highway, runoff on the elevated highway area would result only from direct precipitation. Therefore, effects of erosion on the unpaved shoulders and embankments would be minimal.
- 3. During large storms, there is potential for erosion where the highway dips to allow diverted storm flows to cross and enter downgradient washes. However, because of the highway design at the wash crossings (discussed in Section 6.1.3.2), the potential for erosion which could cause damage is estimated to be less than in areas where the existing highway dips through natural drainages. It is possible that sand and gravel would be deposited in dips on the highway as large storm flows diminish, requiring removal by loaders, scrapers, or dozers.

#### 5.1.3.3 Cumulative Effects

- 1. Cumulative effects include the potential for changes in erosion at the following locations:
  - On the slopes of overburden storage and protore stockpile areas at the Mesquite and proposed VCR mine areas.
  - Where diversion channels associated with the VCR mine area, the highway realignment corridor, and the existing Mesquite facility redistribute runoff into downgradient washes.
  - Where the realigned Highway 78 dips to allow storm flows to cross and enter into natural washes.
- 2. The potential for erosion of the overburden and protore stockpiles at both the Mesquite and VCR projects is expected to be minimal, due to the coarse-grained nature and high infiltration characteristics of the material.

- 3. The total amount of diverted flow for the combined Mesquite and VCR projects and the proposed highway realignment would be less than that required for the three entities individually. This occurs because diversion ditches for the Mesquite facility have already diverted some of the flow upgradient of the proposed highway.
- 4. Substantial changes in natural erosion patterns would not be expected because:
  - The diversion facilities are designed to minimize modification to natural drainage patterns and maintain natural runoff velocities to the extent possible.
  - · Large flows occur in the washes infrequently.
- 5. Because of the characteristics of the natural environment, the cumulative effects of potential erosion would be minor. The alluvial fan environment of the project area is characterized by a complex system of shallow, braided channels. Modification of drainage patterns and areas of erosion and deposition are a common and natural occurrence in such an environment. Therefore, minor localized impacts of erosion due to the combined facilities would not have a substantial effect.

# 5.1.4 MINERAL RESOURCES

# 5.1.4.1 VCR Mining Area

- 1. Areas proposed for overburden storage and **protore** stockpiles have been evaluated for their mineral resource potential. Results of this testing indicate an absence of economically recoverable deposits, including potential placer deposits, in those areas.
- 2. If Alternative II were developed (without the highway realignment) the existing Highway 78 could preclude mining of an estimated 2.1 million tons of ore in the VCR mining area. This would represent a substantial loss of mineral commodities, unless the highway were locally realigned.
- 3. Although gold is the primary commodity of interest, a minor amount of silver is also found at the proposed mine site. Assays of ore indicate that no other minerals are present in sufficient quantities to be economically recoverable. The minor amounts of silver which are present would be extracted in processing, along with the gold.

4. No loss of sand or gravel reserves would occur. The VCR mining area is not located within the gravel withdrawn area.

#### 5.1.4.2 Highway 78 Realignment

- 1. The proposed highway realignment corridor has been designed to avoid economic gold mineralization as indicated by extensive exploratory activities.
- 2. Sand and gravel are the only other known mineral resources which would be affected. Due to road construction requirements and right-of-way limitations, the proposed highway realignment would affect sand and gravel resources in three gravel agreement areas which are adjacent to the realignment (see Appendix F).

The agreement areas which could be affected are:

- Section 24 Included in a Free Use Permit held by the City of Brawley.
- The portion of Section 23 lying southeast of the existing Highway 78 Included in a contract where payment is based on the amount of material removed.
- The north one-half of Section 26 Included in a contract where payment is based on the amount of material removed.
- 3. In Sections 23 and 24, abandonment of the existing highway would liberate more gravel withdrawn area than would be required for the realignment. Therefore, no net loss of resources to the agreement areas in Section 23 and 24 would be expected. The net effect to the contract in Section 26 would be a minor reduction in area available for withdrawal (about 7 of the 320 acres).
- 4. In addition to the effect on area available for future sand and gravel recovery, abandonment of the existing highway would result in the need for modification of existing access routes to some agreement areas. This effect would be minor because of proposed mitigation measures discussed in Section 6.1.4.2.

### 5.1.4.3 <u>Cumulative Effects</u>

- Under Alternative II, the existing highway alignment could preclude mining of an estimated 1.0 million tons of ore at the existing Mesquite facility in addition to 2.1 million tons at the VCR mining area (see Section 5.1.4.1). As with the VCR ore reserves, the Mesquite orebody also contains minor amounts of silver. The silver is being extracted along with the gold in processing.
- 2. The VCR mining area would not affect sand and gravel reserves, as it is outside of the BLM gravel withdrawn area. The proposed highway realignment would reduce the current withdrawn area by a few acres, compared to the more than 3,000 acres available for gravel withdrawal.
- 3. GFMC has acquired in fee approximately 1,400 acres of gravel withdrawn area as part of a land exchange, whereby land purchased by GFMC adjacent to an existing homed-toad lizard preserve in the Thousand Palms area was conveyed to the Nature Conservancy. Previously, GFMC had a commercial lease on this 1,400 acres, constituting a reduction of about 30% of the original gravel withdrawn area. Much of the recoverable gravel had previously been extracted from the lease area.

# 5.2 WATER RESOURCES

#### 5.2.1 WATER USE

#### 5.2.1.1 VCR Mining Area

 Water requirements for the proposed VCR project would be small, consisting mainly of water for dust control. The VCR requirement is estimated to be about 100 acre-feet per year, compared to the maximum permitted usage at Mesquite of 4,033 acre-feet per year. Water would be piped from the existing Mesquite storage tank and distribution system to VCR project facilities.

#### 5.2.1.2 Highway 78 Realignment

1. Realignment of Highway 78 would involve an insignificant one-time water use requirement, mainly for dust control and soil compaction during construction.

#### 5.2.1.3 Cumulative Effects

1. A slight increase in water usage would be required at the existing Mesquite facility for processing the additional ore. However, due to better than anticipated processing efficiency at the existing facility, the total water requirement for both Mesquite and VCR is not expected to exceed that originally permitted for the Mesquite project. Twenty years of withdrawal at the permitted rate (4,033 acre-feet per year) will not have a substantial effect on the Amos-Ogilby Basin in which the production well field is located (Mesquite Project EIR/EA 1984).

### 5.2.2 GROUND WATER HYDROLOGY

#### 5.2.2.1 VCR Minin g Area

- As mining progresses, the Vista and Rainbow pits could reach depths of about 450 and 300 feet, respectively. Based on the water level contours shown in Figure 4.6, these depths correspond to depths below the existing ground water table of approximately 200 and 50 feet, respectively. Therefore, some seepage of ground water into the open pits might occur as operations proceed into the saturated zone.
- Calculations by Sergent, Hauskins & Beckwith (1984) estimated that seepage into the Big Chief mine pit at the adjacent Mesquite project would be on the order of 22 gpm (approximately 35 acre-feet per year) when that pit reached its maximum depth of about 400 feet (over 200 feet below the existing ground water table). Based on the same calculations, seepage into the Vista or Rainbow pits should be less than 22 gpm because:
  - Water bearing characteristics of basement rock in the VCR area are expected to closely resemble those of basement rock in the Mesquite project area.
  - The Vista and Rainbow mine pits are not expected to penetrate as far into the existing water table as the Big Chief pit.
  - The areal extent of the portion of the Vista and Rainbow pits which will be below the existing water table is expected to be less than at the Big Chief pit.

- 3. Seepage into the mine pits may result in a cone of depression forming around the pits and a localized lowering of the water table. Because of the small amounts of water present and the low permeability of the basement rock, **drawdown** of the existing water table would not be expected to have a noticeable impact beyond the immediate area of each mine pit.
- 4. Substantial accumulation of water in the mine pits due to seepage below the saturated zone would not be expected because of the relatively limited inflow and the high evaporation rate in the area.

#### 5.2.2.2 Highway 78 Realignment

1. The proposed realignment of Highway 78 would have no effect on ground water. Figure 4.6 shows that the depth to water along the proposed realignment corridor ranges from about 200 to over 300 feet.

#### 5.2.2.3 Cumulative Effects

- Maximum depth of the Big Chief pit at the Mesquite project is expected to be more than 200 feet below the existing water table. As discussed in Section 5.2.2.1, total inflow to the Big Chief pit is expected to be on the order of 22 gpm (Sergent, Hauskins & Beckwith 1984).
   Special dewatering activities, outside of water recovery for dust control, are not expected to be necessary because of the high evaporation rate in the area (Sergent, Hauskins & Beckwith 1984).
- 2. The principle effect of the combined projects on ground water would be a localized lowering of the ground water table at the edges of each pit that penetrates the saturated zone. Because of the low permeability of the geologic materials, the cone of depression would be relatively steep and limited to a relatively small area. Noticeable **drawdown** would not be expected to occur beyond the immediate vicinity of each mine pit.

#### 5.2.3 SURFACE WATER HYDROLOGY

#### 5.2.3.1 VCR Mining Area

- Certain aspects of mine area construction would have the potential to alter infiltration and runoff. These include surface compaction on haul and access roads, filling of minor drainages, the placement of overburden dumps and stockpiles, and the construction of diversion structures to carry storm flows around key project areas to downgradient natural channels.
- 2. Because of the design of haul and access roads (see Section 6.2.3. 1), infiltration characteristics should not be substantially altered from the natural state. Either percolation into the soils or evaporation would be able to eliminate moisture from most precipitation events. Furthermore, the total area of impermeable surfaces which may be constructed (i.e., the mobile equipment repair shop, conveyor footings, and primary crusher slab) is negligible (about 10,000 sq. ft.).
- 3. The only project facilities expected to have a noticeable effect on infiltration would be the overburden and protore storage areas, where a higher than normal percentage of precipitation is expected to infiltrate because of the porous nature of the material. No resulting adverse effects are anticipated.
- 4. Short segments of storm water diversion facilities (dikes and trenches) would be required near the north and east project boundaries. Drainages in these areas would be intercepted by the diversion structures which would redistribute flows into downgradient washes. Only minor diversions of natural drainage patterns would be required in these areas. Substantial impacts due to the diversions are not expected.

#### 5.2.3.2 Highway 78 Realignment

1. Realignment of Highway 78 would produce an impermeable surface of approximately 40 acres, compared to the existing pavement of about 28 acres. However, due to the linear nature of the highway, infiltration characteristics of the general area are not expected to be significantly altered.

2. Existing drainages upgradient of the proposed highway realignment would be intercepted by diversion berms and ditches and channeled across the realigned highway in controlled areas. South of the proposed highway, storm flows would be redistributed into existing washes. The overall effect of the diversion facilities would be a modification of existing drainage patterns such that some small areas might realize a decreased amount of surface flow, while others (downgradient washes into which the diversion structures redistribute storm waters) might realize an increase. The diversion facilities would be designed to minimize the impacts of the redistributed flows (see Section 6.2.3.2).

#### 5.2.3.3 Cumulative Effects

- Potential impacts on surface water hydrology due to the Mesquite project are generally the same as for the VCR mining area, as discussed in Section 5.2.3.1. As with the VCR mine area, most effects to surface water hydrology are minor. The only potentially substantial effects of the combined Mesquite and VCR projects and the highway realignment would be the alteration of natural drainage patterns due to the diversion structures.
- 2. In the shallow braided washes of an alluvial fan or bajada environment, alterations in drainage patterns are a common and natural occurrence. Because of the design of the diversion facilities, which minimizes the alteration of surface flows to the extent practical (see Section 6.2.3.1), and because of the existing natural environment in which drainage pattern alterations are common, substantial adverse effects would not be expected to result from the combined projects.

# 5.2.4 GROUND WATER QUALITY

#### 5.2.4.1 VCR Mining Area

 Possible effects of the VCR project on ground water quality include the potential for degradation by: (1) infiltrating precipitation percolating through overburden and protore storage piles, (2) mine pit water which, due to high evaporation, may accumulate a high concentration of dissolved solids after abandonment, (3) oxidation of minerals due to the localized lowering of the ground water table, or (4) accidental fuel spillage.

- Localized lowering of the ground water table or percolation through overburden stockpiles would not be expected to significantly alter ground water quality. Extensive testing has been performed on ore, protore, and overburden material from both above and below the oxidized zone at the adjacent Mesquite mine. Results are summarized in Table 5.1, Summary of Results Analysis of Mesquite Mine Ore, Protore, and Overburden, and indicate that the material is slightly alkaline in nature and possesses no acid-generating potential. Also, indicated concentrations of priority pollutant metals are relatively low, well below their respective State standards. Material to be removed from pits in the proposed VCR mining area is expected to display similar characteristics.
- 3. Over time, inflow of ground water to the Vista and Rainbow pits could cause a buildup of dissolved solids and potentially precipitate in the immediate area of the mine pit. Since a cone of depression would form around the pit where it intersects the present water table (see Section 5.2.2.1), local flow of ground water would be toward the pits from each direction. Therefore, if dissolved solids build up in the ground water, the build-up would be localized to the immediate vicinity of the pit itself.
- 4. Fuel for the VCR Mining Project equipment would be taken from storage facilities at the adjacent Mesquite project. Since storage tanks are not proposed for the VCR project, a large fuel spill could not occur as a result of project implementation. However, minor fuel or oil spillage could potentially occur as a result of an accident such as a rock puncturing a fuel tank or hydraulic line on a piece of equipment. If accidental minor spillage of fuel or oil were to occur within the mine pit after the pit proceeds below the natural ground water table, the induced cone of depression would preclude degradation in the surrounding area, therefore minimizing the potential effect. If accidental minor spillage of fuel or oil were to occur outside the mine pit, or within the pit prior to interception of the water table, the probability of the spill ever reaching ground water is extremely remote. The evaporation/precipitation ratio in the project area and the hydrologic and geologic conditions at the site, including depth to ground water and low permeability and moisture content in the unsaturated zone, combine to form an effective deterrent to downward percolation. Therefore, the potential for such a spill to affect ground water quality is minimal.

#### **TABLE 5.1**

# SUMMARY OF RESULTS ANALYSIS OF MESQUITE MINE ORE, PROTORE, AND OVERBURDEN

Γ	DADAMETED	MAXIMUM		MINIMUM		AVERACE	TTL C ⁽¹⁾
	FARAMETER	VALUE	SAMPLE ID.	VALUE	SAMPLE ID.	AVERAGE	TILL
	pH _	8.8	SM-808 314-335	7.1	SM-129 247.5-265	7.89	
	Neutralization Potential (tons CaCO ₃ /1,000 tons of material)	140	SM-790 270-290	35	SM-564 252-272	63.6	
	Potential Acidity (tons CaCO ₃ /1,000 tons of material)	38	SM-234 425-445	<0.6	SM-792 310-340	14.4	
	Net Acid/Base Potential (± tons CaCO ₃ /1,000 tons of material)	+129	SM-790 270-290	+9	SM-234 425-445	+49.2	
	Antimony	Conce	entration in each s	ample was be	low the .25 mg/k	g detection limit.	500
	Arsenic	270	SM-798 210-295	3.70	SM-564 252-272	114.9	500
	Barium	86.0	SM-36 215-237.5	<10.0	SM-128 247.5-265	42.6	10,000
	Beryllium	0.55	SM-828 360-380	<0.25	Ø	<0.28	75
	Cadmium ⁽⁵⁾	13.0	SM-828 380-400	<0.25	SM-456 230-265	2.3	100
g/kg	Chromium	140	SM-460 222,5-242,5	49.0	SM-828 380-400	83.8	500
in m	Chromium VI	0.27	SM-140 270-300	<0.02	(3)	<0.069	500
ations	Cobalt	26.0	SM-460 222.5-242.5	6.5	SM-791 300-330, SM-140 270-300	12.15	8,000
centra	Copper	180	SM-234 425-445	14	SM-790 270-290	76.3	2,500
(Con	Lead	21.0	SM-790 270-290	7.5	SM-456 230-265	13.09	1,000
METALS (	Мегсшгу	0.44	SM-787 280-300	0.02	SM-828 360-380	0.144	20
	Molybdenum	22	SM-36 215-237.5, SM-234 425-445	5.0	SM-790 270-290, SM-828 380-400	9.5	3,500
	Nickel	27.0	SM-460 222.5-242.5	2.5	SM-564 252-272, SM-791 300-330	9.44	2,000
	Selenium	0.56	SM-792 310-340	<0.25	(4)	<0.283	100
	Silver	1.50	SM-828 360-380	0.55	SM-456 230-265, SM-564 252-272	0.876	500
	Thallium	Concentration in each sample was at or below the .25 detection limit.					700
	Vanadium	42.0	SM-828 360-380	16.0	SM-128 247.5-265	29.41	2,400
	Zinc	130	SM-787 280-300	19.0	SM 456 230-265	68.1	5,000

(1) Total Threshold Limit Concentration for Hazardous Waste, California Administrative Code Title 22.
(2) Concentrations in approximately 82% of the samples were at or below the .25 mg/kg detection limit
(3) Concentrations in approximately 65% of the samples were at or below the .02 mg/kg detection limit
(4) Concentrations in approximately 88% of the samples were below the .25 mg/kg detection limit
(5) Analysis of one sample yielded an anomolus result of 190 mg/kg. This samplewas tested for soluble cadmium with a result of 0.41 mg/L. A second composite sample from the same borehole and depth interval yielded a total cadmium concentration of 0.2 mg/kg.

- Not Applicable

#### 5.2.4.2 Highway 78 Realignment

1. As can be seen in Figure 4.6, depth to ground water varies from about 200 to over 350 feet along the highway realignment corridor. Because of the depth to ground water and the low permeability of the geologic materials, the proposed highway would have no effect on ground water quality.

#### 5.2.4.3 Cumulative Effects

 As discussed in Sections 5.2.4.1 and 5.2.4.2, no significant impacts to ground water quality would be expected to result from: (1) precipitation percolating through the overburden and protore storage areas, (2) oxidation of minerals due to localized lowering of the water table, or (3) accidental minor fuel spillage. Therefore, the only potential impact to ground water quality appears to be the possibility of a build-up of dissolved solids in proximity to the Mesquite and VCR mine pits. Since the ground water gradient would form a cone of depression at the edge of each mine pit, local ground water flow would be toward the pits from each direction. Therefore, impacts to ground water in areas away from the pits is not expected.

#### 5.3 ATRRESOURCES

#### 5.3.1 FUGITIVE DUST IMPACTS

#### 5.3.1.1 VCR Mining Area

- Proposed activities at the VCR mining area would create substantial volumes of fugitive dust emissions. As VCR mining activities increase, however, the existing Mesquite activities would decrease, so the net increase in the area would not be substantial. Based on observations at the Mesquite project, and monitoring at two onsite particulate monitoring stations, observable degradation in ambient air quality or visibility is not anticipated.
- 2. A detailed fugitive dust inventory for project-related sources is being developed. Modeling will be performed to assure that Local, State, and Federal standards are not exceeded at locations of potential public access. Permits to construct and operate the VCR mining project would be

obtained from the Imperial County Air Pollution Control District (APCD) based on analyses which consider prior **onsite** monitoring data, the emissions inventory, and dispersion modeling. These permits would include requirements to control dust generation at the source locations.

#### 5.3.1.2 Hiehway 78 Realignment

1. Some dust would be generated during construction of the realigned highway, **primarily** from the hauling of equipment on unpaved roads. Once the new road is paved, dust generation should be minimal.

# 5.3.1.3 Cumulative Effects

1. The VCR and Mesquite mining operations are planned to be managed so that the continuous production rate would be relatively constant. Therefore, the combined operations would not result in a substantial amount of dust in comparison to potential emissions from either project separately.

# 5.3.2 FUEL USE EMISSIONS

# 5.3.2.1 VCR Mining Area

 Mobile sources, such as drilling and loading equipment, haul/dump trucks, and personnel vehicles, would generate fuel use emissions for the VCR project. As production at the VCR Mining Project increases, the increased emissions due to these fuel use sources would be mostly offset by corresponding decreases in activities at the Mesquite project. The net change would not be substantial.

#### 5.3.2.2 Highway 78 Realignment

1. Some emissions from earth moving and paving activities would occur during construction. These emissions would generally be a long distance from potential public receptors. 2. After realignment, truck and automobile emissions would increase due to the approximately 1.2 miles of additional highway length. Considering that the most frequently traveled minimum distance along Highway 78 in the eastern Imperial County area is between Brawley and Blythe, a distance of about 90 miles, emissions from this added length of road would not be significant.

#### 5.3.2.3 Cumulative Effects

 The cumulative effect to fuel use emissions would be a small, incremental increase from that which occurs under present conditions. Increases are not expected between uses at the VCR and Mesquite projects, and increases due to the highway realignment would not be significant. Therefore, no substantial cumulative effects are anticipated.

#### 5.4 VEGETATION

#### 5.4.1 VCR MINING AREA

#### 5.4.1.1 Characteristic Species

Most of the vegetation resources within the VCR mining area would be lost by construction of mine pits, overburden piles, and haul roads. The entire area is of the creosote bush scrub community, the two most common species being the creosote bush and ironwood.

A small population of several species of cacti also would be affected (LaPré 1987). However, none of the potentially affected species represents unique or exemplary stands, assemblages, or densities.

#### 5.4.1.2 Sensitive Species

<u>Calliandra eriophylla</u>, or fairy duster, is the only sensitive plant species found within the VCR mining area. This plant is considered "Rare in California, Common Elsewhere" by the California Native Plant Society. Populations of fairy duster are found across the western two-thirds of the VCR mining area which would be developed with mine pits, haul roads, overburden piles and, perhaps, mining-related structures.

2. The project would reduce the populations in Sections **3**, **4**, **9**, and 10 to the extent that project facilities are located there. Since vigorous natural revegetation of fairy duster was noted in areas where previous mining operations have disturbed surface soils, the local impact over the long term is not expected to be substantial.

## 5.4.1.3 Vegetation/Surface Water

- Short segments of storm water diversion facilities (dikes and trenches) would be required near the north and east VCR project boundaries. Drainages in these areas would be intercepted by diversion structures which would redistribute flows into downgradient washes. Only minor diversions of natural drainage patterns would be required, so effects to downstream vegetation and habitat are expected to be negligible.
- 2. Further, the existing system of braided washes within the VCR mining area naturally changes with some frequency. Dead trees and silt block channels, causing runoff to divert to other channels. Any change in flow, however, is not likely to be substantial, as there is little difference between vegetation in abandoned and currently active channels. This is likely because vegetation is primarily sustained by local precipitation rather than by surface flows from upgradient areas (Mesquite Project EIR/EA 1984).
- 3. Therefore, it is expected that the action of diverting water from existing washes for drainage control would not substantially alter existing vegetation. The effect would be similar to ongoing and naturally occurring changes within the area's braided wash system.

# 5.4.2 HIGHWAY 78 REALIGNMENT

# 5.4.2.1 Characteristic Species

1. The proposed highway realignment would affect about 125 acres of vegetation, consisting virtually exclusively of creosote bush scrub. Due to its sparseness within the highway corridor, generally common occurrence elsewhere, and the extensive area in which this vegetation type occurs, the effect of the highway realignment would be considered negligible.

As designed, the highway would cross four washes, which support minor stands of honey mesquite and ironwood. It is estimated that about 40 trees would be removed to accommodate the realignment. Some vegetation would likely reestablish in disturbed areas after construction activities cease, particularly the drainage channel area adjacent to the realignment.

#### 5.4.2.2 Sensitive Species

1. The vegetation survey did not reveal any fairy duster to be present within the highway study corridor. Therefore, it is anticipated that the highway realignment would not affect local populations of fairy duster.

#### 5.4.2.3 Vegetation/Surface Water

- 1. Existing drainages upgradient of the proposed highway realignment would be intercepted by diversion structures and channeled across the realigned highway in controlled areas. South of the highway, storm flows would be redistributed into existing washes. The overall effect would be some minor alteration of flow patterns, although the diversion facilities would be designed to minimize such effects (see Section 5.2.3.2).
- 2. The effect of such modification is not expected to be significant, as similar changes occur naturally within braided wash systems such as the one traversed by the highway realignment. Further, local vegetation is sustained primarily by precipitation rather than flood water, so a minor alteration of the drainage pattern would not be expected to affect the availability of water.

#### 5.4.3 CUMULATIVE EFFECTS

- With an estimated vegetative cover of about 5%, development of the Mesquite and VCR project areas would affect a total of about 200 acres of creosote bush scrub over the approximate 20-year operational period. After cessation of operations, natural revegetation could occur over much of the disturbed area.
- 2. The two projects also would negatively impact several species of cacti.

- 3. Almost all of the existing fairy duster within the boundaries of the two projects would likely be affected. However, natural revegetation has been noted within the boundaries of both projects in areas that had been disturbed by pre-development mining activities. Therefore, it is expected that some natural reestablishment of the species may occur after cessation of operations.
- 4. The effects of modifications to local drainages for the VCR and Mesquite projects are expected to be limited primarily to the actual development areas. The downstream consequences of drainage diversions are expected to be similar to the naturally occurring changes of a braided wash system.

# 5.5 WILDLIFE

# 5.5.1 VCR MINING AREA

# 5.5.1.1 Characteristic Species

- Development of the proposed VCR project facilities and the concurrent increase in the level of human and equipment activities would reduce wildlife and wildlife habitat within the mining area. Losses would be greatest in the braided washes with taller, dense? vegetation that is utilized by a number of resident and migratory bird species and other animals. On a regional scale, the area affected is estimated to represent less than 3% of the comparable desert area in southeastern Imperial County east of the Algodones Dunes.
- 2. A secondary impact, although difficult to quantify, consists of habitat fragmentation and interruption of wildlife movement patterns. Wide-ranging animals that would seem to be most susceptible to this potential effect are coyote, kit fox, and burro deer, although less mobile forms also could be affected. On a regional scale, however, these impacts would not be substantial.

# 5.5.1.2 Species of Special Concern

1. Two species which experts feel are declining through all or portions of their ranges are the black-tailed gnatcatcher and desert tortoise, which are observed to be present on the project site.
- 2. The population of the black-tailed gnatcatcher within the VCR mining area appears to be large, utilizing wash areas as habitat. At this time, due to the apparent wide distribution of this species on the California deserts, the habitat losses at the VCR mining area would not appear to be substantial.
- 3. No affect on the Spadefoot toad is anticipated. None of the species was found during the wildlife inventory. Further, the washes within the VCR mining area originate locally. Because of the small contributing watershed, the potential for pooling of water to the extent necessary to provide habitat for the Spadefoot toad is low.

#### 5.5.1.3 Desert Tortoise

- 1. Desert tortoise habitat would be affected by the proposed project. Tortoise densities within the VCR mining area are in the lowest of the ranges as designated by the BLM, 0 to 20 per square mile. For the life of the project, virtually all of the VCR mining area would be lost as potential tortoise habitat. Partial recovery of the area could occur subsequent to operations. Similarly, project development could result in direct losses of individuals. In addition, some minor degradation of habitat quality might occur adjacent to the project site as a result of increased human activity. A minor impact would accrue from introducing paved access to areas previously accessible by a number of unpaved roads and washes.
- 2. In view of the low tortoise density within the mining area, which is comparable to or less than the adjacent Mesquite project, potential impacts to the desert tortoise represent a small impact to the species and its habitat as a whole. Nevertheless, in view of the special concern for this species, certain mitigation measures would be enacted.

### 5.5.2 HIGHWAY 78 REALIGNMENT

#### 5.5.2.1 Characteristic Species

 There are anticipated to be some impacts to wildlife and wildlife habitat due to construction and operation of the proposed highway realignment. Local populations of larger predators, such as kit fox and coyote, would be reduced by collisions. Also, there may be a degradation of habitat quality within the 120-foot right-of-way as a result of increased human activity. The area affected by the new highway, primarily the 40 acres which would be paved, would be partially offset by the abandonment of existing Highway 78 between the western boundary of the Mesquite project and the intersection with the proposed new alignment,

#### 5.5.2.2 Species of Special Concern

- 1. The species of special concern which could be affected by the highway realignment are the kit fox, coyote, black-tailed gnatcatcher, and the desert tortoise.
- 2. The black-tailed gnatcatcher, a species of bird, is not expected to be significantly affected. It utilizes the wash areas as habitat, and the majority of the road is planned to be constructed outside of the wash areas. Therefore, it *is* anticipated that this species would not be adversely affected by the proposed realignment.
- 3. No affect on the Spadefoot toad is anticipated. None of this species was found during the wildlife inventory, and most of the road would be constructed outside of wash areas which could provide appropriate habitat.

#### 5.5.2.3 Desert Tortoise

- 1. Although low, the population of desert tortoise along and adjacent to the proposed highway would be affected, including elimination of habitat within the approximately 120-foot disturbed area of the construction corridor. Over time, the impact of individual losses by collisions could have more impact than the loss of habitat. Studies suggest that populations may be reduced for distances of up to one-half mile on either side of a paved roadway (Nicholson 1978).
- 2. However, because of the low tortoise densities involved along the highway realignment corridor, potential impacts to the desert tortoise would represent a small and insubstantial impact to the species and its habitat as a whole.

#### 5.5.3 CUMULATIVE EFFECTS

 The extent to which characteristic species are affected relates to the extent and duration of habitat disturbance and human activity. It is anticipated that a total of about 200 acres of habitat would be disturbed over the life of the two projects. This disturbance would be incremental, reaching its maximum extent near the end of the anticipated 20-year operational period. Species utilizing this area would be deprived of habitat and disturbed by the presence of human activity over this period.

- 2. The cumulative effect to the desert tortoise would involve disruption of habitat and losses of individuals within the boundaries of the two projects and, under Alternative I of the VCR project, along the highway realignment corridor. Virtually all of this area contains low estimated populations of 0 to 20 individuals per square mile. This results in a small incremental contribution to the cumulative loss throughout the range of the tortoise. Extensive exploration in the area by GFOC has shown that the potential for development of additional mines in the land open to mineral location is very low. Therefore, other incremental disturbance to areas outside of the VCR study area is not anticipated.
- 3. If Highway 78 were realigned, the existing roadway between the Mesquite project boundaries and the intersection with the new highway alignment would be abandoned, and the pavement outside of areas not to be used would be removed. This action would partially offset potential impacts associated with the new highway.
- 4. Overall, based upon the site-specific inventories of the project area, effects to wildlife would not be substantial. For this project, site-specific inventories and these analyses indicate that the level of impact would be minor on a regional basis.
- 5. At the completion of the operational period, the absence of human activity would enable local wildlife to resume utilization of the area. This utilization would likely increase as vegetation becomes reestablished and improves as habitat.

### 5.6 VISUAL RESOURCES

#### 5.6.1 INTRODUCTION

 In order to assess the potential visual impacts of the proposed project, views of the project site were photographed from various points along both the existing and proposed Highway 78 alignments. A reference map providing the location, direction, and reference number for each of these "viewpoints" is shown in Figure 5.1. Computerized, scaled, photo-simulations were then made to depict future views with the project in place, as it would be seen from each



viewpoint. The photo-simulations were prepared by EDAW, Inc., of San Francisco, using a Computer-Aided Drafting and Design (CADD) system. Information on existing topography of the site and project development plans was digitized by computer to obtain accurate physical configuration and elevation input.

- 2. The viewpoints represent locations from where major project features would be visible and from distant locations where the project **first** comes into view. Each figure shows both the existing view and the projected view, with development of the VCR project. Views of the completed VCR project are depicted at full project development (i.e., about 20 years). Where appropriate, the project views also indicate the overburden piles and/or heap leach pads for the full buildout configuration of the adjacent Mesquite project.
- 3. Other than long-range views from Hugh Osborne Park in the Algodones Dunes, primary opportunities to view the project would be from public roads, principally Highway 78. For westbound travelers, limited visibility of the VCR project may begin as far east as the intersection of Highway 78 and Ogilby Road. However, unobstructed views would not occur until westbound travelers were within approximately three-fourths of a mile of the project. Views for these westbound travelers would be possible until past the western boundary of the site. For eastbound traffic, visibility would begin at Osborne Park and be possible until persons had passed the eastern boundary of the project site.
- 4. In general, the most evident visual features of the proposed VCR project would be landform alterations, primarily the overburden storage piles. Due to the prevailing relatively flat topographic conditions of the VCR mining area, and berms which would be constructed adjacent to the road, the open mine pits would generally not be visible to the traveling public on either the existing highway or the proposed realignment. With the exception of an overpass being considered for Alternative II (without highway realignment), proposed buildings and other structural features of the VCR project would not be prominent, as they would be located distant from the highway and would be at least partially blocked by existing or proposed landforms.
- 5. Since the primary evaluation of visual impacts is related to views from the highway, this section does not follow the normal discussion sequence of "VCR Mining Area" and then "Highway 78 Realignment." Instead, the discussions relate to visual impacts for Alternative I (Section 5.6.2) and then Alternative II (Section 5.6.3). Because the Mesquite project impacts

would be unavoidably combined with the VCR impacts, a special section for combined effects is not provided in this case. The VCR Project would basically represent an addition to the same type of visual impact resulting from the Mesquite Project. Because the two projects are adjacent, the cumulative impact would be less than for two equivalent projects in separate, undisturbed areas.

#### 56.2 ALTERNATIVE I

#### 5.6.2.1 <u>Viewpoint #1</u>

- Elements of the VCR project would first come into view for motorists traveling eastbound on Highway 78 near Hugh Osborne Park, at a distance of about 11 miles from the site, when both the VCR and Mesquite overburden piles would come into view (Figure 5.2, Viewpoint #1). As shown in the top photo, (Existing), the largest overburden stockpile forms a short, light-colored line in the center of the photo, just below the horizon. In the center of the bottom photo (Proposed), the combined VCR and Mesquite stockpiles at year 20 would form a more prominent, light-colored line. The left approximately one-third of the piles shown are Mesquite project related, while the right approximately two-thirds would be VCR project related.
- 2. From this view, the lighter color of the overburden material in relation to the surrounding weathered rock and soil, and the generally featureless form of the piles in relation to the rugged topographic backdrop of the Chocolate Mountains, would cause the combined projects to result in a low contrast to the existing landscape. However, as can be seen in the photo, the view would still be dominated by the light-colored, rolling topography of the Algodones Dunes (foreground) and the contrasting dark, rugged topography of the Chocolate Mountains (background). Considering the view-related landscape modifications from the Mesquite project, the VCR project would represent a low contrast to the view from the Osborne Park area.

#### 5.6.2.2 <u>Viewpoint #2</u>

 For eastbound traffic, the highway realignment would begin about two miles northeast of Glamis (about 5 miles southwest of the proposed mining area). From this vantage point, overburden piles for both projects, and leach pads for the Mesquite project, would be visible in the distance (Figure 5.3, Viewpoint #2). The abandoned highway alignment would not be visible because a berm would be placed about 200 feet beyond the beginning of the realignment, and the pavement would be removed.



EXISTING: View eastward from Hugh Osborne Park, about 11 miles west of the proposed mining area. The existing Mesquite project overburden stockpile is visible as a light colored line (center) against the dark backdrop of the Chocolate Mountains.



**PROPOSED:** At year 20, stockpiles from the combined Mesquite and VCR Projects would be more visible. They form the light colored line just below the horizon in the center of the photo.

FIGURE 5.2

#### VIEWPOINT #1 (BOTH ALTERNATIVES)

VCR MINING PROJECT



EXISTING: View northeast from the west end of the proposed highway realignment (about 5 miles from the proposed mining area). The existing road bends to the left and disappears into the flat topography. Existing Mesquite overburden stockpiles can be seen as a light colored line below the horizon on the left of the photo.



PROPOSED: The realigned highway bends to the right and disappears into the flat topography. VCR project stockpiles are partially concealed by existing vegetation (center). The Mesquite project stockpiles at the completed height are seen on the left side of the photo.



2. As shown in the "Existing" photo, views from this point are dominated by the surrounding desert, with the Chocolate Mountains in the background and the existing Mesquite project overburden piles visible below the horizon. At year 20, the Mesquite stockpiles are substantially larger, as seen at the left side of the "Proposed" photo. The VCR stockpiles, partially shielded from view by existing vegetation, are seen modifying the horizon line at the center of the field of view. The Chocolate Mountains backdrop still dominates the horizon to the left and right. However, stockpiles from both projects, with their lighter color, smooth texture, and fl at-topped forms, result in a low modification to the characteristic landscape.

### 5.6.2.3 <u>Viewpoint #3</u>

- The first opportunity for eastbound travelers to see the VCR project from a close perspective would be about two miles south of the project boundary. This view is shown in Figure 5.4 (Viewpoint #3). Before that, views would be limited by distance (in the early stages of the project) and by the presence of the Mesquite heap leach pads. The existing view from this vantage point is dominated by a vast, barren expanse of desert pavement in the foreground, vegetation in the middleground, and the Chocolate Mountains in the background.
- 2. As shown in the photo simulation of the proposed project, the VCR overburden stockpiles would be visible in the background. This would be due mainly to their lighter color contrasting against the Chocolate Mountains and the dark colored desert pavement foreground. Although the piles are visible, the vegetation in the intervening distance effectively modifies their featureless form and texture and provides partial screening to reduce the overall visual impact. Because of the intervening distance and vegetation, modification to the natural landscape from this view is low to moderate.

### 5.6.2.4 Viewpoint #4

1. Figure 5.5 shows a view from the realigned highway toward the heap leach pads for westbound drivers. The existing view is dominated by the desert pavement in the foreground, with intervening vegetation, and the Chocolate Mountains and foothills in the background.



**EXISTING:** View northward from the proposed highway realignment about 0.4 of a mile south of the Mesquite processing area. Mesquite coarse ore stockpile dust cap is visible as a light colored object just below the horizon on the left side of the photo.



PROPOSED: The realigned highway is shown in the foreground. VCR stockpiles (center and right) are partially concealed by existing vegetation. The Mesquite project heap leach piles are seen below the horizon at the left side of the photo.

FIGURE 5.4 VIEWPOINT #3 ALTERNATIVE I VCR MINING PROJECT ENVIRONMENTAL SOLUTIONS, INC.



EXISTING: View northwest from the proposed highway realignment about one mile east othe Mesquite processing area.



PROPOSED: Mesquite project leach pads arc partially concealed by vegetation and form the left two-thirds of the horizon line. Brownie Hill and the Chocolate Mountains are still visible, providing topographic variety to the horizon. VCR project facilities are not visible in this field of view.

FIGURE 5.5

#### VIEWPOINT #4 ALTERNATIVE I

VCR MINING PROJECT

2. When the leach piles are expanded to reach their permitted configuration, as shown in the "Proposed" photo, they would be visible from this location, although the level of contrast to the characteristic landscape would be low. The leach pile material is darker in color than overburden material and blends well with the existing environment. Further, the intervening vegetation effectively screens and visually modifies the featureless form of the flat-topped heap leach piles. The VCR project features would not be visible within this field of view.

### 5.6.2.5 <u>Viewpoint #5</u>

- The closest potential view of the VCR project area for Alternative I is shown in Figure 5.6. As shown in the "Existing" setting, the view is dominated by the sparsely vegetated and relatively featureless desert in the foreground and middleground and the rugged peaks of the Chocolate Mountains in the background. Some evidence of minor previous land-disturbing activities can be seen on the desert pavement.
- The "Proposed" photo simulation illustrates the visual impact which would occur as a result of project implementation. Most of the natural scenery within the field of view would be altered in this manner for views on the one side of the highway for approximately the eastern two miles of realigned Highway 78.
- 3. Views into the mine pit would be would be prevented by placement of berms, as seen in the middleground. However, stockpiles would form much of the horizon from this view, and the natural form and colors of the existing setting would be replaced by the lighter color and streaked texture of the overburden stockpiles. Their flat tops and sides, sharp angles, and relatively featureless configurations would contrast with the surrounding environment. The sparse vegetation would provide some screening of the lower portions of the piles. Because views on one side of the highway realignment would be virtually unchanged, the overall effect would be a moderate modification to the characteristic landscape.

#### 5.6.2.6 <u>Viewpoint #6</u>

1. For travelers westbound on Highway 78, the VCR project would **first** come into view from about three miles northeast of the site. However, due to the screening effect of intervening



**EXISTING:** View northwest from southeast comer of the proposed mining area at the pro] realignment. The Mesquite project coarse ore stockpile dust cap is seen as a small white ob on the far left. Existing 92 kV power lines are seen in the upper left of the photo.



**PROPOSED:** VCR overburden stockpiles form much of the horizon in this view. A lowb roadway prevents view into the Vista mine pit.



area at the proposed high way mall white object at the horizon oto.



viev. A low berm parallel to

FIGURE 5.6

### VIEWPOINT #5 ALTERNATIVE I

VCR MINING PROJECT

topography, clear views of the project when approaching from the east would not be visible until about three-fourths of a mile northeast of the site. From that point, the VCR overburden piles would be visible, as depicted in Figure 5.7. As can be seen in the figure, the "Existing" view is that of a natural setting, with the eye drawn to the conical shape of a small hill, the primary element of interest in a view otherwise dominated by flat topography and sparse vegetation.

2. Without the VCR project, the Mesquite overburden stockpiles at year 20 would be clearly visible to the right of the small hill in the center of the photo. With the VCR project, that view would be completely obscured by the three overburden piles shown on the right in the "Proposed" photo simulation. The texture and color of the VCR project overburden piles would contrast with the natural surroundings, and their size would create the perspective of flat-topped hills. Intervening vegetation and the conical shaped hill would provide some visual interest and screening, and possibly draw some attention away from the man-made features. From this view, however, there would be a moderate to high change to the existing landscape.

### 5.6.2.7 Highway 78 Realignment

1. Views of the proposed highway realignment would occur only from elevated areas a substantial distance from the road. This would primarily be from Hugh Osborne Park, about 11 miles southwest of the project area (see Figure 5.2, Viewpoint #1). In general, the actual highway realignment would have minimal visual impact, as it would primarily follow natural grade and would have relatively flat sideslopes.

## 5.6.3 ALTERNATIVE II

1. Figures 5.8 to 5.10 (Viewpoints **#7**, **8**, and 9) illustrate views which would be realized if the highway were not realigned. These are all taken from existing Highway 78, which has been identified as the primary visual receptor. Visual impacts would be greater from the existing highway than from the proposed realignment because: (1) the Mesquite and proposed VCR project activities would be near the existing highway for a greater distance than the proposed realignment, and (2) mining activities and facilities would occur on both sides of the existing highway, which bisects both project areas, but would be confined to only one side of the proposed realignment.



EXISTING: View southwest from the east end of the proposed highway realignment (at the proposed mining area). The existing highway turns to the right in front of a small hil provides topographic variety to the relatively flat surroundings.



PROPOSED: VCR overburden stockpiles form most of the horizon line. The view of the overburden piles which would be from this vantage are blocked by the VCR piles. T turns left, in front of the existing hill.



ment (about 0.5 mile east of small hill (center) which



icw of the Mesquite project piles. The realigned highway

FIGURE 5.7

#### VIEWPOINT #6 ALTERNATIVE |

VCR MINING PROJECT



**EXISTING:** View west from the existing highway within the proposed VCR mining area (Alternative II). The Mesquite project coarse ore stockpile, dust cap, and conveyor can be seen on the horizon line near the renter of the photo. The level top of the main Mesquite stockpile is visible on the horizon near the right side.



**PROPOSED:** VCR project stockpiles dominate the view on both sides of the highway. From this vantage point, the VCR overburden pile on the right blocks the view of the Mesquite overburden stockpiles which would otherwise be visible at year 20. A low berm, seen in front of the left stockpile, blocks the view into the Rainbow Pit.





**EXISTING:** View southeast over the proposed Vista pit area from within the proposed VCR (Alternative II). Cargo Muchacho Mountains are visible in the background.



PROPOSED: Overburden stockpiles form most of the horizon, although the Cargo Muchach still visible in the background near the center of the photo. A berm (left to right) blocks views



Muchacho Mountains are cks views into the pit.

FIGURE 5.9

#### VIEWPOINT #8 ALTERNATIVE II

VCR MINING PROJECT



**EXISTING:** View east from the existing highway immediately west of the proposed mining existing Mesquite project access road intersection is seen at left-center of photo.



**PROPOSED:** VCR overburden stockpiles dominate the view on both sides of **the** highway. The (shown at left-center) or an underpass may also be built under this alternative (Alternative II).



ed mining area. The



highway. The overpass native II).

FIGURE 5.10

#### VIEWPOINT #9 ALTERNATIVE II

VCR MINING PROJECT

- 2. Figure 5.8 (Viewpoint #7) illustrates how overburden piles would be prominent on both sides of the highway as westbound motorists enter the VCR mining area and pass by the Rainbow pit. Figure 5.9 (Viewpoint #8) illustrates the view to the south, as would be seen by a motorist adjacent to the Vista pit. As shown in these figures, the pits would not be visible from automobile eye level because of berms which would be constructed between the highway and the pit. The overburden piles and the berms, however, would be readily visible. Because of the minor amounts of vegetation in these areas, and the proximity of the pits and piles to the existing highway, views for motorists within the proposed mining area would be dominated by the overburden piles and berms, which would create a high level of change to t'he existing landscape.
- 3. Figure 5.10 (Viewpoint #9) illustrates the view eastward from just outside the western project boundary. The existing Mesquite access road is seen near the left-center of the photo. The existing view is primarily of the surrounding, sparsely vegetated desert pavement and the dark shapes of the low, rounded hills which form the horizon. In the "Proposed" project photo simulation, the horizon is obscured by the VCR project overburden stockpiles and a low berm which blocks views into the Vista Pit. A mine equipment overpass may be constructed over Highway 78 as shown. In the "Proposed" photo, the view is dominated by the texture and form of the overburden stockpiles. However, in light of the relatively featureless existing landscape and absence of vegetation, the main impact is the effect of the overburden piles which represent a high level of change to the characteristic landscape.
- 4. It is likely that, to many, close views of the mining facility, such as those shown in Figures 5.8, 5.9, and 5.10, would be considered of interest rather than being perceived as an adverse visual impact. However, with regard to modifications of the existing landscape and view, modifications to views from within the mining area would be considered substantial. For the approximately 3.5 miles of Highway 78 which would pass through the Mesquite and proposed VCR projects, the views to both sides of the highway would be dominated by the overburden stockpiles and other mine facilities, such as haul roads and heap leach pads. These close-up views would result in a high contrast with the natural environment outside of the project areas.

#### 5.6.4 SUMMARY

- 1. In general, distant views of modifications to the characteristic landscape due to development of the VCR project would be low and would not have a substantial overall effect. As the project area is approached, modifications to the basic form, line, color, and texture of the natural setting would become progressively more noticeable. However, these modifications are not generally dominant, except for views from within the project area. Overall, the visual effect of the VCR project would not be significant. It would add to adjacent, previously permitted and similar visual disturbances of the Mesquite project.
- 2. Based on the visual analysis, it is anticipated that the primary features of the VCR project would generally meet the Class III standards for BLM visual resource management. This standard is effective in the American Girl Wash scenic quality unit which extends south from the existing highway. The proposed highway realignment primarily traverses this unit, and it is from the realigned highway that most of the public would view the project. It is not anticipated that the mine pits and overburden stockpiles which are located in the Chocolate Mountains Bajada unit north of the existing highway would meet the Class II standard which is in effect there. However, under Alternative I, this area would not be readily visible to the public because of the location of the proposed highway realignment.

### 5.7 CULTURAL RESOURCES

### 5.7.1 VCR MINING AREA

1. The 12 identified sites and 11 isolated artifact occurrences within the VCR mining area would be adversely affected by the proposed project.

### 5.7.2 HIGHWAY 78 REALIGNMENT

1. The seven identified sites and eight isolated artifact occurrences along the proposed highway realignment corridor would be adversely affected by highway construction and operation.

### 5.7.3 CUMULATIVE EFFECTS

- For cultural resources, an important beneficial effect of development of the Mesquite and VCR projects is the increase in knowledge of the resources found in the vicinity of the two projects. This increase in knowledge is the result of the inventories which have been conducted in response to State and Federal regulations. This is especially true in the area south of the VCR mining area and proposed highway realignment known as the Singer Geoglyphs Area of Critical Environmental Concern (ACEC). Extensive archaeological inventories previously conducted in support of the Mesquite project resulted in relocation of the ACEC to its present boundaries and correct location of the resources within its boundaries (see Figure 4.7).
- 2. The archaeological mitigation program at Mesquite resulted in 17 sites being lost to mitigation by collection. Twenty-two other sites were lost to construction without further data recovery because of their insignificance.
- 3. For the VCR project, there will be new data recovery at seven sites. One geoglyph site within the VCR mining area will be preserved **from** future impacts. Eleven sites will not be further documented beyond their original recording.

## 5.8 LAND USE

## 5.8.1 VCR MINING AREA

- The land area which initially would be disturbed or otherwise directly affected by development of the proposed mining area and construction of ancillary facilities would amount to approximately 500 acres. It is estimated that an additional area of about 50 acres would be disturbed in each successive year during project operations. Total area disturbed within the mining area over the life of the VCR project (about 20 years) would amount to about 1,500 acres.
- 2. The VCR mining area would represent a continuation of and be consistent with past and present gold mining activities in the area. VCR would be contiguous to the east of the operating Mesquite gold mine and processing facilities.

- 3. Establishment of the VCR project would effectively preclude other types of activities which might occur at the site, such as small-scale mining operations and recreational uses. Further, once mine operations cease, the site would not be readily adaptable to most non-mine uses, particularly the mine pits and stockpiles. Therefore, the project would be expected to limit most non-mining uses within most of the VCR mining area. However, the reclaimed site might become a legitimate point of interest as it is within a multiple use designated area that includes provisions for extractive uses.
- 4. It is possible that, during operations, aliens seeking illegal entry into the United States by crossing the desert might be attracted by the mining activities during the day and by the project lights at night.

# 5.8.2 HIGHWAY 78 REALIGNMENT

- 1. Under Alternative I, the project would include realignment of about 8.5 miles of State Highway 78. This would utilize about 125 acres of undeveloped land, but it would also provide access to areas south of the project site where access presently is limited to a few dirt roads.
- 2. A potential adverse effect is that, under Alternative I, there would be an intersection where the highway realignment crosses Vista Mine Road south of the project site. This would improve access which already exists to the Singer Geoglyphs Area of Critical Environmental Concern (ACEC) (see Figure 4.9). A portion of the proposed highway realignment would cross the extreme northwest corner of the ACEC. However, the alignment would be several hundred feet from a geoglyph which was previously fenced in conjunction with development of the Mesquite project.

# 5.8.3 CUMULATIVE EFFECTS

 The cumulative effect of the two projects involves conversion (over the course of the approximate 20-year operational period) of approximately 3,800 acres of mostly vacant open desert to gold mining and processing uses. Subsequent to the operational period of the two projects, the area would be returned to vacant open space. However, the landform of the area will have been altered, and the mine pits will remain fenced unless directed otherwise by the BLM or Imperial County. The reclaimed site might become a legitimate point of interest, as it is within a multiple use designated area that includes provisions for extractive uses.

- 2. Under Alternative I of the proposed VCR project, the realignment of Highway 78 south and east of the mining and processing areas would remain for public use after cessation of activities.
- 3. It is possible that illegal aliens could be attracted by the mining activities during the day and by the lights at night.

### 5.9 TRANSPORTATION

#### 5.9.1 REGIONAL EFFECTS

- 1. The system of Imperial County roadways could experience some increased traffic as a result of VCR project construction and operations. These impacts would result largely from workers commuting to and from work. Most construction and operations personnel are expected to live in or near the area's major population centers. Therefore, most traffic increases would likely occur on roadways which provide the most direct access between the project site and these communities. These impacts are expected to be minor during both project phases, as the number of additional workers is expected to be about 50 to 75 during the anticipated 8- to 16-month project construction period and about 35 to 50 during the operational life of the project (see Section 5.11.1).
- 2. Increases in traffic volumes would most directly affect Highway 78. As the only major roadway serving the VCR site, Highway 78 collects traffic from other roadways in the area, and increases in traffic volumes may be noticeable. However, projected increases would be well within **Caltrans'** planning data of more than 1,500 vehicles per day.
- 3. In addition to employee commuter traffic, there would be additional vehicle trips associated with mine services, deliveries of fuel and supplies, and visitors. These would be few in number and occur infrequently.
- 4. At the onset of the project, there would be a one-time traffic impact associated with the delivery of major mine and construction equipment. Mine equipment and vehicles would be fueled and serviced **onsite**, so their location **onsite** would not result in repeated trips on area roadways.

#### 5.9.2 VCR MINING AREA

- The potential impact of vehicular traffic at the mining area would depend upon whether Alternative I or Alternative II were selected. Selection of Alternative I would place project access about 2.5 miles south of the mining area, at the intersection of the new project access road and the Highway 78 realignment. This relatively remote location would minimize impacts of mining area activities to local transportation.
- 2. If Alternative II were selected, project access would be from the existing Mesquite project intersection on Highway 78. Under this alternative, the potential impact **primarily** would be associated with turning movements of employee and visitor vehicles entering and exiting at the intersection of the project site and the highway. Other project activities that could affect traffic on existing Highway 78 would be the occasional movement of heavy equipment and vehicles across the highway, for periodic maintenance and repairs.
- 3. Also under Alternative II, a mining equipment overpass might be constructed across Highway 78. This facility would be designed and constructed to **Caltrans** specifications and would not affect traffic on Highway 78. There would be the potential for rocks and dust to blow onto vehicles approaching the underpass during periods of high winds.' However, the ore which would be transported would not have been crushed, so there would be a limited amount of small particles. Further, the overpass would be designed so that rocks which could potentially fall from an ore truck would not fall onto the public roadway.
- 4. Under Alternative I, mine vehicles and equipment would not need to cross the realigned highway. The principal project impact would be from daily turning movements of employee and visitor vehicles entering and exiting the access road to the mining area. The average daily trip volume, estimated to total 200 to 400 trips per day, would be distributed among two or three daily shifts, with different arrival and departure times. Therefore, project-related traffic would tend to be in groups, at several times during the day.

### 5.9.3 HIGHWAY 78 REALIGNMENT

- The major effects of realigning Highway 78, as proposed under Alternative I, would involve:

   the general public, and (2) GFOC employees and visitors to the mine area. For the general public traveling on Highway 78, realignment would result in their traveling around rather than through the mine area. This route would have the beneficial effect of decreasing the potential for motorists to be distracted by the features of the operating facilities. For GFOC employees, the primary effect would be that access to both the VCR and Mesquite projects would be from about 2.5 miles south of the project rather than from virtually within the project site.
- 2. The realigned highway would add about 1.2 miles to the travel distance between Brawley and Blythe, affecting both the public and the mine employees. However, the realigned road would have a faster design speed and improved pavement width so that the change in driving time on Highway 78 would not be substantial.
- 3. It is possible that, during times of shift changes at the mine, there could be some backup of traffic at the intersection of the new access road and Highway 78. This would primarily affect eastbound traffic on Highway 78 turning left (north) onto the access road, and southbound traffic on the access road turning left (east) onto Highway 78. Any such **delays** would likely be minor. However, Highway 78 would have a wider paved area at the intersection in order to accommodate a left turn lane.

### 5.9.4 ZAPPONE AND VISTA MINE ROADS

- Under Alternative I, the unpaved Zappone Road, which provided access to fee Section 16 prior to GFOC's purchase of that area, would be abandoned. Under Alternative II, Zappone Road would be re-routed around the south and east boundary of the VCR mining area and re-connected to Vista Mine Road, if required by the County or BLM.
- 2. Under Alternative I, the unpaved Vista Mine Road would be abandoned north of the proposed realignment. As with Zappone Road, this segment of Vista Mine Road would not be replaced, because public access to Section 16 is no longer necessary. The segment of Vista Mine Road south of the highway realignment would remain open for public use and access to the GFOC production well field.

### 5.9.5 CUMULATIVE EFFECTS

1. Over the long term (the anticipated 20-year operational period), the primary effect of the two projects would involve increases in personal vehicle and commercial truck traffic on area roads and highways. Together, the two projects could employ as many as 270 people and involve about 150 to 300 trips per day to the mine site. The difference in vehicle trips per day between the Mesquite project alone and the two projects together would not be substantial. The impacts described above for the VCR project would also apply to the combined conditions of the two projects.

#### 5.10 NOTSE

#### 5.10.1 VCR MINING AREA

- 1. Construction and operation of the VCR project would increase the noise and vibration in the vicinity of the mining area. The principal sources of noise would be:
  - Ore and overburden removal and handling
    - Drilling
    - Blasting
    - Ore and overburden loading, hauling, and dumping
    - Ore crushing
  - Construction of haul roads and structures
    - Earthmoving equipment
    - Construction equipment
- 2. These noises would generally be the same as those which presently exist at the Mesquite project. They would be noticeable primarily by GFOC employees and, perhaps, to Highway 78 travelers, depending upon the chosen alternative. Potential impacts would be less under Alternative I, with Highway 78 realigned around the project area than under Alternative II, which would maintain public travel within the mining area. No substantial noise impacts are expected to result from the VCR Mining Project.
- 3. Because the VCR mining area is adjacent to other noise generating areas (Mesquite project, Highway 78, Navy gunnery range), it is expected that wildlife which are sensitive to these noises either would not inhabit the area or would already have relocated to a less active area.

## 5.10.2 HIGHWAY 78 REALIGNMENT

- 1. During construction, activities for the realigned highway would generally not be within hearing distances of sensitive receptors, and noise impacts would not be substantial.
- 2. Motorists traveling the realigned highway would be further from the mining activities than those using the existing alignment. Therefore, mining-related noise levels at the closest public receptors (motorists) would be less with the proposed realignment than under present conditions.
- 3. Noise associated with operation of the proposed highway realignment is expected to be the same as with the current alignment of Highway 78. Therefore, potential effects to wildlife due to the type and extent of noise are not expected to be different than now exists. However, the realignment would place the noise in a different area, so there could be some: shift in the affected populations.

## 5.10.3 CUMULATIVE EFFECTS

- 1. The primary noise effects from the two projects would be the relative increase in the frequency of blasting activities, as two or more mine pits could be operational at one time. However, potentially sensitive receptors are limited to motorists along Highway 78, w'ho would pass either through or to the south and east of the project area within about ten minutes. Over this limited time period, the overall noise from the two projects together would not be noticeably different than from either of the two projects separately.
- 2. The cumulative effect to wildlife is not expected to be substantially greater than that which would occur with the Mesquite project alone. Further, at the completion of project operations, there would not be further impact to wildlife from noise associated with mining and processing activities.

### 5.11 SOCIOECONOMTCS

## 5.11.1 VCR MINING AREA

## 5.11.1.1 Employment

### **Construction**

- The proposed VCR project would generate both short- and long-term employment in the County. Construction employment would range from about 50 to 75 workers, for either Alternative I or II. It is anticipated that about one-half of the construction workers would be from the local (Imperial and Yuma Counties) work force.
- 2. For Alternative I, construction activities initially would consist of pre-production stripping of overburden at the mine and road-building activities along the Highway 78 realignment. In the future, this alternative also could involve construction of a primary crusher, which could utilize about 30 workers over a period of several months.
- 3. Construction activities for Alternative II would also involve pre-production stripping of overburden at the mine site, plus construction of a primary crusher. For this alternative, a mobile equipment repair shop would also be built.

### **Operations**

- Long-term employment at the mine would provide about 35 to 50 additional jobs over an estimated operational period of about 20 years, and extend the employment period for a significant portion of the existing Mesquite work force. Based upon current employment at the Mesquite mine, it is expected that about 80% of the VCR employees would be from the local labor force. Ultimately, the number of employees directly related to the VCR project would be 250 to 270, when ore production would be shifted from the Mesquite project to the VCR project.
- 2. Although mining is expected to remain a minor source of employment relative to agriculture, it could contribute somewhat to moderating the seasonal unemployment fluctuations in the County.

### 5.11.1.2 Housing

### **Construction**

- The estimated 50 to 75 construction workers for the proposed VCR project would generate some demand for temporary housing. About one-half are expected to be local residents living in permanent housing. About one-half are expected to be non-local workers who would use local accommodations such as hotel and motel rooms. Some might bring recreational vehicles or trailers to established facilities in the County. No recreation vehicles or trailers would be allowed to park within the project area.
- 2. Given its relatively small size, the temporary VCR construction work force is not expected to have noticeable impacts to the County's permanent and/or temporary housing supply.

### **Operations**

1. Operational employment is not expected to significantly affect local housing resources, as about 80% of the operations work force is expected to be derived from the local labor force.

### 5.11.1.3 <u>Economics</u>

### Construction

- The type and extent of construction activities would depend upon which alternative is chosen. Under Alternative I, construction at the VCR mining area would involve removal of overburden from the initial pit and construction of the haul roads. These activities would be conducted by operations personnel, at an estimated cost of more than \$3.0 million. Later in the project, there also might be construction of a primary crusher and mobile equipment repair shop, with payroll and purchases estimated to exceed \$6.0 million.
- 2. Under Alternative II, pre-operational activities would involve removal of overburden and construction of haul roads, a primary crusher, and mobile equipment repair shop. Initial construction costs for this alternative would exceed \$6.0 million.

# **Operation**

- Annual payroll for the VCR project is expected to be more than \$1.0 million, including fringe benefits, and involve annual purchases from Imperial County vendors of more than \$0.5 million. Ultimately, with production shifted from the Mesquite project, the annual payroll and purchases from the VCR project would be approximately \$7.5 million and \$3.0 million, respectively. Similarly, the contribution of property taxes would shift to the VCR project as production is increased.
- 2. These expenditures would generate secondary effects, largely other local employment opportunities. These secondary jobs would most likely be in trades and services as a result of project and employee expenditures for goods and services.

# 5.11.2 HIGHWAY 78 REALIGNMENT

# 5.11.2.1 Employment

- 1. Construction of the Highway 78 realignment would involve about one-half of the construction workers (see Section 5.11.1.1) over a period of about six months. It is expected that at least one-half of these would be from the local area.
- 2. Long-term operation and maintenance of the highway realignment would not affect existing employment patterns.

# 5.11.2.2 Economics

- Construction costs for the proposed realignment are expected to be about \$4.0 to \$5.0 million. Of this amount, about 20% would be for payroll, with the remainder for equipment and materials. This contribution to the local economy would be a beneficial impact.
- 2. The economics of the long-term operation and maintenance of the proposed realignment would not be noticeably different from the existing alignment. The realignment would add about 1.2 miles of roadway to the travel distance around the mine. However, due to its improved design and construction criteria, maintenance costs for the realignment are not expected to be substantially different than for the existing alignment.

#### 5.11.3 CUMULATIVE EFFECTS

- Should VCR become operational, the combined annual economic contribution of the two projects (VCR and Mesquite) is estimated to be as discussed under VCR, in Section 5.11.1.3. Annual payroll and purchases would be about \$7.5 million and \$3.0 million, respectively, Annual property taxes would be more than \$800,000.
- 2. These effects would be beneficial to the local economy.

#### 5.12 SERVICES AND UTTLTTTES

#### 5.12.1 VCR MINING AREA

- There would be some increase in demand for community services as a result of the proposed project. 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. However, the number of such personnel is estimated to be relatively small (25 to 40 non-local construction workers, 5 to 10 non-local operations personnel) and not create a significant demand on existing services. Mining construction and operational activities would involve the handling and use of heavy equipment and hazardous materials and create the: potential for work-related injuries requiring medical attention. It is anticipated that existing County facilities and/or emergency vehicles and equipment at the adjacent Mesquite facility could accommodate such a need.
- 2. Project construction and operations personnel who come into the Imperial County area would contribute to the demand for public utilities, but the number of such personnel is expected to be so small that local services would not be noticeably affected. At the project site, no public water or sewer facilities would be required. Domestic water would be provided from the Mesquite water treatment plant. A sewage collection and disposal system would be installed for the primary crusher and mobile equipment repair shop.
- 3, Demands of the VCR project for electricity would be accommodated by the existing 92 kV power line and substation operated and maintained by IID. Access to the line and substation would not be impaired by the proposed project. The proposed VCR project is not expected to result in adverse impacts to community services or utilities.

4. Solid waste generated by the proposed VCR project would be collected **onsite** and transported by a licensed hauler to a County landfill or to an approved disposal area on fee land. The amount of solid waste generated by the VCR mining project would not be substantial.

### 512.2 HIGHWAY 78 REALIGNMENT

- Construction of the proposed highway realignment might increase the demand for community services, due to the presence of perhaps 20 non-local workers for the duration of the six-month construction period. The existing facilities in the County could handle these requirements with no adverse effects.
- 2. Operation and maintenance of the proposed realignment are not anticipated to affect the demand for local services and utilities.

### 5.12.3 CUMULATIVE EFFECTS

- 1. **The** cumulative effect to services and utilities would be within the capacity of the existing systems. Effects would primarily be related to overall population increases related to employment at the Mesquite and VCR facilities.
- 2. With about 80% of the estimated 250-270 employees being from the local labor force, the increase in demand generated by new population would be negligible.

#### 5.13 PUBLIC AND EMPLOYEE SAFETY

#### 5.13.1 VCR MINING AREA

#### 5.13.1.1 Public Safety

1. There is the potential for accidents to occur upon unauthorized entry into the project site, as there would be large, open, mining pits and potential hazards associated with exposure to dust, noise, and heavy equipment. The overburden and **protore** stockpiles would be built with stable slopes, but would not be designed for recreational use. This potential effect is not expected to be substantial, as unauthorized entry would be discouraged by a formal security program and a project perimeter fence.
- 2. Security would be provided primarily by trained security personnel with controls at project gates and vehicles to monitor the entire site. The formal security staff would be enhanced by the 16- to 24-hour operations activities. Further, warning signs would be posted at reasonable spacing along the perimeter fence. The general public could avoid potential onsite hazards by not entering the fenced and clearly marked facility.
- 3. There could be a potential hazard if the attention of a motorist on Highway 78 were to be diverted from the road to the project facilities. However, the potential would be less under Alternative I than under Alternative II. Under Alternative I, the project facilities would be on only one side of the highway and, for most of the alignment, facilities would be more than one mile distant. Further, the highway would be adjacent to one side of the VCR project boundary for a distance of less than two miles. Under Alternative II, the existing Highway 78 alignment would go through both the VCR and Mesquite project sites for about 3.5 miles. This effect should not be excessive, however. The project can be seen from a distance of about eleven miles from the west and about one mile from the east, so that it would not be completely unanticipated.
- 4. Potential hazards could occur if an overpass constructed for Alternative II were to become unstable or if material were to fall onto the highway. However, this potential would be mitigated by the project design and the requirement to obtain **Caltrans** approval for such a structure.
- 5. Pit slopes are designed to be stable. If not stabilized, they could give way after abandonment, resulting in rock falls to the pit floor. This would create a safety hazard with the possibility for public exposure. The mitigation measures discussed in Section 6.8.1 are expected to effectively minimize the potential for such occurrences.

#### 5.13.1.2 Employee Safety

 Employee safety concerns relative to the VCR project would be related to basic mine operations. The potential for onsite accidents would be reduced by employee adherence to basic safety precautions and procedures and project adherence to Mine Safety and Health Administration (MSHA) standards.

#### 5.13.2 HIGHWAY 78 REALIGNMENT

#### 5.13.2.1 Public Safety

- It is anticipated that public safety would be enhanced by the proposed highway realignment. Traffic would be routed around rather than through the mining area. There would not be the opportunity for traffic to turn directly from the highway into the project area, nor would there be the occasion for mine related traffic to cross the highway to get from one side of the mining area to the other. The new roadway would be designed with smoother curves than the existing alignment, so visual distances would be greater. Also, the realignment would have six- or eight-foot paved shoulders, while the existing roadway has no paving beyond the 24-foot travel way.
- 2. As discussed in Section 5.13.1.1, there would be only limited visibility of the VCR mining area from the proposed realignment. This would likely be a beneficial effect, as there would be less distraction to passing motorists than from the existing alignment which passes through the project site.

#### 5.13.2.2 Employee Safety

- 1. The proposed realignment would decrease the potential for mine-related traffic to mix with highway traffic, with a potential beneficial effect on employee safety.
- 2. Access to Highway 78 from the project would be via an access road from only one direction (north) rather than from an access road intersecting the highway from two directions (north and south) as now occurs. This is also expected to enhance employee safety relative to entering and exiting the VCR mining area.

#### 5.13.3 CUMULATIVE EFFECTS

 Both projects would be less visible from the realignment than from the existing highway and, therefore, would be less of a distraction to passing motorists. This is expected to have a beneficial safety effect relative to both the general public who would travel the highway and VCR and Mesquite employees who would use it for commuting purposes. 2. As with mine pits in the VCR mining area, unstable pit slopes in the Mesquite project area could potentially create a rockfall hazard after the pits are abandoned. Mitigation measures incorporated into the reclamation plans for the Mesquite and VCR projects would minimize this potential (see Section 3.14.4.1).

## 6.0 MITIGATION MEASURES

- This section addresses the same areas of environmental concern as were discussed in Chapter 4.0, Description of the Existing Environment, and Chapter 5.0, Potential Environmental Impacts. For purposes of completeness, if no mitigations are warranted, it is so stated in the text.
- 2. Where appropriate, the mitigations discussed in this chapter are the same as, or similar to, those presented for the adjacent Mesquite project in that EIR/EA (1984). The Conditional Use Permit conditions from the Mesquite project which are appropriate for the proposed VCR project are presented in Appendix G.
- 3. The mitigation measures addressed in this chapter will be implemented, as appropriate to the proposed project. They are committed by their inclusion in this document.

## 6.1 GEOLOGY AND SOILS

## 6.1.1 SEISMICITY

## 6.1.1.1 VCR Mining Area

- 1. Project structures would be designed in accordance with Seismic Zone 4, the most stringent zone of the Uniform Building Code. Zone 4 criteria satisfy building requirements for either a 0.15 g or 0.35 g ground acceleration event.
- 2. Potential slope instability would be mitigated by constructing slopes at angles specific to the configuration and composition of each pit wall or pile. Average slopes in the mine pit would be between about 28 and 45 degrees. The angle of the slopes for the overburden and protore stockpiles would not exceed the natural angle of repose, about 37 degrees. Other facilities involving artificially constructed slopes of soil or rock, such as drainage and diversion structures, would be designed to avoid the possibility of substantial slope movement during a seismic event.

#### 6.1.1.2 Highway 78 Realignment

 Artificially constructed slopes of soil or rock, such as those associated with diversion structures, would be designed at angles which would minimize the possibility of slope movement during a seismic event. Artificial slopes associated with the highway realignment and diversion structures would typically be less than eight feet high, with slopes of 3:1 (horizontal:vertical) or flatter.

#### 6.1.2 SOILS

 Due to the small amounts of poor quality soil which would be salvaged, stockpiling is not recommended (Mesquite Project EIR/EA 1984). No mitigation measures for soils are warranted.

#### 6.1.3 EROSION POTENTIAL

#### 6.1.3.1 VCR Mining Area

- 1. Access and haul roads would be constructed such that modifications to natural **onsite** drainage and infiltration characteristics, and related soil erosion, would be minimal. **Onsite** materials would be used to construct the roads which, to the extent practical, would be graded to follow natural contours.
- 2. Overburden and protore stockpiles would be constructed at the natural angle of repose and benched as necessary to minimize slope movement. Where possible, they would be bermed and the tops would be graded to direct rainfall away from sloped areas. In addition to the direct benefit of reducing runoff at steep slopes, this may increase the potential for growth of native shrubs to provide additional erosion control. In conjunction with revegetation research which is being conducted for the Mesquite project, attention would be given to the use of chemical binders/dust suppressants. If the research indicates that application to overburden disposal areas would have substantial beneficial effects, such binders would be applied to dumps which become completed and/or inactive.

- 3. The effect of erosion due to redistribution of diverted runoff would be mitigated by:
  - Directing storm runoff flows to the approximate locations where they would have occurred without the project.
  - Designing diversion ditches to have flow conditions which will not be substantially different from existing conditions.
- 4. The need for riprap or other erosion control in downgradient natural washes is not anticipated. Periodic inspections of diversion structures and the downgradient washes would be conducted. The BLM and the County would reserve the right to require additional mitigation measures if substantial erosion were detected.

## 6.1.3.2 Highway 78 Realignment

- 1. Diversion channels are designed to redistribute runoff into several of the larger washes which naturally carry most of the storm flow. The gradients and widths of diversion channels would be designed so that natural runoff velocities would not be substantially altered. If necessary, erosion control such as **gabions** or **riprap** would be incorporated into portions of the diversion facilities to minimize the need for future maintenance. Some minor erosion and sedimentation is expected to occur within the channels during moderate, but infrequent, storms. The design will incorporate an appropriate margin for these processes to occur without either: (1) the need for excessive maintenance, or (2) reducing the flow capacity below that required for larger storms.
- 2. Several provisions incorporated into the design of the highway would minimize the potential for erosion where the road dips to allow storm flows to cross. These include:
  - Dividing the area upgradient of the proposed highway realignment into discrete drainage areas, using segments of north-south trending dikes. Runoff from different drainage areas would then cross the highway at several controlled areas, thereby minimizing the potential flow through any one dip.
  - Providing relatively shallow, wide dips to allow flows to cross at a relatively low velocity and to minimize depth of flow.
  - Increasing the paved width of the highway at dips and providing **subgrade** concrete reinforcement cut-off walls beneath the edges of the pavement..

3. Occasional routine maintenance, which would be provided by Caltrans after the proposed highway realignment is turned over to the State, would mitigate minor effects such as minor erosion of the road shoulders or sand and gravel deposits which could collect in dips. The maintenance requirement for the realigned portion of the highway is not expected to be substantially different than for the existing highway.

## 6.1.4 MINERAL RESOURCES

## 6.1.4.1 VCR Mining Area

- 1. Lower grade gold- and silver-bearing material (protore) removed from the mine pits would be segregated and stored separately from overburden material to the extent practical. In the future, if and when economics and technology permit, metal values could be extracted
- 2. Barren material (overburden), which might contain sand and gravel resources, would be made available by GFOC for use by the BLM in accordance with applicable statutes and limitations, so long as such use did not restrict or hinder **GFOC's** operations, including reclamation.

## 6.1.4.2 Highway 78 Realignment

- The highway realignment design will include a new, unpaved access route to the current Gravel Withdrawn Area access on the portion of Highway 78 which is planned for abandonment. Realignment of the highway would provide paved access to portions of the Gravel Withdrawn Area south of the existing highway.
- 2. GFOC will seek to resolve, to **BLM's** satisfaction, conflicts between the operations of existing gravel permittees and the new highway route.

### 6.2 WATER RESOURCES

### 6.2.1 WATER USAGE

1. Because the proposed VCR project and highway realignment would not change the **permitted** water usage, no mitigation measures are warranted.

#### 6.2.2 GROUND WATER HYDROLOGY

1. As discussed in Section 5.2.2.1, expected inflow to each of the Vista and Rainbow pits would be less than 22 gpm. It is likely that this seepage would evaporate, eliminating the need for a continuous collection or removal system. If greater seepage rates occur temporarily, as each new bench is excavated, temporary dewatering might be necessary. If practical, discharge from this activity would be used for dust control.

#### 6.2.3 SURFACE WATER HYDROLOGY

#### 6.2.3.1 VCR Mining: Area

- 1. Haul and access roads would be graded to existing contours where practical., Road design calls for minimal grading modifications and the use of **onsite** materials for borrow.
- 2. Drainage diversion ditches or dikes would be provided as necessary to protect mine pits, stockpiles, roads, and structures from infrequent storm flows. Engineering of these structures would provide assurance that flows directed toward the adjacent Mesquite project did not exceed that project's flood protection requirements. Drainage design would minimize interruption of natural drainage paths to the extent practical.
- 3. If runoff from larger storms caused ponding in the mine pits, temporary dewatering would be necessary. If practical, discharge would be used to supplement dust control water requirements.

#### 6.2.3.2 Highway 78 Realignment

1. The design of the proposed highway and associated diversion structures would mitigate the impacts of altering surface drainage by minimizing alterations to natural flow paths. Flows would be intercepted by diversion ditches and berms and channeled to cross the highway realignment in controlled areas. These areas are arranged to redistribute flows into the relatively larger downgradient washes which naturally carry the most runoff.

2. Drainage facilities would be designed with sufficient excess width and depth to allow minor erosion and siltation to occur during moderate storms without either: (1) the need for excessive maintenance, or (2) reducing the flow capacity below that required for larger storms.

#### 6.2.4 GROUND WATER QUALITY

#### 6.2.4.1 VCR Mining Area

- 1. In order to assure that percolation through overburden and protore storage areas and oxidation of minerals due to localized lowering of the ground water table pose no threat to ground water, an analytic program similar to that previously conducted for the Mesquite project would be initiated. The purpose of this program would be to confirm that the material: (1) does not contain excessive concentrations of trace elements, and (2) does not have substantial acid-generating potential.
- 2. If a small fuel or oil spill should accidentally occur (i.e., a punctured fuel tank or a broken hydraulic line), oil-stained soil would be removed and disposed of appropriately.

#### 6.2.4.2 Highway 78 Realignment

1. No mitigations are proposed, as the highway realignment would not have an effect on ground water.

#### 6.3 AIR RESOURCES

#### 6.3.1 VCR MINING AREA

1. Although the proposed VCR project may represent a substantial source of fugitive dust, control measures would keep emissions within acceptable levels. Unpaved haul, service, and access roads within the project area would be sprayed with water on a regular basis to reduce fugitive dust emissions from vehicular traffic. Water sprays would be provided at the crusher and at conveyor transfer points to reduce particulate emissions. Surfactants which would not create a hazardous or toxic condition might be added to the water to enhance dust control.

2. Low sulfur fuels would be used to reduce SO, emissions in construction and mining equipment and other diesel engines.

### 6.3.2 HIGHWAY 78 REALIGNMENT

- 1. Water spraying would be used to control dust during road construction.
- Mitigations would not be necessary relative to long-term operation of the proposed Highway 78 realignment.

#### 6.4 VEGETATION

#### 6.4.1 VCR MINING AREA

- 1. Construction disturbances would be **confined** to the immediate development area. Operational disturbances would be limited to currently active project locations.
- 2. A revegetation program relative to VCR would be coordinated with the revegetation research program being implemented for the existing Mesquite project. Results of the program would be utilized in determining appropriate revegetation activities at the VCR Mining Project. The goals of that program are focused on increasing knowledge of revegetation in arid regions and providing a data base for the feasibility of revegetation on sites such as the proposed mining area.
- 3. The net loss of habitat for fairy duster (<u>Calliandra eriophylla</u>) could be partially mitigated by measures based on a revegetation research program.
- 4. GFOC would arrange with the BLM to allow members of the public with a proper permit to salvage plant material, specifically various cacti, from areas of the project site prior to specific development of each area. Such a collection program would be monitored by the BLM to prevent unauthorized collection outside the project site.
- 5. The absence of project equipment and activities after cessation of mining would allow natural reestablishment of indigenous vegetation.

#### 6.4.2 HIGHWAY 78 REALIGNMENT

1. Construction disturbances would be confined to: (1) an approximate 50- to 150-foot wide area within the 500-foot highway realignment study corridor, (2) localized grading at four locations where storm runoff would cross the road, and (3) a construction staging area of several acres, located within the 500-foot study corridor. The construction specifications would require that equipment and vehicles be confined within BLM-approved staked areas, specifically marked to illustrate access area limits. If necessary, minor relocations could be made during construction, to Caltrans specifications. If possible, the construction staging area would be located at the project access road intersection in order to minimize total disturbance.

- -

2. The finished slopes for small embankment fills would be relatively flat and constructed from stripped soil. This soil may contain seeds which would maximize the potential for natural revegetation.

#### 6.5 <u>WILDLIFE</u>

#### 6.5.1 VCR MINING AREA

- 1. As with vegetation and sensitive plants, there is no replacement for lost habitat within the mining area. However, the following measures would be incorporated into the project to mitigate the potential for wildlife loss:
  - Fencing would be provided around the project area to discourage wildlife from entering the active mining area. The level of human and equipment activity and associated operational noise would also be a deterrent to wildlife approach.
  - A formal tortoise instruction program would be established for construction workers and employees, using the procedures which have been implemented for several years at the adjacent Mesquite project. Figure 6.1, Employee and Construction Workers Procedure Card, illustrates the tortoise card which has been provided to Mesquite employees. An expanded booklet is provided at formal training sessions.
  - Signs such as those posted in the Mesquite project area, reminding employees of the sensitivity of the tortoise, would be posted at access gates and other strategic locations at the VCR project (see Figure 6.2, Desert Tortoise Awareness Sign).

## SIDE "A"

Gold Fields Operating Co.-Mesquite

#### PROTECTION OF THE DESERT TORTOISE

The Desert Tortolse is protected by State taw.

GoldFields prohibits any ● mployeo from taking a tortoise from the project site at any time.

Do not disturb a Desert Tortoise.

The Desert Tortoise Is a 6 to 14 Inch reptile with a domed brown shell and four short, scaley leas The tortoise will likely be under a shrub, eating or sleeping, or near its burrow, which Ia a hole usually under shrubs or In the side of a wash



#### <u>SIDE "B"</u>

#### PROCEDURE FOR PROTECTION OF THE OESERT TORTOISE

If you see a tortoise, determine if it is in any danger from operations

IF THE TORTOISE IS NOT IN DANGER: Leave it alone!

IF THE TORTOISE IS NOT IN IMMEDIATE DANGER, BUT IS IN A PLACE WHERE IT WILL BE EXPOSED TO TRAFFIC OR OTHER HAZARDS, OR

IF THE TORTOISE IS IN IMMEDIATE DANGER:

- Approach tortoise slowly and quietly from the front.
  Place one hand to the rear between theupperandlowershellsand one hand
- on shell behind head3) With two fingers press firmly on base of tail: apply pressure up and toward head If tortoise is 4 inches long or less do not press on tail.
- Lift tortoise slowly and gently; move it to a safe place. preferably in the shade of a shrub

Mark the location where you found the tortoise and where you moved the tortoise. Tell your supervisor immediately.

IN ALL CASES DO NOT FEED, POKE OR THROW OBJECTS AT A DESERT TORTOISE DESERT TORTOISES ARE PROTECTED BY LAW.

**FIGURE 6.1** 

#### EMPLOYEE AND CONSTRUCTION WORKERS PROCEDURE CARD

#### VCR MINING PROJECT

ENVIRONMENTAL SOLUTIONS, INC.

SOURCE: GOLD FIELDS OPERATING CO., 1987 (SEE REFERENCES. SECTION 10.0)



- If a tortoise is observed in an area where it could be impacted during either project construction or operations, it would be relocated from areas of potential danger, using procedures acceptable to the BLM. The potential relocation area is a site about four miles south of the mining area, near the GFOC production well field and the ACEC.
- With the exception of security personnel, employees would not carry firearms.

## 6.5.2 HIGHWAY 78 REALIGNMENT

- 1. The existing highway between the intersection with the proposed new alignment and the Mesquite project boundary would be abandoned. The pavement would be removed, crushed, and, to the extent feasible, recycled for use on project related roads. This would allow the habitat within the highway area to return to conditions similar to those which existed prior to construction.
- 2. Construction workers for the highway realignment would be instructed on the proper handling of a tortoise encounter, using the training materials discussed in Section 6.5.1. Tortoises which are encountered would be relocated using procedures agreed to by the BLM. The best relocation area in this case would be in the vicinity of the GFOC well field, south of the highway realignment. Tortoise fencing would not be a feasible mitigation measure, due to the low density of tortoises within the vicinity of the proposed highway realignment.

## 6.6 VISUAL RESOURCES

## 6.6.1 VCR MINING AREA

- 1. For the preferred Alternative I, realignment of Highway 78 is considered a mitigation of potential visual impacts of the proposed project to motorists traveling the highway.
- 2. For both alternatives, berms would be provided adjacent to the highway right-of-way and/or project fence, where necessary; to shield the mine pits from the view of passing motorists. Locations of the berms would depend upon which alternative is chosen.

- 3. Under Alternative II, the highway would extend through the northern portion of the VCR mining area. The Rainbow, Cherokee, Vista, and Gold Bug pits could extend almost to the edge of the highway right-of-way, so they would be **bermed** to reduce the potential to distract passing motorists. The south and east edges of the Cherokee and Gold Bug pits would be **bermed**, as would the west edge of the Rainbow pit and the north edge of the Vista pit extension.
- 4. To partially mitigate the visual effect of the overburden stockpiles, natural vegetation will be planted as screening at the toes of slopes which are adjacent to the highway, depending upon results of the vegetation research program being conducted for the Mesquite project. Natural mitigation also would occur to the extent that the artificial slopes would weather to a darker color after years of exposure, and some natural vegetation would became reestablished.
- 5. Buildings constructed for the VCR project would be painted a color to blend with the surrounding environment, as selected by the BLM. If an overpass were constructed for mine equipment to cross Highway 78, it would be painted or constructed of materials which would blend with the surrounding desert environment.
- 6. GFOC will evaluate the use of color additives in conjunction with research on the use of chemical binders as dust suppressants for the Mesquite project overburden piles.
- 7. The visual effect would be partially mitigated by the fact that the Mesquite and VCR projects would be developed within relatively confined areas rather than being widely dispersed. This limits both the ultimate area utilized by the two projects and the duration and distance of their visibility from the realigned public highway.
- 8. Old abandoned prospector domiciles will be removed, and materials will be disposed of in a manner acceptable to the BLM.

#### 6.6.2 HIGHWAY 78 REALIGNMENT

1. To minimize the visual impact, the realigned highway profile would be designed to be as close to existing grade as possible. In areas without an adjacent drainage channel, slopes from the road shoulders would form a small embankment which would be graded to "blend" with the natural topography.

- 2. Where a drainage channel is excavated adjacent to the highway, the slope typically would be a relatively flat **5**:1, and the ditches would be wider than required These measures would visually soften the transformation between the construction and natural areas and result in the channels having a relatively natural "wash" appearance.
- 3. Where the proposed realignment connects to the existing highway, the existing asphalt would be removed and the existing road bed scarified. Berms with shallow slopes would be placed along the old route about 200 feet from the connection point. These measures would eliminate the visual impact of the abandoned route for motorists on the new alignment.

## 6.7 CULTURAL RESOURCES

## 6.7 1 VCR MINING AREA

- There is one geoglyph in the southwest portion of the VCR mining area which was identified and fenced during development of the Mesquite project. Relocation of the 92 kV power line would be done in a manner to assure avoidance of this resource. Once relocated, the power line would not span any geoglyph.
- 2. Mitigation of potential impacts to cultural resources would be conducted according to a Cultural Resources Management Plan (CRMP), which would be approved by the BLM, SHPO, and the National Advisory Council on Historic Preservation. Mitigation measures recommended in the CRMP would be completed prior to initiating development or construction activities in any specific area. Recovered artifacts would be curated at the Imperial Valley College Barker Museum.
- 3. Implementation of the approved CRMP would fulfill Section 106 responsibilities of the BLM regarding the proposed action and result in a determination that the VCR Mining Project would have No Adverse Effect upon identified cultural resource properties, per 36 **CFR** Part 800.

- 4. Construction specifications for the VCR project would include requirements that vehicular activity be limited to specified areas to minimize the potential for damage in presently undisturbed areas. Measures to limit the extent of vehicular activities would include:
  - The requirement to provide specially flagged stakes at the perimeter of construction areas.
  - Instructing construction workers and employees as to the sensitivity of desert vegetation, wildlife, archaeology, and the purpose of the construction limit stakes.
- 5. Several of the non-eligible archaeological sites identified would be collected because of their scientific and educational value. Results of this field work would be incorporated into the final report, as appropriate.

## 6.7.2 HIGHWAY 78 REALIGNMENT

- 1. A portion of the Singer Geoglyphs ACEC lies within the designated Highway 78 realignment corridor in Sections 21 and 22, T13S, R19E. Measures such as access restriction in the construction specifications and work area staking will be taken to assure that the geoglyphs would be avoided during highway construction. Prior to implementation, actual measures would be approved by the BLM. Pending completion and implementation of the CRMP, no disturbance to cultural sites would be authorized.
- 2. Mitigation of potential impacts to cultural resources would be conducted according to a Cultural Resources Management Plan (CRMP), which would be approved by the BLM, SHPO, and the National Advisory Council on Historic Preservation. Mitigation measures recommended in the CRMP would be completed prior to further action associated with the highway. Recovered artifacts would be curated by the Imperial Valley College Barker Museum.
- 3. Implementation of the approved CRMP would fulfill Section 106 responsibilities of the BLM regarding the proposed action. This would result in a determination of No Adverse Effect relative to the proposed highway realignment, per 36 **CFR** Part 800.
- 4. Several of the non-eligible archaeological sites identified would be collected because of their scientific and educational value. Results of this field work would be incorporated into the final report, as appropriate.

5. Final design of the highway realignment drainage system could include areas not previously inventoried. In that event, additional inventories would be completed, and appropriate avoidance or mitigation activities required by the BLM would be accomplished prior to construction disturbance.

#### 6.8 LAND USE

#### 6.8.1 VCR MINING AREA

- Land use impacts for which mitigation would be appropriate relate primarily to public safety, especially the potential for unauthorized off-road vehicle use once the proposed mine became non-operational. As was done with the adjacent Mesquite project, vehicular access to the site would be restricted by the BLM "Routes of Travel" program during operations and after completion of the project. Access and travel on BLM lands within the California Desert Conservation Area (CDCA) are regulated by the Routes of Travel process, which includes the posting of coded road markers that signify the allowed level of vehicular access.
- 2. In addition to the above, the following measures would minimize potential hazards related to unauthorized use of the reclaimed mining site:
  - Re-grading roadways and ditches to adjacent contours, where appropriate.
  - Removing buildings and structures.
  - Stabilizing pit slopes by excavating or blasting.
  - Leaving the overall pit slopes no steeper than 1: 1 from the floor of the pits to the rim.
  - Stabilizing overburden and protore stockpile slopes at the natural angle of repose, as necessary.
  - Providing consolidated earth and rock berms at the entrances to the mine pit access roads to prevent vehicular access.

- 3. GFOC may make the VCR mining area available for mineral research, in conjunction with the adjacent Mesquite property and subject to BLM approval. The research site would be made available for use by accredited academic institutions and research organizations which would be responsible for funding of research activities.
- 4. Should there be a problem in regard to illegal aliens becoming attracted to the mining project, the same water facilities will be provided as at the adjoining Mesquite project.
- 5. Approval of the VCR Plan of Operations by the BLM would not constitute an exception to the 14-day camping limit in effect in the CDCA.

## 6.8.2 HIGHWAY 78 REALIGNMENT

- 1. A new, at-grade intersection with turning lanes would be provided in conjunction with the new mine access road.
- 2. An at-grade intersection would be provided on the new highway alignment at the existing unpaved Vista Mine Road to maintain access to the existing County road system south of the realignment.
- 3. A new route for access from the proposed realignment to the previous highway alignment would be provided so that access to potential sand and gravel resources would also be maintained.

## 6.9 TRANSPORTATION

## 6.9.1 VCR MINING AREA

 Alternative I, which would include about 8.5 miles of Highway 78 realignment, could be considered a mitigation, as the proposed realignment would eliminate certain potentially adverse transportation effects associated with the proposed project. These include: (1) vehicle turning movements at project access points on both sides of the road, (2) occasional highway crossings by mine-related vehicles and equipment, and (3) driver distractions due to mine activities occurring on both sides of the roadway.

- Under Alternative II, the project would be designed so that project access and equipment crossing locations would be concurrent with the existing Mesquite project intersection. Previously, the pavement at the intersection was strengthened, and it would 'be able to accommodate the anticipated loads for the two projects.
- 3. Also under Alternative II, measures would be taken to minimize the number of times Highway 78 would be crossed by heavy and slow-moving equipment. Such measures would include establishment of the mobile equipment repair shop on the south side of the existing highway. For the infrequent crossings which would be necessary, adequate. warning and traffic control would be provided (e.g. flagmen, signs). A traffic management plan for these crossings would be utilized, such as approved by Caltrans for the Mesquite project.
- 4. Under Alternative II, in order to minimize gold losses due to the existing highway alignment, there could be local realignments of the highway at the various pits. The design and construction of these realignments would be subject to approval by Caltrans.
- 5. If an overpass were built for mining equipment to cross Highway 78, it would be designed and constructed to Caltrans specifications. The design would minimize the potential for adverse effects to motorists on Highway 78.

#### 6.9.2 HIGHWAY 78 REALIGNMENT

- 1. Under Alternative I, turning lanes would be provided at the intersection of Highway 78 and the new mine access road. They would be designed and constructed to Caltrans specifications.
- 2. Access would also be provided by an at-grade minor intersection from the new highway alignment to the Vista Mine Road south of the highway.
- 3. An intersection from the new highway alignment to the gravel withdrawn area near the west end of the proposed realignment would be provided, if necessary.

#### 6.10 <u>NOISE</u>

#### 6.10.1 VCR MINING AREA

- 1. Blasting would be conducted only during daylight hours and would not occur for periods longer than one hour. Typically, blast events would last no longer than several seconds.
- 2. Under either Alternative I or Alternative II, berms placed between the highway and mining activities would tend to mitigate the magnitude of mining noise to highway travelers.
- 3. Areas of equipment operation for building overburden stockpiles would generally be at least several hundred feet from Highway 78. Also, in later operational years, the presence of overburden stockpiles would attenuate sound from activities within the mining area.

#### 6.10.2 HIGHWAY 78 REALIGNMENT

1. The proposed highway realignment would be a mitigation measure relative to potential noise effects associated with the proposed project.

#### 6.11 SOCIOECONOMTCS

1. **Socioeconomics** effects of the proposed project would be beneficial and would not require mitigation.

#### 6.12 SERVICES AND UTILITIES

1. There would be minimal impacts to local services and utilities. Therefore, mitigation measures would not be required.

### 6.13 PUBLIC AND EMPLOYEE HEALTH AND SAFETY

### 6.13.1 VCR MINING AREA

#### 6.13.1.1 Public Safety

- 1. The perimeter of the VCR mining area would be fenced and posted with warning signs to prevent unauthorized entry.
- 2. As discussed in Section 6.8.1, the following measures would be employed to minimize potential hazards to the reclaimed mining area:
  - Regrading roadways and ditches to adjacent contours, where appropriate.
  - Removing buildings and structures.
  - Stabilizing pit slopes by excavating or blasting.
  - Leaving the overall pit slopes no steeper than 1: 1 from the floor of the pits to the rim.
  - Stabilizing overburden and protore stockpile slopes at the natural angle of repose, as necessary.
  - Providing consolidated earth and rock berms at the entrances to the mine pit access roads to prevent vehicular access.

#### 6.13.1.2 Employee Safety

- 1. In the event of an accident, trained personnel and an emergency vehicle are available at the adjacent Mesquite facility. Also, a heliport located at the adjacent Mesquite project site is available to coordinate with regional "Life Flight" services. An **onsite** communication system would link the various areas of the project and connect to the public communications system.
- 2. The VCR project would comply with applicable MSHA standards for achievement of a safe working environment.
- 3. Separate water storage and fire suppression equipment are located at the existing Mesquite site for prompt response in the event of a fire at the VCR project.

#### 6.13.2 HIGHWAY 78 REALIGNMENT

#### 6.13.2.1 Public Safety

- 1. The highway would be designed to current Caltrans specifications, resulting in a significantly improved design from that of the present alignment.
- 2. Compared to the existing alignment of Highway 78, the proposed highway realignment would result in decreased motorist distraction from mining activities and facilities.

### 6.13.2.2 Employee Safety

- 1. Turning lanes designed to Caltrans standards would be provided at the intersection of the realignment with the new VCR project access road.
- 2. GFOC would have at least two employees per shift trained and certified by the American Red Cross to administer Multi-Media First Aid.

#### 7.0 UNAVOIDABLE ADVERSE IMPACTS

- The discussions of potential environmental impacts indicate that each is mitigable to either an acceptable level or to one of no significant effect, as summarized in Table 2.3 and discussed in detail in Chapter 5.0. However, implementation of the proposed VCR project, under either Alternative I⁽¹⁾ or Alternative II, would create some unavoidable adverse impacts to mineral resources, land use, vegetation/wildlife habitat, and visual resources. These were also areas of potentially unavoidable adverse effects identified for the adjacent Mesquite mine and processing facility (Mesquite Project EIR/EA 1984).
- 2. To avoid unnecessary repetition in this short chapter, adverse impacts of the VCR mining area and highway realignment are discussed concurrently for each topic. When appropriate, differences in impacts for the two areas are noted.

#### 7.1 MINERAL RESOURCES

- 1. If Alternative II (without the highway realignment) were developed, and local realignments of the existing highway were not possible, the presence of the existing highway would preclude mining of an estimated 2.1 million tons of ore. This would result in the adverse effect of precluding the efficient recovery of these available natural resources. Further, it would adversely affect the associated socioeconomic benefits of mining, such as employment, property taxes, and project-related expenditures.
- The VCR mining project is not located in the BLM gravel withdrawn area, and the realigned highway for Alternative I affects only a small portion of the withdrawn area boundary. Therefore, substantial effects to sand and gravel resources are not anticipated.

⁽¹⁾**Two** alternative project configurations are analyzed in this document. The "preferred" alternative (Alternative I) would include the relocation of Highway 78 to the south of the mining area. A "backup" alternative (Alternative II) is also analyzed so that it would become the approved arrangement in the event relocation of the highway were determined to be infeasible. These designations are consistent throughout this document.

## 7.2 <u>LAND USE</u>

- The proposed VCR project is consistent with County land planning objectives relative to mineral extraction. However, it would not be feasible to return the VCR mining area to a "natural condition" at the completion of project operations. Although buildings and structures would be removed at the end of the anticipated 20-year life of the project, the mine pits and overburden stockpiles would remain, to permanently alter the physical character of the VCR mining area. The VCR project would directly impact about 1,500 acres for mine pits, stockpiles, haul roads, and associated facilities. The realigned highway would impact an additional area of about 125 acres.
- 2. The proposed project is also consistent with BLM land use designations. However, implementation limits most future non-mining uses of the mining area, such as ORV recreation and hiking. Rock-hounding, however, would be enhanced. This preemption of many future recreational uses would be partially mitigated by the potential for future resource recovery from the mine pits, protore stockpiles, or other unforeseen uses of these resources.

## 7.3 VEGETATION/WILDLIFE HABITAT

## 7.3.1 VEGETATION

- The proposed VCR mining area ultimately would affect about 1,500 acres which support creosote bush scrub habitat dispersed over about 5% of the area. The loss of habitat for wildlife in most of this area would be an unavoidable adverse effect of the proposed development. However, given the larger contiguous acreage of desert habitat in unmineralized areas, and phasing of the proposed project, this impact would not be considered substantial. Some natural revegetation is expected to occur at the end of project operations.
- 2. The one sensitive vegetation type found within the VCR mining area is the fairy duster (Calliandra eriophylla), which is considered by the California Native Plant Society to be "Rare in California, Common Elsewhere." Since this plant has adapted to an extreme environment and its reestablishment in disturbed areas has been observed (Pritchett 1987), it can be assumed that it would also adapt to other areas of disturbance. The fairy duster has been found widely distributed throughout the VCR mining area, a site which comprises a small percentage of the

plant's total population in the eastern Colorado desert. For example, extensive field inventories conducted over about 70,000 acres of desert east of the Algodones Dunes (Pritchett 1984) have found populations of fairy duster to be widely dispersed and thriving. The plants are found in the washes and runnels of the inventoried area, ranging from Midway Well, 20 miles to the northeast, to Gold Rock Ranch, 18 miles to the southeast of the VCR and Mesquite project areas. Consequently, the effects of the proposed mining project are not considered to be substantial.

- 3. Further, results of exploration activities by GFOC on much of the land available for mineral location indicate that additional large mining operations are not expected in this portion of the desert. This reduces the potential for nearby incremental impacts to vegetation due to other mining activities. Therefore, considering the relatively small percentage of population affected, and the extent and good health of the plants inventoried, the cumulative effect on the fairy duster community is not expected to be substantial.
- 4. The highway realignment would affect about 125 acres, also with an estimated vegetative cover of about 5%. Some vegetation may naturally reestablish outside of the paved area after initial construction. Also, removal of all pavement along the abandoned highway alignment would permit reestablishment of habitat in that general area. The net loss of vegetation due to the highway realignment would not be substantial.

#### 7.3.2 WILDLIFE

Although the VCR mining area and proposed highway realignment corridor contain no unique habitat features, wildlife inventories have found evidence of use of the site by the desert tortoise (Gopherus agassizii). The desert tortoise is considered a "Sensitive Species" by BLM, a "Protected Species" by the California Department of Fish and Game, and is found to warrant inclusion on the list of Threatened and Endangered Species by the U.S. Fish & Wildlife Service. The VCR mining area has been classified as having the lowest category of tortoise densities established by the BLM. The area does not constitute critical habitat for the desert tortoise, and site-specific inventories have confirmed the lowest density as classified by the BLM. Mitigation measures would be implemented to alleviate impacts on individual tortoises. The impact of the proposed action on tortoises would be minor.

## 7.4 VISUAL RESOURCES

- The overburden stockpiles resulting from the proposed VCR project will cause a noticeable visual effect which would become greater over the anticipated 20-year operations period. Because the VCR project would be located adjacent to the similar, currently active Mesquite project, this overall visual effect would be less than that of the same project in a previously undisturbed area.
- 2. The extent of visibility of the stockpiles would depend upon which alternative were selected. Under Alternative I, the stockpiles would be most visible from the approximate 2-mile portion of highway realignment which would parallel the eastern boundary of the VCR mining area. This segment of the realignment would represent a travel time of about 2 minutes at 55 mph, and the stockpiles would dominate the view on only one side of the highway. The view toward the east and south from the realigned highway would be virtually undisturbed
- 3. Under Alternative II, the overburden stockpiles would be visible from a closer perspective, and on both sides of Highway 78, which would traverse the mining areas (see Section 5.6, Visual Resources). This more expansive view of the stockpiles would occur for about a 4-minute driving period on the existing highway.

### 8.0 OTHER REQUIRED CONSIDERATIONS

#### 8.1 <u>RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT</u> <u>AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY</u>

#### 8.1.1 POTENTIAL ADVERSE EFFECTS

- 1. Implementation of the proposed VCR project could result in both short-term and long-term environmental effects. Short-term air quality, noise, energy use, visual, and transportation impacts would occur during project construction.
- 2. Project operations would create certain air quality, visual, transportation, energy, and noise impacts for the anticipated 20-year life of the project. Operations also would involve the long-term commitment of existing natural habitat to accommodate project facilities.

#### 8.1.2 ECONOMIC BENEFITS

- The project would generate short-term employment opportunities during construction and long-term employment during operations. There would be some incremental gains in long-term productivity in the region's urban centers and a beneficial increase. in the County tax base.
- 2. Increased retail and commercial activity generated by direct project employment and purchases of goods and services for the project could be expected to incrementally increase local employment and retail sales.

#### 8.1.3 MITIGATIONS AND RECLAMATION

- 1. Implementation of the VCR project, with appropriate mitigations, is expected to enhance the productivity of the project area over the life of the project and protect the **continued** viability of the adjacent Mesquite mine.
- 2. With reclamation, some of the mining area would be returned to a natural state while the rest, primarily the mine pits and overburden stockpiles, would remain. The mine pits and overburden and protore stockpiles would remain available for future mineral recovery, as economics and technology permit.

3. The proposed Reclamation Plan includes incorporation of the VCR mining area into the area to be utilized for research at the Mesquite site.

## 8.2 IRREVERSIBLE ENVIRONMENTAL CHANGES RESULTING FROM THE PROPOSED VCR PROJECT

- 1. The proposed project would result in irreversible commitments of some resources. Extraction of gold reserves would gradually diminish the commercial value of the VCR **orebody** until it would no longer **be** economically viable. Commitment of the project site to mining use would have an irreversible and irretrievable impact on vegetation and wildlife within the limits of the project boundaries.
- 2. The proposed mining method would limit future non-mining uses on the project site. Also, the mine pits and overburden and **protore** stockpiles remaining after project completion would represent permanent alteration of the **landform** and characteristic visual environment.
- 3. A Cultural Resources Management Plan (CRMP) would be developed to provide for recovery of data from important cultural sites that would be adversely affected by project development. Disturbance of a fragile cultural site unavoidably alters the data base, thus making preservation the best alternative for protection. However, due to the nature of the proposed project, most of the cultural resource sites would be mitigated by collection. The CRMP would provide a program to mitigate direct impacts. Further, care would be taken during project construction in the event of discovery of any subsurface resource.

#### 8.3 GROWTH-INDUCING EFFECTS OF THE PROPOSED ACTION

 The proposed VCR project would generate some growth in employment in Imperial County, but minimal increase in housing demand. According to GFOC estimates, about 80% of the operational work force would be from the local labor market. The remaining 20% would likely be drawn from the larger Southern California region. It is assumed that new personnel would relocate to local communities.

- Based on these projections, an estimated 7 to 10 non-local workers could relocate to project vicinity communities. Using the Imperial County average household size of 2.9 persons, this could result in additional population of about 20 to 30 persons, a negligible increase in the County's estimated 1987 population of 108,000.
- Minor secondary employment growth is expected to benefit the local labor force and local suppliers of goods and services. No noticeable secondary population growth is anticipated. The proposed project would not require the extension of community services or utilities to the project site.

#### 8.4 ENERGY CONSUMPTION AND CONSERVATION

- Construction and operation of the proposed VCR project would result in both short-term and long-term commitments of non-renewable energy resources. The principal energy requirements would be fuel for mining equipment and motor vehicles and, if installed, a primary crusher and conveyor. Energy consumed for uses such as lighting and water heating would be negligible.
- 2. The initial 8- to 16-month construction/stripping (pre-production) phase would require significant fuel consumption. Primary activities would be removal of the overburden from the pits and construction of other project facilities, primarily the haul roads. Once this phase had been completed, fuel consumption and energy requirements would depend upon which portion of the 4.5 MTY production was being produced from the VCR facility. For the two projects, average annual energy consumption is estimated to be about 2.3 million gallons of diesel fuel, 225,000 gallons of gasoline, and 30 million kilowatt hours of electricity.
- 3. Vehicular fuel consumption would be the largest single energy requirement. Therefore, one of the primary opportunities for energy conservation would be regular maintenance of vehicles and equipment to maximize their fuel efficiency. Also, the project site has been designed for operational efficiency, including measures such as minimizing travel distances to reduce onsite fuel consumption.

# 9.0 STAFF AND CONSULTANTS PERSONS AND ORGANIZATIONS CONTACTED

#### 9.1 STAFF AND CONSULTANTS

- 1. This EIR/EA was prepared by Environmental Solutions, Inc., 15520 Rockfield Boulevard, Suite E, Irvine, California 92718.
- 2. The following professional staff and consultants participated in preparation of the document:
  - Environmental Solutions, Inc. Richard D. Ellison, Ph.D., P.E. Principal in Charge Permitting Manager

Carolyn E. Trindle, M.B.A. Environmental Coordinator

Joseph L. S tenger, B . **S** , Geology Environmental Engineer

Massoud Vatankhahi, P.E. Highway Design

Kerry Parkinson, P.E. Hydrology

Shahriar Shahin Geotechnical Engineering

- Mooney-Levine & Associates, Cultural Resources Inventories John R. Cook, S.O.P.A. Jackson Underwood
- EDAW, Inc., Visual Resources Analysis Thomas Packard, Landscape Architect
- Tierra Madre Consultants, Wildlife Inventory Lawrence LaPré, Ph.D.
- Botanical Inventory Lorraine Pritchett, Environmental Botanist
- EMS, Air Quality Analysis Al Larson, Task Manager
- TRC, Air Quality Analysis Clifford Cole, Project Manager

#### 9.2 PERSONS AND ORGANIZATIONS CONTACTED

#### 9.2.1 COUNTY OF IMPERIAL

- Planning Department Jurg Heuberger, Planning Director J.L. Morrison, Assistant Planning Director James Kelley, Senior Planner Jerry Santillan, Planner III
- Air Pollution Control District Philip R. Schafer, Deputy Air Pollution Control Officer Harry Dillon, Director Gasper F. Torres, Air Pollution Control Engineer
- Department of Public Works S. Harry Orfanos, Director Jean Mavity, Deputy Director
- Board of Supervisors Abe Seabolt, District 1 James Bucher, District 3 Jeanne Vogel, District 5

#### 9.2.2 BUREAU OF LAND MANAGEMENT

- Ben Koski, Area Manager, El Centro
- Peter Ertman, Chief, Branch of Resource Program Operations, El Centro
- Lillian Olech, Wildlife Biologist, El Centro
- Cindy Grover, Botanist, El Centro
- Pat Welch, Archaeologist, El Centro
- Garth Portillo, Archaeologist, Riverside
- Richard Park, Geologist, El Centro
- Linda Kastoll, Realty Specialist, El Centro
- Steve Nelson, Visual Analyst, El Centro

#### 9.2.3 STATE OF CALIFORNIA

 Department of Transportation (Caltrans) Bill Dodson, P.E., District Director, District 11 Stuart Harvey, P.E., Deputy District Director, Project Studies Gary J. Klein, P.E., Project Studies Engineer E.P. Marshall, P.E., Local Streets and Roads Engineer Jim Roy, Local Assistance Project Engineer Tim Vasquez, Chief, Environmental Analysis Branch A Chris White, Chief, Environmental Analysis Branch B Fred Yazdan, Project Engineer Don Jones, Area Superintendent, Imperial County Charles Pivetti, Chief Highway System Engineering Branch, Sacramento Eugene Poch, P.E., Chief, Project Planning Branch, District 4

- Department of Transportation (Caltrans) (continued) David Walcott, Project Engineer James S. Kemp, District Permit Engineer
- California Transporation Commission Tom Hawthorne, Commissioner
- Regional Water Quality Control Board, Colorado River Basin Region Art Swajian, Executive Officer Gary Morris, Supervisor, WRC Engineers Neal Krull, Sanitary Engineer Will Ponder, Senior Water Resources Control Engineer Amarjit Saluja, Senior Water Resources Control Engineer

#### 9.2.4 GOLD FIELDS MINING CORPORATION

- . William Bleimeister, Vice President
- . John Fitz-Gerald, Assistant General Counsel, Operations
- . Stan Watowich, Senior Project Geologist

#### 9.2.5 GOLD FIELDS OPERATING CO. - MESQUITE

- Richard Graeme, Manager
- · Robert Filler, Assistant Manager
- · Larry Todd, Mesquite Plant Superintendent
- Jim Eacret, Mesquite Mine Superintendent

#### 10.0 REFERENCES

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APPENDIX A

LIST OF PERMITS AND APPROVALS

# APPENDIX A

# LIST OF PERMITS AND APPROVALS

#### PERMIT/APPROVAL

#### AGENCY OR <u>APPROVING AUTHORITY</u>

#### **REMARKS**

#### FEDERAL

Plan of Operations

Environmental Assessment

Antiquities Permit

Right-of-Way Easement or Special Use Permit

Permit to Construct

Archaeological Salvage Notice

Purchase and Storage of Explosives Permit

Emergency fire, evacuation and rescue plans (55.4-39.B)

Notice of Start of Operations

Legal Identity Report

Record of Inspection of Self-Propelled Equipment (55.9-1)

Record of testing the resistance of electrical grounding system (55.12-28)

Miner Training Plan (Title 30, Subchapter H, Part 48, Subpart B) Bureau of Land Management

Department of Interior Interagency Archaeological Service

Department of Justice, Bureau of Alcohol, Tobacco, and Firearms

Department of Labor, Mine Safety and Health Administration

Mine and Reclamation Plan approval.

N/A

Cultural Resources Inventory

Electric power and water line rights-of-way.

Highway 78 Realignment

Salvage of artifacts first discovered during construction.

Purchase of explosives in one state for use in another.

Separate plans required for surface and underground operations.

Notice must be filed prior to start of operations.

Report on type of operation, location, and ownership.

Must be maintained for 6 months and available to inspectors.

Test required annually and after installation, repair, or modification. Record of tests must be available to inspectors.

Training by certified instructors is mandatory for all personnel.

# APPENDIX A

# LIST OF PERMITS AND APPROVALS (Continued)

# AGENCY OR APPROVING AUTHORITY

# **REMARKS**

# PERMIT/APPROVAL

# STATE OF CALIFORNIA

Environmental Impact Report	Office of Planning & Research, State Clearinghouse	Caltrans is Responsible Agency for Highway 78 realignment.
Conceptual Route Approval	California Transportation Commission	Proposed Highway 78 realignment.
Encroachment Permit	Department of Transportation (Caltrans)	To construct highway facilities on existing State Highway right-of-way.
COUNTY OF IMPERIAL		
Conditional Use Permit	Imperial County Planning Department	Consistency with planning/ zoning.
Road Vacation	Imperial County Department of Public Works	Maintain access to adjoining properties (depending on whether Alternative I or II is chosen).
Approval of Mine and Reclamation Plan	Imperial County Planning Department	
Water System Permit	Imperial County Health Department	Supply, storage, and distribu- tion. System design, water quality.
Sewage Disposal System Permit	Imperial County Health Department	Location, design, percola- tion rates for septic tanks and underground leaching fields.
Purchase and Use of Explosives	Imperial County Sheriff	N/A
Building Permit	Imperial County Planning and Building Inspection	Fire safety, building safety.
Authority to Construct	Imperial County Air Pollution Control District (APCD)	Air pollution source location and control.
Permit to Operate	Imperial County APCD	Air pollution emissions, monitoring, and reporting.

APPENDIX B

RESPONSES TO NOTICE OF PREPARATION



**IMPERIAL** IRRIGATION **DISTRICT** 

OPERATING HEADQUARTERS + P O 80X 937 + IMPERIAL CALIFORNIA 92251

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18



June 11, 1987

Mr. Jurg Heuberger, Planning Director Inperial County Planning Department 939 Main Street El Centro, CA 92243

Dear Mr. Heuberger:

Subject: Gold Fields Open Pit Mining Project -Imperial County Initial Study #1830-87

The proposed project will have a detrimental impact on Imperial Irrigation District power facilities.

The existing 92-kV transmission line serving the present Gold Fields operation crosses the proposed project area. This line must be accessible to the District for patrol and maintenance at all times. Also, access to the Gold Fields Substation will be more difficult because of the added distance.

The owners of the Glamis Store have requested electric power service from the District. The proposed route of the power line to provide this service would be alongside of the existing Highway 78 alignment which is included in the portion proposed for abandonment.

Thank you for the opportunity to connent on IS #1830-87.

Sincerely,

CHARLES L. SHREVES General Manager

**GOLDFIELDS** 

	UNITED STA U.S. MA YUMA, A	TES MARINE CORPS RINE CORPS AIR STATION RIZONA 85369-5001	IN REPLY REFER TO:
			11000 <b>3AQ/DKI</b> 15 Jun 87
Mr. Jurg Planning Planning 939 Main El Centre	Heuberger Director Department, Imperial County Street o, <b>CA</b> 92243-2856	- 5:3927	

Re:' IS# 1830-87

Dear Mr. Heuberger:

We offer the following comments concerning Initial Study 1830-87, part of a request from Gold Fields Mining Company to expand an open pit mining operation 6 miles east of Glamis, north and south side Highway 78. The legal description is Sections 3, 4, 9 and 10, Township 13 South, Range 19 East, parcel 739-330-01 which consists of 2,500 acres.

As long as the operation does not touch our land in the Chocolate Mountain Gunnery Range, we do not object to their request.

Thank you for allowing our comments.

IK Doal y

D.K. ISALY LtCol, U.S. Marine Corps By direction of the Commanding Officer

STATE OF CALIFORNIA--THE RESOURCES AGENCY

#### DEPARTMENT OF CONSERVATION DIVISION OF ADMINISTRATION DIVISION OF MINES AND GEOLOGY DIVISION OF 011 AND GAS

	CE	IVE	GEORGE	DEUKMEJIAN, Govern
	JUN 2	<b>7</b> 1987 		
			]	1416 Ninth Sheet

JUN221987

SACRAMENTO, CA 958 14

Mr. Jim Xelley Imperial County Planning Department 939 Main Street El Centro, **CA 92243** 

Dear Mr. Xelley:

#### Gold Fields VCR Mine

The Mine Reclamation Program staff of the Department of Conservation's Division of Mines and Geology has reviewed the documents submitted for the VCR Mine. Mine Reclamation Program files were reviewed. A site visit was not conducted. The following comments prepared by James Pompy and Larry Lippert of the Mine Reclamation Program staff are offered to assist in your review of this project.

The Project Description and Initial Study Assessment do not indicate that a mined land reclamation plan has been prepared for this mining project, and we find no record of one in our files. While a number of the items addressed in the Environmental Assessment are pertinent to mine reclamation, a complete reclamation plan was not included in the documents submitted.

The Surface Mining and Reclamation Act of 1975 (SMARA) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Administrative Code (CAC) Title 14, Chapter 8, Article 1, Section 3500 et. seq.) (copies enclosed) require that a mine reclamation plan be prepared and approved prior to the start of any mining operations. If requested, our Mine Reclamation Program will provide technical assistance in the review of the reclamation plan.

The Mine Reclamation Program maintains a file of lead agency approved plans. Please send a copy of the final reclamation plan and the mining permit for this project.

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact Jim **Pompy**, Mine Reclamation Program Manager, at (916) 323-8565.

Junif. Cisyant

Dennis J. O'Bryant Environmental Program Coordinator

Enclosures

STATE OF CALIFORNIA-THE RESOURCES AGENCY



```
245 W. Broadway, Suite 350
Long 3e3ch, CA 90802
(313) 590-5137
Fune 23, 1987
Jim Kelley
County of Imperial/BEM
Flanning Department
939 Main Street
El Centro, CA 92243
```

Dear Mr. Kelley:

Department biologists familiar with the project site have reviewed the Notice of Preparation of an EIR for the proposed expansion of the existing Gold Fields VCR Mine (SCH 37051709). The project will reroute approximately 8 miles of Highway 78 and open four additional pits. We believe this project will result in significant long-term adverse impacts to biological resources within the project site and in adjacent areas. We fully agree that an EIR needs to be prepared to enable our staff to adequately review and comment on this project. We recommend that the following information be included in the Draft EIR:

- The total acreage that will be impacted, including a detailed analysis of the different habitat types that will be lost or affected and their associated flora and fauna.
- 1. A complete assessment of flora and fauna within the project area. Farticular emphasis should be placed upon identifying threatened, endangered, State-protected species and locally unique species. This should include, but not be limited to, the protected desert cortoise and spayed-foot toad. Nildlife species which migrate through or utilize the site seaschally or throughout the year should be documented, including the burro mule deer and the desert bighorn sheep. The EIR should propose measures to offset any identified adverse impacts.
- The impacts to the lesert flora and fauna associated with rerouting of Highway 78. This should include an analysis of new roads that will be formed and increased access to desert areas that presently are undisturbed or have limited access.
- 4. Discussion and evaluation of the sumulative impacts of this project and the existing Gold Fields project including, but not limited to, the increase of prouniwater use, impacts from additional installations being added to existing leach pads and further reduction of the flora and fauna of the area.

Diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream, or lake will require notification to the Department of Fish and Game as called for in



Mr. Keiley

the Fish and Game Code. This notification (with fee) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Jack L. Spruill of our Environmental Services staff at (213) 590-5137.

Sincerely,

Fred Worthley

Regional Manager Region 5

cc: Uffice of Flanning and Research
Ray Bransfield, USFWS, Laguna Niguel
R. Thompson
K. Nicol

"The Largest Irrigated District in the World"

S. HARRY ORFANOS DIRECTOR OF PUBLIC WORKS COUNTY ROAD COMMISSIONER COUNTY SURVEYOR COUNTY ENGINEER



July 2, 1987

DEPARTMENT OF PUBLIC WORKS 155 South 11 th Street EL CENTRO, CALIFORNIA 92243-2853

Mr. Jurg Heuberger Planning Director County of Imperial Courthouse El Centro, CA 92243

> SUBJECT: Expansion of Goldfield Mining and Rerouting of State Highway 78

Upon review of the documents in our possession regarding this project, we have determined several specific areas of concern. The Board of Supervisors, by resolution, has indicated they support the proposed relocation of State Highway 78. Caltrans does not object to the proposal but all expenses must be borne by Goldfield's. The plans, specifications, and construction of the new route must conform to Caltrans standards.

The abandonment of Zappone Road may be a concern. There are several private ownerships in the northwest quarter of Section 16 (near the old Gold Basin Rand Mine). An abandonment proceeding would have to be initiated and public input would determine whether the Vista Mine Road could be used or the applicant might have to construct a new road to access State Highway 78.

Another concern would be the possible abandonment of the existing portion of State Highway 78 for about 2 1/2 miles from its southerly intersection with the proposed highway. There are a number of gravel or other related private operations along that portion of highway. This would have to be addressed at a later time to determined whether it should be abandoned or retained as a public road.

Sincerely yours fairid HARRY ORFANOS

S. HARRY ORFANOS Director of Public Works

msr

TELEPHONE 619-339-4462

STATE OF CALIFORNIA-BUSINESS AND TRANSPORTATION AGENCY	REC 75 GEORGE DEUKMEJIAN, GOVERNOR
DEPARTMENT OF TRANSPORTATION DISTRICT 11, P.O. BOX 85406, SAN DIEGO 92138-5406	JUL 1 0 1987
June 30, 1987	

ll-Imp-078
(New Alignment)
P.M. 42.3/50.0

Jim Kelley Planning Department Imperial County 939 Main Street El Centro, CA 92243

Dear Mr. Kelley:

#### Notice of Preparation of a DEIR for the Gold Fields VCR Mining Project - SCH 87052709

We need to receive our review copy of the DEIR from the State Clearinghouse and the eventual notice of determination is to be filed with the Office of Planning and Research (Sections 15087(d) and 15094(c) of the State CEQA Guidelines). We would appreciate the opportunity for an informal review of the DEIR prior to that official review period. Our contact person for this project is Gary Klein, District Project Studies Engineer, (619) 237-6134.

Sincerely,

W. R. DOTSON District Director

By C

JAMES T. CHESHIRE, Chief Environmental Planning Branch

MO:ec

# APPENDIX C

GENERAL WILDLIFE ASSESSMENT OF THE VCR MINING PROJECT Gold Fields Operating Company General Wildlife Assessment of the VCR Mining Project

> Tierra Madre Consultants Lawrence F. LaPré, PhD

#### Introduction

At the request of Carolyn Trindle of Environmental Solutions, Inc. of Irvine, California, a general wildlife assessment was performed on the Gold Fields Operating Company's proposal to establish a gold mine at its VCR claims, and to relocate Highway 78 in this portion of Imperial County. The Mesquite Project, an adjacent mining and processing operation, was reviewed in detail for environmental effects in 1983. The VCR application is a separate mining project., but the biological impacts are nearly identical to those previously identified for the Mesquite Project. Biological documents prepared for the Mesquite Project consisted of a wildlife inventory and a desert tortoise study, which were summarized in the Environmental Impact Report/Environmental Assessment (EIR/EA) and presented as supporting technical documents to the EIR/EA. This report treats the VCR applicant's new study area at the same level of detail as the earlier studies, and covers the wildlife resources of the proposed mining area and highway alignment. We also summarize limited specialized studies of the desert tortoise and other sensitive species known from the region.

#### Methods

Prior to the field surveys, a literature review was conducted of environmental reports prepared for nearby areas, as well as relevant scientific references and field guides. In addition, information was obtained from the California Natural Diversity Data Base (Data Base), a unit of the California Department of Fish and Game (CDFG), about sensitive species locations known from the site. We contacted the Bureau of Land Management (BLM), the CDFG, and Caltrans for input into the scope of work for this study.

Field work for this study was performed by L. LaPré, Mark Baumgartner, and Tom Wake. All three investigators have extensive experience in walking biological transects and recording signs of wildlife. The three worked together for several weeks locating kit foxes, leopard lizards, and kangaroo rats in the southern San Joaquin Valley by the walking transect method just prior to this investigation. A total of 121.5 hours were spent conducting the field surveys for the Gold Fields Operating Company VCR mining project.

The road alignment was covered by walking transects spaced 125' apart for a total of four transects within the 500' alignment width. All wildlife and sign was recorded on these walks, including tortoise sign. Each significant finding, such as active tortoise burrow or a kit fox den, was plotted on 1: 100' scale maps and aerial photographs.

The VCR mining area was covered with walking transects, night-driving routes, and small mammal trapping. Several triangular walking tortoise walking transects were performed in the VCR mining area.

To determine estimated tortoise densities within the VCR area, triangular transects were walked, using the standard methodology for this species. These transects are 1.5 miles long (0.5 miles on each side) and consist of searching for tortoise sign along the length of the walk, using a width of fifteen feet on either side of the observer. Sign consists of scat, burrows, live tortoises, and remains. To calibrate the sign count with a known tortoise density, six transects were walked as calibration transects within the Chuckawalla Valley II permanent study plot, established by the BLM in 1980. This methodology was patterned after that used by Humphreys for analysis of tortoise densities in the original Mesquite Mine environmental review. The detailed tortoise study is presented elsewhere separately, and the results are summarized below.

Copies of the proposed scope of work were sent to the BLM, Caltrans, and Imperial County Planning Department by Environmental Solutions, Inc. prior to the start of field work. These agencies, along with the California Department of Fish and Game, commented on the scope and made suggestions about the methodology which would address their concerns.

#### Results

# **Biological Setting**

The VCR mining site and the highway realignment are located in a relatively unproductive part of the Colorado Desert. No surface water is present, limiting activity of many animals. The wildlife present is adapted to severe desert conditions of heat, drought, and wind, and for the most part consists of common and widespread species. The terrain is primarily a network of braided washes which cut through well-developed desert pavement, a barren-appearing landscape where the soil surface is covered with small rocks that have been darkened with desert varnish. Few perennial plants are present, and the total plant cover is less then 5%. Annual plants comprise a significant

proportion of the flora, and a distinct seasonal element is correlated with animal activity. Birds, for example, utilize the site for nesting in the early spring, but tend to disperse to more favorable areas during the summer and fall. Reptiles, on the other hand, become most active at night during the late spring and summer. Mammals are present year round, with the exception of migratory bats.

The wildlife habitat varies from almost pristine to extremely disturbed. Along the highway realignment route, very little evidence of human disturbance is evident, with the exception of military debris from years past when the site was part of a training area. Three unexploded projectiles were located within the proposed right-of-way during the field work, and others are probably present. These objects present a danger to wildlife, especially to man.

At the western edge of the VCR site, the amount of disturbance increases. Several mineral workings and geological testing programs have disrupted the soil surface for many acres, making about one-sixth of the total study area almost useless as habitat. On the eastern edge of the VCR site, the disturbances are minor, consisting mainly of dirt roads and ORV tracks..

Vertebrate species observed were identical to those detected by the previous studies of the Mesquite mining site, with the addition of a few new observations of different species. No amphibians were observed, although the major washes may support populations of the red-spotted toad and possibly of Couch's spadefoot toad, a species of concern to the California Department of Fish and Game. A disjunct population and one of only three known from California is found in Purgatory Wash, located within the main Mesquite mining area to the west. No washes the size of Purgatory Wash are found withing the VCR mining area, so this amphibian may be absent from the proposed mining site.

Reptiles were commonly seen during the summer survey period, dominated by various species of lizards. Night-driving along Ogilby Road resulted in the finding of one leaf-nosed snake, which is also expected to occur within the VCR area. The rocky knoll within Section 9 provides excellent reptile habitat, and collared lizards, chuckwallas, and speckled rattlesnake were observed at this location. These species were not widespread throughout the study area, being limited by lack of suitable habitat. Other reptiles, such as zebra-tailed lizard, whiptail lizard, and desert tortoise, were widely distributed throughout the VCR mining area, and were most abundant in the sandy washes. A total of eleven species of reptiles are known from the mining area based on this and the previous studies.

Birds of the VCR area consist of common desert residents, such as black-tailed gnatcatcher, verdin, and black-throated sparrow, as well as migratory species that spend the winter, which were not detectable during the summer survey period. Evidence of nesting was recorded for several species, especially in the ironwood, mesquite, and **palo verde** trees. Three species of doves were seen, indicating the capacity of this area to support gamebirds.

Mammals were common, consisting primarily of nocturnal rodents. Five species were identified by the live-trapping effort, and others were detected by sign. Results of the small mammal trapping effort are presented in Table 2. A few larger predatory mammals were detected, including coyote, kit fox, and spotted skunk.

Mule deer of the desert race, referred to locally as burro deer are extremely uncommon in the project area. One set of tracks was observed on one of the wildlife transects, and a few bones that were possibly of this species were found. It appears that the site provides only marginal habitat for deer, since no surface water is available, cover is very limited, and the food resources are most likely inadequate except in the best of years. Mule deer most likely use this site only as an open space resource which they pass through on occasion.

# Sensitive and High-interest Species

Several species of vertebrate wildlife considered sensitive by resource agencies and/or conservation organizations were identified as occurring or potentially occurring on the VCR mining site. Sensitive species are so called because their populations are declining, they are especially vulnerable to habitat change, or because they have restricted distributions and are naturally rare. For a summary of those sensitive species identified for the study area see Table 1.

The sensitive species of wildlife identified in Table 1 as occurring within or near the project area are discussed below. Not all of these animals were identified by the Data Base and other authorities as sensitive species. Some were noted by the Department of Fish and Game as unusual in the area, or as high priority management species.

Couch's spadefoot toad is an amphibian adapted to desert conditions of low rainfall and high temperatures. The distribution of this toad includes much of the southwest from southwestern Oklahoma to southeastern California, as well as stations in Baja, California, and mainland Mexico (Stebbins 1966). Three general areas are known for spadefoot sitings in California: the east side

of the Algodones Dunes to Buzzard's Peak, near Vidal Junction, San Bernardino County (Mayhew 1965), and Purgatory Wash on the Mesquite mining site. No washes of similar size were noted on the VCR mining site, and the likelihood of this amphibian being found within the project area is marginal.

The desert tortoise is a long-lived species that has recently been the subject of great concern to resource agencies. A population in Utah is listed as threatened by the U.S. Fish & Wildlife Service, and a petition has been submitted to the Service to list the tortoise as endangered throughout its range. The FWS is still evaluating the proposal to bring this reptile under the protection of the Endangered Species Act.

The desert tortoise occurs in low densities on the VCR site. The transects indicated that tortoise populations in this area are in the range of O-20 per square mile, a level that is the lowest compared to desert-wide densities published by the BLM. The VCR site is not near one of the four major crucial habitat areas defined by the BLM, where tortoise densities reach or exceed 200 per square mile. Tortoises are found most often in the washes on the VCR site, though they travel over areas of desert pavement as well. Sign of tortoises was detected on the mining site, as well as on the highway realignment corridor. A detailed evaluation of the desert tortoise in the project area is contained in the accompanying Desert Tortoise Report.

The black-tailed gnatcatcher is a very common bird in the project area. It nests in the washes in palo verde and ironwood trees. The desert race is subject to population declines due to disturbance of habitat and nest parasitism by cowbirds, but the populations in the VCR project area are apparently healthy.

The leaf-nose bat is though to be a declining species in California due to loss of foraging areas near the coast, and disturbance to roost sites throughout its range in southern California. It is most common in the low deserts of Imperial, Riverside, and San Diego counties. Apparently, suitable roosting areas are an essential component of the habitat, with caves and old mines being the most extensively used sites. We observed several bats during the field work, but could not make a specific determination. No suitable roost sites were present on the VCR mining area to our knowledge. The species is assumed to be present in low numbers and to use the entire Mesquite and VCR project areas as foraging habitat.

**Mule deer** of the desert race, referred to locally as burro deer, are extremely uncommon in the project area. One set of tracks was observed on one of the wildlife transects, and a few bones that were possibly of this species were found. It appears that the site provides only marginal habitat for deer, since no surface water is available, cover is very limited, and the food resources are most likely inadequate except in the best of years. Mule deer **most** likely use this site only as an open space resource which they pass through on occasion.

**Desert bighorn sheep are** known in this region from the Chocolate and Cargo Muchaco Mountains. They rarely traverse the desert pavement habitat of the VCR site except when crossing between ranges. No sign of bighorn sheep was detected during the field studies, and use of the site by this species is minimal.

The **desert kit fox** is a widespread species throughout the deserts of southern California. It is thought to be on the decline, due to habitat fragmentation, urbanization, and losses to road collisions. Several active dens were located, including a few natal dens used during the spring. One fox was seen being hit and killed by a car on Ogilby Road. The kit fox is rather common at the VCR mining site.

#### Discussion

# Project Impacts

The VCR mining project will remove a large majority of the habitat for all wildlife within its boundaries. Although the disturbance will occur over a substantial period of time, some undisturbed desert areas may remain, and some small parts of the project area may eventually return as habitat after mining is completed. The mining and construction will thus impact many common species of desert animals which are found in this region, as well as a few sensitive or protected species. No animal currently listed as threatened or endangered by State or Federal agencies will be adversely impacted. The impacts of this project will be a small contribution to the cumulative loss of range and habitat for common species of wildlife in the Colorado Desert.

The rocky knoll which provides high-value reptile habitat will be destroyed by the proposed project. This area, along with the adjacent wash which drains the knoll, contains habitat that is uncommon in the project area, though not uncommon in the Colorado desert.

The highway realignment presents a biological impact that equals or exceeds the impact of the mining project by itself, Local populations of larger predators, such as kit fox, coyote, and rattlesnakes, will become reduced due to vehicle collisions. Desert tortoises found in adjacent undisturbed desert will be killed by collisions as well. Over the long term, the presence of the new highway alignment will reduce adjacent wildlife populations of these slow-moving and wide-ranging species without adequate mitigating measures.

# Mitigating Measures

Adoption of one or more of the mitigation measures discussed below would reduce the level of impact of the VCR mining project to wildlife. Mitigation measures for tortoises are discussed separately in the accompanying Desert Tortoise Report. The final mitigating measures and conditions of approval for this project will be determined by consultation with the Bureau of Land Management.

- 1. The portions of existing highway alignment outside of the project area may have the pavement removed. These areas would provide some mitigation for the return of wildlife because high speed and frequent traffic will no longer occur.
- 2. The impacts of collision with vehicles on the realigned highway would be reduced by fencing the **right-of-way on** the south and east sides. This would prevent animals from crossing the highway. Fencing of the right-of-way may not be feasible.
- 3. Additional mitigation measures to protect the sensitive and high-interest species of wildlife, other than the tortoise, are probably unwarranted. The reasons for this statement are as follows:
  - a. The Couch's spadefoot toad and leaf-nosed bat either are not present in substantial numbers or mitigation measures are infeasible. For the spadefoot, any areas that might harbor populations will be destroyed by mining, and this is an unavoidable loss. No known roosting areas for the leaf-nosed bat are being impacted, and the amount of foraging habitat being removed for this species is inconsequential.
  - b. Burro deer do not use the site on a frequent basis, hence the impact is insignificant, and mitigation is unwarranted.
  - c. Populations of the desert the kit fox and black-tailed gnatcatcher are high in this area of the Colorado desert, and the loss of **onsite** habitat is an unavoidable adverse impact of little significance. Healthy populations of these species will remain in adjacent areas, though the potential collision impact to foxes will extend some distance from the actual highway if it is not feasible to install fences.

## Table 1.

Scientific Name (Common Name)	status (Data Base) (Federal) (State)	Probability of Occurrence*
Amphibians:		
<u>Scaphiopus couchi</u> Couch's spadefoot toad		Moderate
Reptiles:		
<u>Gopherus agassizii</u> Desert tortoise	B2.1 c2 CP	Occurs
Birds:		
<u>Polioptila melanura lucida</u> Black-tailed gnatcatcher	B3.1	Occurs Breeds
Mammals:		
Macrotus califomicus Calif. leaf-nosed bat	B2.1	Low
<u>Odocoileus hemionus</u> Mule deer		Occasional
<u>Vulpes macrotus arsipus</u> Desert kit fox	B3.2 CP	Occurs

# Sensitive and High-interest Wildlife - VCR Project

* Definitions of occurrence probability:

Occurs:	Observed on the site by field personnel of Tierra Madre Consultants, or recorded
	on-site observations by other qualified biologists.

**High:** Observed on similar habitat in surrounding region by field personnel of Tierra Madre Consultants, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.

- **Moderate:** Reported sightings in surrounding region, habitat on the site is a type occasionally utilized by the species; or site is within the known range of the species and habitat on the site is a type occasionally utilized by the species.
- **Low:** Site is within the known range of the species but habitat on the site is rarely used by the species.

### STATUS DESIGNATIONS

#### 1) FEDERAL DESIGNATIONS

- E = Federally listed, endangered
- T = Federally listed, threatened
- Cl = Category 1 candidate species. Enough data are on file to support the federal listing.
- C2 = Category 2 candidate species. Threat and/or distribution data are insufficient to support federal listing.
- C3a = Extinct
- C3b = Taxonomically invalid
- C3c = Too widespread and/or not threatened. No longer considered as a federal candidate for listing.

#### 2) STATE DESIGNATIONS

- CE = State listed, endangered.
- CT = State listed, threatened (previously listed as rare).
- CP = Fully protected under California Fish and Game Code, Sections 3511, 4700, 5050, 5515.

#### 3) DATA BASE

- Al.1 Extremely rare, endangered and unprotected species.
- A1.2 Extremely rare and threatened species.
- A2.1 Very rare, endangered and unprotected species.
- A2.2 Very rare and threatened species.
- B1.1 Rare and endangered species or extremely rare, endangered or threatened subspecies.
- B1.2 Rare and threatened species or very rare, endangered or threatened subspecies.
- B2.1 Uncommon and threatened species or rare and endangered subspecies.
- B2.2 Rare but not threatened <u>or</u> peripheral and endangered species in California only, <u>or</u> rare and threatened subspecies.
- B3.1 Uncommon and declining <u>or</u> peripheral and threatened species in California only, <u>or</u> uncommon or threatened, or peripheral and endangered subspecies in California only.
- B3.2 Widespread and declining species <u>Or</u> uncommon declining, or peripheral and threatened subspecies in California only.
- BU Possibly threatened, needs more information.

# 4) CALIFORNIA NATIVE PLANT SOCIETY (CNPS)

- List 1 Plants rare and endangered in California and elsewhere.
- List 2 Plants rare or endangered in California, but more common elsewhere.
- List 3 Plants about which we need more information.
- List 4 Plants of limited distribution (a watch list).

R-E-D CODE:

R (Rarity)

- 1 Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
- 2 Occurrence confined to several populations or one extended population.
- 3 Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

- E (Endangerment)
- 1 Not Endangered.
- 2 Endangered in a portion of its range.
- 3 Endangered throughout its range.

D (Distribution)

- 1 More or less widespread outside California
- 2 Rare outside California
- 3 Endemic to California (i.e., does not occur outside California).
- Note: Species listed as "Noteworthy" have been determined by Tierra Madre Consultants to be an unusual occurrence or seldom-encountered species. These taxa may be locally rare, disjunct from their major range or habitat, or of particular importance in the local ecosystem.

Information sources of status descriptions are derived from the California Natural Diversity Data Base. See references for federal and state designations.

# Table 2Small Mammal Trapping Results

Total traps set : 80	Date: June 18-19, 1987
Habitat: Sandy washes and desert paver	nent, Section 11
Captures: (#, %)	
<u>Diuodomvs merriami</u> Merriam kangaroo rat	4, 22%
<u>Diuodomvs deserti</u> Desert kangaroo rat	2, 11%
<u>Perognathus bailevi</u> Bailey pocket mouse	7, 39%
<u>Perognathus penicillatus</u> Desert pocket mouse	3, 17%
Perognathus spinatus Spiny pocket mouse	2, 11%
Total	18 captures, 22.5% success

#### References

- Atwood, J.L. 1980. "The United States distribution of the California Black-tailed gnatcatcher. Western Birds, v. 11, no. 2, pp. 65-78.
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- Garrett, K. and J. Dunn, 1981. <u>Birds of Southern California. status and distribution</u>. Los Angeles Audubon Society, Los Angeles, California. 408 pp.
- St. Clair Research Systems, Inc., 1984. "Draft Environmental Impact Report/Environmental Assessment (EIR/EA) for the proposed Mesquite Project, Imperial County, California," report prepared for the County of Imperial and the Bureau of Land Management, El Centro, California.
- U. S. Department of the Interior, Fish and Wildlife Service, 1985. "Endangered and threatened wildlife and plants: Review of vertebrate wildlife," Federal Register 50(181):37958-37967.
- Wier, H. A, 1983. "Wildlife Survey Report for the Mesquite Project, Glamis, California," prepared as a supporting technical document for the EIR/EA on the Mesquite Project," BLM and Imperial County, El Centro, California.
- Williams, Daniel F., 1986. "Mammalian Species of Special Concern in California", State of California, The Resources Agency, Department of Fish and Game, Wildlife Management Division Administrative Report 86-1, Sacramento, California.

#### Gold Fields Operating Company VCR Mining Project Animals

#### Reptilia

Testudinidae <u>Gouherus agassizi</u>

#### Gekkonidae Coleonvx variepatus

Iguanidae <u>Gambelia wislizinii</u> <u>Dipsosaurus dorsaus</u> <u>Sauromalus obesus</u> <u>Callisaurus draconoides</u> <u>Uma notata</u>

Crotoanhvtus collaris

Colubridae Phyllorhynchus decurtatus <u>Arizona elegans</u> <u>Chionactis occipitalis</u>

Viperidae <u>Crotalus cerastes</u> <u>Crotalus mitchelli</u>

#### Aves

Accipitridae Buteo iamaicensis

Columbridae Zenaida macroura Zenaida asiatica Columbina passerina

Hirundinidae Steligidopteryx ruficollis

Icteridae Icterus cucullatus

Mimidae <u>Toxostoma lecontei</u>

Paridae Auriparus flaviceps Rep tiles

Turtles and Tortoises Desert Tortoise

Geckos Banded Gecko

# Iguanids

Long-nosed leopard lizard Desert iguana Chuckwalla Zebra-tailed lizard Colorado Desert fringe-toed lizard Collared lizard

# Colubrids

Spotted leaf-nosed snake Glossy snake Western shovel-nosed snake

Pit vipers S idewinder Speckled rattlesnake

# Birds

Hawks and Eagles Red- tailed hawk

Pidgeons and Doves Mourning dove White-winged dove Common ground dove

Swallows Rough-winged swallow

Orioles Hooded oriole

Mockingbirds LeConte's thrasher

Titmice Verdin Tyrannidae <u>S avornis saya</u>

Tytonidae <u>Tyto alba</u>

Mammalia

Leporidae Lepus californicus

Heteromyidae <u>Perognathus baileyi</u> <u>Perognathus penicillatus</u> <u>Perognathus spinatus</u> <u>Dipodomys merriami</u> <u>Dipodomys deserti</u>

Cricetidae <u>Neotoma albigula</u>

Canidae <u>Canis latrans</u> <u>Vulpes macrotis</u>

Mustelidae Spilogale_putorius

Cervidae Odocoilus hemionug Tyrant Flycatchers Say's phoebe

Barn owls Barn owl

Mammals

Hares and Rabbits Black-tailed jackrabbit

Pocket mice & Kangaroo rats Bailey pocket mouse Desert pocket mouse Spiny pocket mouse Merriam kangaroo rat Desert kangaroo rat

Rats and mice White-throated wood rat

Foxes and Coyotes Coyote Kit fox

Skunks Spotted skunk

Deer, elk Mule deer

# APPENDIX D

VCR MINING PROJECT DESERT TORTOISE REPORT Gold Fields Operating Company VCR Mining Project Desert Tortoise Report

Tierra Madre Consultants Lawrence F. **LaPre**, Ph.D.

# Introduction

The Gold Fields Operating Company plans to develop a new gold mine adjacent to its Mesquite Project in eastern Imperial County, California. This project involves the realignment of Highway 78, and the excavation of major portions of Sections 3, 4, 9, and 10 in Township 13S, Range 19E. About 4.5 square miles were inventoried for tortoises for the VCR Project, and 8.5 miles of the new highway alignment were studied. The location of these studies is shown in Figure 1, which was prepared by Environmental Solutions, Inc. of Irvine, consultant to the applicant and client of Tierra Madre Consultants.

The purpose of this study was to determine the abundance and distribution of desert tortoises on the proposed mining site, realigned Highway 78 route, and areas adjacent to these two sites. Since substantial biological resource data was gathered for the Mesquite Project EIR/EA, this study incorporates the previous studies where appropriate, and expands the work onto portions of this new project not covered by previous on-the-ground surveys. The special tortoise studies of Nicholson (1984) covered the VCR site in part, and these studies were used as a model for this report.

# Methods

The methodology for this study is based on providing the same level of detail in the environmental information as that presented in the Mesquite Project EIR/EA. Therefore, the same methodology as used by Wier (1983) and Nicholson (1984) was employed for this study. Overall transect density for the desert tortoise inventory was 2.6 per square mile, as in the previous studies.

Field work for this investigation was performed by Lawrence LaPre, Mark Baumgartner, and Tom Wake during the week of June 12-19, 1987. At the initiation of the transect studies on the site, all field workers reviewed what to look for, the identification of tortoise sign, the search radius and pace, and methods of recording data. Each person was trained in how to estimate the distance and direction walked by measuring time, distances by pacing, and use of a compass and maps.

Fifteen triangular transects were **walked** following the accepted methodology developed by the BLM and described by Nicholson for the Mesquite project (Nicholson 1984). Each of these transects is 1.5 miles in length, 0.5 miles on a side, and assumes a search distance of ten yards, five on each side of the investigator. The tortoise sign (scat, shells, burrows tracks, live animals ) is recorded for each leg of the transect and totalled. Associated sign is combined into a single adjusted sign count. For example, two scats in front of an active burrow reflect the activity of a single tortoise, so these three sign are lumped together to make one adjusted sign on the sign count total. Because the number of sign is low in this area, this correction was made in only one case (Transect 13).

Several of the transects were designed to include the highway realignment corridor as one leg of the triangle. This was done to insure complete coverage of the highway route, and to mark the active burrows so that they could be found again, in the future for relocation of the tortoises, if necessary. The highway route inventoried was an 8.5mile, 500-foot wide corridor.

Calibration transects were performed at the Chuckwalla Valley II permanent study plot established in 1980 by the BLM. Nicholson used this plot for calibration of her data on the Mesquite mining site because of its proximity, and this practice was followed here. The study plot has vegetation and topography that are similar to the VCR mining area, but the soils are lighter and finer, and the areas supports a higher density of tortoises than found on the project site. Portions of the study plot, comprising about 5%, consist of desert pavement similar to that on the VCR site. These areas of lower tortoise density on the Chuckwalla Valley II plot were those walked with six triangular transects for comparative purposes with the unknown density of the VCR site.

The BLM provided tortoise density maps for the entire California Desert Conservation Area, as well as a location and description of the Chuckwalla Valley II study plot. Original data on the number of tortoises in each portion of the study plot was provided by Lori Nicholson Humphreys. This information was used to calculate a regression equation for observed sign against the known number of tortoises per segment of the study plot.

To obtain the density estimates for the VCR site, a series of linear correlation equations was solved, exactly as presented by Nicholson (1984). Our correlation between the sign count on the study plot and the number of marked tortoises on the study plot was CS = 5.09M + 1.63, with a correlation coefficient (r) of 0.85. This was rearranged to obtain the number of marked tortoises

per square mile to yield M/mi = 6(CS - 1.63)/5.09. Data from Berry (1984) gives estimated tortoise density per square mile when the number of marked tortoises is known as D = 1.31 (M/mi) + 10.56. This relationship was developed through intensive study of 23 permanent study plots where mark-recapture studies were conducted. Both equations were solved for M/mi, and combined to yield D = 1.54CS + 8.04. This final relationship was used to estimate desert tortoise densities on the VCR site.

#### Results

The results of the transect walks on the VCR site are given in Table 1. No tortoise sign was detected on six of the transects, and the maximum corrected sign count was two, indicating low tortoise densities in the area. Portions of the VCR site are already heavily disturbed on the surface by past mining activity and current exploration. These areas, representing about 1/5 of the total VCR mining area, may have contributed to some of the low sign counts.

Gold Fields Operating Company has three years of experience with mining on a site containing low density desert tortoise populations. In that time, nine tortoises have been sighted and removed from the mining activities. Two other tortoises were reported to be killed by mining equipment. Mining personnel are alerted to the presence of tortoises and carry a tortoise card to instruct them about proper procedures in case a tortoise is seen on the site. The communication between the mining company and the BLM regarding the employee tortoise training program about how to handle any tortoises found to be in jeopardy has been very good to date, according to Gold Fields.

Results of the triangular transects walked on the Chuckwalla Valley II study plot are given in Table 2. These data were compared to the known number of tortoises on each area of the plot by linear regression in order to obtain a correction factor to use for estimating the density of tortoises on the VCR site. Sample sizes for the regression are too low to ensure complete statistical accuracy.

The equation derived from the linear regression was then used to calculate estimated density of tortoises at the mining project site. Results of these calculations are given in the density map of desert tortoises on the VCR site presented in Figure 1. It is evident from this data that tortoise densities are low throughout the study area, varying from 0 to 11 tortoises per square mile. Given the limitations of the data with the small sample size and numerous correction factors applied, a better categorization of tortoise density would be to place it into the category of **0**-20

tortoises per square mile, as done by the BLM on a regional basis. We did not note an area of higher tortoise densities in Section 10 as did Nicholson. This area has received heavy disturbance since 1984 from geological testing, and the tortoises may have been depleted in that area in the past few years. As an overall evaluation of the VCR site, it can be said that the area supports a low density tortoise population which is concentrated in the major wash systems.

# Discussion

**The** Bureau of Land Management has mapped tortoise density desertwide, and this information was obtained from Larry Foreman, Wildlife Biologist at the Desert District Office in Riverside. The BLM lists the VCR project area as a low density region, with 0 - 20 tortoises per square mile. This is consistent with the findings of this study. **Dimmitt** (1977) reported on tortoise densities in the Colorado Desert, and he observed tortoise evidence in the immediate area. Berry, et. al. (1983) estimated densities of 20 - 50 tortoises per square mile north of the site in the Chocolate Mountains Aerial Gunnery Range. All reported previous studies have indicated that this site is a low density area, although favorable pockets of habitat may exist which support densities of up to 59 tortoises per square mile (as in Section 10 of the VCR site, reported by Nicholson, 1984).

The VCR project lies outside of the BLM's designated desert tortoise "crucial habitat" (USDI, . 1980). Crucial habitat is defined as "... Portions of the habitats of sensitive species that if destroyed or adversely modified could result in their being listed as threatened or endangered..." The four "crucial habitats" contain very high densities of desert tortoise, in the range of 200 tortoises per square mile.

# Project Impacts

Elimination of the majority of the tortoise habitat and some individuals of this species within the boundaries of the mining area is expected as an unavoidable consequence of project approval. It is unreasonable to expect that a substantial amount of **onsite** habitat could be retained within the mining area over the long term. This loss of habitat and individuals represents a very small and insignificant impact to the species and its habitat as a whole. However, the impact of the VCR project makes a small incremental contribution to the cumulative loss of habitat throughout the range of the tortoise.

If many projects like this were to be developed, significant losses of habitat could occur unless permanent protection were provided. However, the eastern Imperial County region containing low density tortoise habitat will probably not be greatly affected by future mining projects. According to Gold Fields Operating Company, which has conducted extensive exploration of the mineralization of subsurface deposits in the region, little potential exists to successfully develop a mine in the undisturbed lands which are open to mineral location outside of the Mesquite and VCR claims.

The realignment of Highway 78 will probably have a greater impact to the local tortoise populations in the long term than the mining proposal, since the road traverses several miles of relatively undisturbed habitat. This impact is a secondary or indirect effect of approval of the VCR project, and is one that will be partially mitigated by the abandonment of the existing Highway 78. The loss of tortoises by vehicle collisions is expected to eliminate most tortoises for some. distance perpendicular to the highway. Earlier studies of this impact (Nicholson 1978) have suggested reduction of tortoise populations for a distance of one-half mile on each side of a paved road such as Highway 78.

# **Possible Conservation Measures**

# Salvage of Tortoises

All tortoises occurring within the boundaries of the VCR mining site could be destroyed as an unavoidable consequence of project approval. Salvage of many larger individual tortoises is possible, however, thus preserving reproductive members of the regional population.

In order to be able to locate as many tortoises as possible, the salvage effort should take place when tortoises are active, in the spring or fall. Tortoises should be released at a protected relocation site during these seasons, when annual forage is available. Two logical areas for tortoise relocation are east of Ogilby Road and the abandoned portion of Highway 78 west of the Mesquite ore processing area. Since the tortoises may attempt to return to their point of origin, the exclusionary fence around the mining site, if constructed, should be in place prior to the relocation effort. All relocation efforts of tortoises should be conducted under the supervision of the RLM and DFG biologists, or following procedures agreed upon by these agencies.

If the timing of the mining operations or fence construction does not allow relocation of the tortoises during spring, arrangements must be made to take care of the collected tortoises during the interim. This may prove difficult, since virtually no suitable sites are currently available. If collection of the tortoises must take place during the winter or summer, a much lower ratio of success in finding tortoises on the site is expected. Previous attempts to dig up dormant tortoises during the winter have been difficult operations, with limited success in capturing the number of tortoises known to inhabit a site (Karen Kirtland 1986, pers. comm.). Small size classes are virtually impossible to locate.

The locations of active tortoise burrows within the highway corridor were flagged during the most recent inventory so that this measure could be enacted more easily for that portion of the project, if necessary.

The long term success of humane rescue measures which salvage individual tortoises from a project site has not been determined, since few studies have progressed long enough to obtain this data.

# Mitigating Measures

If determined to be appropriate, the following mitigating measures would reduce the level of impact of the VCR mining project on the low density tortoise population in adjacent undisturbed areas, especially south and east of the realigned highway.

- Education of personnel working in the area about laws protecting tortoises using the procedures which Gold Fields indicates have been successful at the Mesquite project. Personnel should be notified that adjacent desert areas are tortoise habitat and be alert for tortoises walking on the roads near the mine in the spring and fall, and after summer rainstorms. The need for restrictions on off-road travel should be explained.
- 2. Removal of traffic from about 3 miles of the portion of the existing highway alignment southwest of the Mesquite project will provide some built-in mitigation for impacts expected from the new road alignment. This area may become a relocation site for tortoises removed from the mining area, thus re-establishing a population in suitable habitat that has been previously impacted by the highway.

3. Inclusion of fencing along portions of the VCR project where cyclone fencing is planned, such as the southern edge of Section 10. This fencing, which will be similar to that employed on the adjacent Mesquite project (a double layer of chicken wire) will serve to exclude tortoises that might occur in relatively undisturbed areas bordering the mining site.

### Habitat compensation

Because of low tortoise densities on the proposed VCR project and the ability of tortoises to hide, even during their active period, intensive search efforts will yield low numbers of tortoises relative to the number of person-hours spent searching the project area. Clearing an area of tortoises prior to winter development may be especially fruitless, if scheduling development with tortoise activity periods is unpractical. An alternative to the proposal of clearing development sites of tortoises would be to compensate the loss of tortoises and habitat by improving tortoise conditions elsewhere. This compensation could be in the form of a monetary contribution from Gold Fields to the Desert Tortoise Preserve Committee or a purchase and dedication of land in high density tortoise habitat elsewhere. An alternative would be to provide funds for fencing of an area such as the Desert Tortoise Natural Area or the Chuckwalla Bench crucial habitat. Compensation arrangements, for action such as this, generally are negotiated between the applicant and the BLM.

- Berry, K. H., 1984. "The Status of the desert tortoise (<u>Gopherus agassizii</u>) in the United States." report from the Desert Tortoise Council to the U.S. Fish & Wildlife Service, Endangered Species Office, Sacramento, CA. Order No. 11310-0083-81.
- Berry, K. H., A. P. Woodman, L. L. Nicholson, and B. L. Burge, 1983. "The Distribution and Abundance of the Desert Tortoise (<u>Scaptochelys agassizii</u> Bramble) on the Chocolate Mountain Aerial Gunnery Range," report from the Desert Tortoise Council to the U. S. Navy, San Bruno, CA. Contract No. N02474-81-M-A534.
- Din-mitt, M. A., 1977. "Status of the desert tortoise in the Colorado Desert," Desert Tortoise Council, <u>Proc. 1977 Symposium</u>, pp. 46-53. Available from the Desert Tortoise Council, Long Beach, CA.
- Nicholson, L. L., 1978. "The Effects of Roads on Desert Tortoise Populations," Desert Tortoise Council, <u>Proc. 1978 Symposium</u>, pp. 127-9. Available from the Desert Tortoise Council, Long Beach, CA.
- Nicholson, L. L., 1984. "The Distribution and Abundance of the Desert Tortoise (<u>Gopherus</u> <u>agassizii</u>) on a Mining Site in Imperial County and Recommendations for Conservation," Supporting Technical Report for the EIR/EA for the proposed Mesquite Project, BLM and Imperial County Planning Department, El Centro and Imperial, CA.
- St. Clair Research Systems, Inc. and The Butler/Roach Group, Inc., 1984. "Draft Environmental Impact Report/Environmental Assessment (EIR/EA) for the proposed Mesquite Project, Imperial County, California," report prepared for the County of Imperial and the Bureau of Land Management, El Centro Resource Area, El Centro, CA.
- U.S. Dept. of the Interior, Bureau of Land Management, 1980. <u>California Desert Conservation</u> <u>Area Plan. 1980</u>. USDI, BLM, Calif. Desert District, Riverside, CA.
- Wier, H.A., 1983. "Wildlife Survey Report for the Mesquite Project, Glamis, California," report prepared as a supporting technical document for the EIR/EA on the Mesquite Project, Imperial County and BLM, El Centro, CA.
| Transect<br>Number | Investigator | Section<br>Quarter          | Number<br>Burrows | of Sign<br>Scats | Observed<br>Shells I | Live | Corrected<br>Sign |
|--------------------|--------------|-----------------------------|-------------------|------------------|----------------------|------|-------------------|
| 1                  | TW           | 9 NW & SW                   |                   |                  |                      |      | 0                 |
| 2                  | LL           | 9 NE & SE                   |                   |                  |                      |      | ŏ                 |
| 3                  | MB           | 9 NE & 4 SE                 |                   |                  |                      |      | Ő                 |
| 4                  | LL           | 10 SE &SW                   |                   |                  | 2                    |      | 2                 |
| 5                  | MB           | 10 SE                       | 1                 |                  | 1                    |      | $\overline{2}$    |
| 6                  | TW           | 10 SE & 1 SW                |                   | 1                |                      |      | 1                 |
| 7                  | LL           | 10 SE & 1 SW                | 1                 | 1                | 1                    |      | 2                 |
| 8                  | MB           | 1 NW                        |                   |                  |                      |      | 0                 |
| 9                  | LL           | 1 NW & 2 SW                 | 1                 |                  |                      | 1    | 2                 |
| 10                 | TW           | 3 SE                        |                   | 1                |                      |      | 1                 |
| 11                 | TW           | 3 SE                        |                   |                  |                      |      | 0                 |
| 12                 | MB           | 2 s w                       |                   |                  |                      |      | 0                 |
| 13                 | LL           | 24 SW & 25 NW               | 1                 | 1                |                      |      | Ī                 |
| 14                 | LL           | 19 SW & 30 NW               | 1                 |                  |                      |      | 1                 |
| 15                 | LL           | 20 NE & 21 NW<br>Tract 30 W | 1                 |                  |                      |      | 2                 |

## Table 1. Desert Tortoise Transect Data from the Gold Fields VCR Project.

Transect Number	Investigator	Section Quarter	Number Burrows	of Sign Obs Scats She	served ells Live	Corrected Sign
1	LL	4 SE	2	1		3
2	LL		1			1
3	MB	4 SEV	1	1		2
4	MB		1			1
5	TW	4 SEv	3	2	1	4
6	TW	5 SE		1		4
LL = Lav	wrence LaPre	TW = Tom Wake	MB =	Mark Baum	gartner	

Table 2. Desert Tortoise Transect Data - Chuckwalla Valley II study plot.

Table 3. Sign counts and number of marked tortoises on the Chuckwalla Valley II study plot. S 1/2 of Sections 4 & 5, T 8S, R 18E.

Transect number	Corrected Sign count	# of marked tortoises/ 1/6 mi
1	4	13
2	4	12
3	1	8
4	2	7
5	3	8
6	1	7



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APPENDIX E

VEGETATION SUPPORT MATERIAL,

### CREOSOTE BUSH SCRUB COMMUNITY TYPICAL SPECIES

#### SCIENTIFIC NAME

Larrea tridentata Ambrosia dumosa Fouquieria splendens Dalea califomica Dalea schotti Dalea spinosa Lyceum brevipes Lyceum andersonii Hymenoclea salsola Encelia farinosa Encelia frutescens Sphaeralcea ambigua Baccharius sergiloides Echinocereus engelmanii Optunia bigelovii Optunia echinocarpa Optunia basilaris Prosopis glandulosa var. torreyana⁽¹⁾ Olneya tesota⁽¹⁾ Pluchea sericea⁽¹⁾ Chilopsis linearis⁽¹⁾

#### COMMON NAME

Creosote Bush Bursage Ocotillo California Dalea Schott's Dalea **Smoketree** Frutilla Anderson's Thornbush Cheesebush Brittlebush **Rayless** Encelia **Desert Mallow** Desert Broom Calico Cactus Teddy Bear Cholla S taghorn Cholla Beaver-tail Cactus Honey Mesquite Ironwood Arrowweed Desert Catalpa

Source: Pritchett 1987

⁽¹⁾ Arborescent species generally found along the watercourses.

APPENDIX F

BLM CONTRACTS AND AGREEMENTS FOR SAND AND GRAVEL WITHDRAWAL NEAR THE PROPOSED VCR PROJECT

#### APPENDIX F BLM CONTRACTS AND AGREEMENTS FOR SAND AND GRAVEL WITHDRAWAL NEAR THE PROPOSED VCR PROJECT

TOWNSHIP/RANGE (S.B.B.M.)	SECTION ⁽¹⁾	NAME	TYPE OF AGREEMENT ⁽²⁾
13S/18E	14(SW1/4), 15(SE1/4)	Bureau of Reclamation	Free Use Permit
13 <b>S/18E</b>	24	City of Brawley	Free Use Permit
13S/18E	27(NW1/4)	Imperial County	Free Use Permit
138/19E	18(W1/2)	N/A	Community Pit
13S/18E	13(SE1/4)	Little Trucking	Contract
13S/18E	14, 15, 22	M. Dill	Contract
13S/18E	23(SE1/4)	C. Hastings	Contract
13 <b>S</b> /18E	26(N1/2)	Elms Equipment	Contract
13 <b>S/</b> 18E	24(E1/2 OF NE1/4)	A. Ritter	Contract
13S/18E	13(N1/2 AND SW1/4) 14(SE1/4) 23(N1/2 AND SW1/4)	Caltrans	Right-of-Way

⁽¹⁾ For locations of sections, see Figure F-l.

⁽²⁾ Gravel Agreement areas may be limited to portions of the indicated sections.

Source: Park 1987



### APPENDIX G

#### MESQUITE PROJECT CONDITIONAL USE PERMIT CONDITIONS POTENTIALLY APPLICABLE TO THE VCR MINING PROJECT

### CONDITIONS

Pursuant to the application and plot plan on file, the County of Imperial grants this Conditional Use Permit for a period of twenty (20) years. The permittee shall comply with all of the following conditions:

### GENERAL CONDITIONS(1)

- 2. Periodic inspection of this operation shall be conducted by County staff at times they determine to be appropriate.
- 4. This permit is contingent upon compliance with an approved Reclamation Plan.
- 5. Meet all applicable permit requirements and conditions of the Imperial County Air Pollution Control District.
- 6. Artificial slopes are to be constructed at or less than the natural angle of repose and benched as necessary to minimize soil movements.
- 10. Structures will be painted with a non-reflective paint compatible with the surroundings.
- 11. Natural vegetation will be planted as screening at toe of slopes adjacent to the highway.
- 14. Employees will be trained in the identification and proper handling of tortoises. Tortoises found in active areas of the site during operations will be relocated.
- 16. Provide and maintain signs within the fenced portions of the project to advise employees of the sensitivity of Desert Tortoises.
- 17. Perimeter fences will be constructed with non-reflective material.

⁽¹⁾Condition numbers indicated are those applicable from the Mesquite Project Conditional Use Permit. Some of the conditions above include language changes, deleting aspects of the Mesquite project conditions which are not applicable to the scope of the VCR Mining Project which does not call for any new processing facilities other than a primary crusher.

- 18. Submit planting plan to BLM for the approval where vegetation is to be used for landscaping or visual screening.
- 19. To the extent feasible, barren material containing sand and gravel will **be** made available for future resource recovery.
- 20. Vehicular access to the site will be restricted by BLM "Routes of Travel" program during operations and after completion of the project.
- 21. A Cultural Resources Management Plan will be prepared and implemented to mitigate the effects of development on potentially significant sites. This plan must be approved by BLM, SHPO, and the National Advisory Council on Historical Preservation:
  - a. Eligible sites that will be impacted will be subject to full data recovery.
  - b. Sites with indeterminate eligibility for National Register of Historic Places will be tested for further data by a competent authority holding a current Antiquities Permit issued by BLM.
- 23. The Cultural Resources Management Plan will be implemented and work completed prior to any project site development that could impact potentially significant sites.
- 24. All vehicles and equipment shall meet applicable noise standards and the permittee shall provide employee ear protection devices as required by the Mine Safety and Health Administration (MSHA) and the State agency responsible for occupational safety and health, if applicable. All company vehicles requiring licensing shall be registered in Imperial County.
- 28. Indemnify, defend and save harmless, BLM and the County, its Board of Supervisors, and all officers and agents of the BLM and the County, against any and all claims, actions, or liabilities arising out of the construction or operation of the project.
- 29. The applicant will pay amounts as determined by County to defray all County costs for review of reports, field investigations, or other activities related to compliance with this CUP, County Ordinances, or any other laws that apply.
- 30. Structures and facilities will meet current applicable seismic safety standards.

- 33. Diversion channels will be constructed around the project site as necessary to direct runoff to existing drainages.
- 34. Onsite roads will be graded to follow existing natural contours to the maximum extent possible. Where necessary, appropriate diversion structures will be constructed to provide for the least interruption of natural drainage patterns.
- 41. Obtain encroachment permits or other appropriate approvals from CALTRANS District II prior to operation and/or construction of traffic improvements and all other facilities within the Highway 78 right-of-way.
- 42. A traffic management plan, including provision of adequate warnings and traffic control, for project vehicle crossings on Highway 78 must be approved by CALTRANS.
- 43. The County must approve the abandonment of Zappone Road or any applicable portion of Vista Mine Road prior to any construction activity affecting these facilities.

#### SAFETY AND FIRST AID

- 45. Blasting shall be limited to daylight hours. The operator shall obtain the proper permits for the use, transportation and storage of explosives.
- 46. Instructions for emergency procedures in the event of potential or actual flash flooding shall be given to the security personnel and all other employees and shall be posted in a conspicuous location.
- 50. Submit written proof that at least two employees on each work shift have been certified by the American Red Cross to administer Multi-media Standard First Aid or submit written assurance that such proof will be provided within ninety (90) days of commencing operations allowed by this permit.
- 56. The emergency vehicle and first aid station with trained personnel will be maintained at the Mesquite project site and will be available to administer treatment in the event of an emergency.

- 57. The Mesquite project heliport will be available to coordinate with "Life Flight" services.
- 58. A private security force will be provided, and the Mesquite project fire fighting system will be available.

#### REPORTS

- 62. Periodic inspections and reports of Mining and Reclamation activities shall be required of the permittee as follows:
  - a. The permittee shall file an annual report of mining activities with the Planning Director at least fifteen (15) days prior to a date specified by the Planning Director. The report will specify how the mining at the site conforms to or deviates from the approved permit. It shall indicate that persons trained in the first-aid have taken and passed examinations affirming their continued competence during the preceding year. It shall also indicate the status of the local employment program and how it compares with the local employment projections in the EIR/EA.
  - b. The Planning Director or the Director's designee shall inspect the site within thirty (30) days from receipt of the report. Failure to inspect within thirty (30) days shall be deemed acceptance and compliance with the permit.
- 63. When mining pits reach the ground water level, the permittee shall include a summary of seepage quantity and quality conditions in each annual report or at a different interval as requested by the County and/or BLM. If accumulation of seepage water is occurring, an investigation will be requested by the County and/or BLM to determine if remedial actions are warranted.

FINAL EIR/EA ADDENDUM OCTOBER 28, 1987

#### ADDENDUM FINAL EIR/EA VCR MINING PROJECT

This addendum contains the material necessary to comprise a Final EIR/EA for the VCR Mining Project, including a description of the public review process, comments received during the public review period and responses to the comments received on the Draft EIR/EA. The Final EIR/EA is comprised of this Addendum, the Draft EIR/EA, and public testimony taken by the Imperial County Board of Supervisors and Planning Commission at their hearings for certification of the EIR/EA in conjunction with their consideration of the proposed Conditional Use Permit (CUP) application and Reclamation Plan for the VCR Mining Project.

#### 1.0 PUBLIC REVIEW

A legal notice announcing the availability of the Draft EIR/EA for public review was published in <u>The Brawlev News</u> on August 29, 1987. The public review period was set for 45 days, ending on October 9, 1987. The Draft EIR/EA was distributed to the Imperial County Planning Commission and Board of Supervisors, Federal, State and local agencies, local and regional public libraries, and organizations and individuals with known or potential interest in the proposed project. This distribution included 10 copies sent to the State Clearinghouse for distribution among State agencies and 40 extra copies to the Imperial County Planning Department for public access and review. Copies of the Draft EIR/EA were sent to each of the six agencies, organizations, and individuals who responded to the Notice of Preparation, and a notice of its availability was sent to those who received the NOP, but did not respond. Copies of the Draft EIR/EA were sent to public libraries in Los Angeles, Riverside, Palm Springs, San Diego, Coachella Valley, and Yuma.

Copies of the legal notice, mailing list, and distribution letters are provided in Appendix AA.

#### 2.0 CHANGES TO T-HE TEXT SUBSEQUENT TO CIRCULATION OF THE DRAFT EIR/EA

For ease of reference, this section provides a list of substantive changes which have been made in the text subsequent to circulation of the Draft EIR/EA. The page and section indicate the locations of the noted changes.

## Substantive Changes

	Page	Section	
1.	3-10 3-10 3-14 3-16 3-16 3-20 3-22	3.2.5.1 3.2.5.1 3.2.5.2 3.2.6 3.2.7 3.2.11 3.2.11	Clarification about BLM right-of-way status or requirements were made in these sections.
2.	3-25	3.2.13.3	GFOC will evaluate the use of color additives with a dust suppressant for application to the stockpiles.
3.	5-20	5.5.1.2	Statement added that no impact to the Spadefoot toad is anticipated. This species' habitat is not expected to occur within the VCR mining area.
4.	5-20	5.5.1.3	Statement added that there would be a minor impact relative to the desert tortoise, resulting from introducing paved access to an area previously accessible by unpaved roads and washes.
5.	5-21	5.5.2.2	Statement added that no impact to the Spadefoot toad is anticipated. The amount of wash area disrupted by the highway realignment will be minimal.
6.	6-l	6.0	The mitigation measures discussed in the EIR/EA are committed mitigation measures.
7.	6-4	6.1.4.2	The highway realignment design will include a new, unpaved access route to connect to the existing access to the Gravel Withdrawn Area.
8.	6-4	6.1.4.2	GFOC will seek to resolve, to BLM satisfaction, conflicts between operations of existing gravel permittees and the new highway realignment.
9.	6-11	6.5.1	If a tortoise is observed within the mining area, it will be relocated to an area near the GFOC water production well field.
10.	6-11	6.5.2	If a tortoise is encountered during highway construction, it will be relocated to an area near the GFOC water production well field.
11.	6-12	6.6.1	Abandoned domiciles will be removed, and materials will be disposed of in a manner acceptable to the BLM.

### **3.0 COMMENTS AND RESPONSES**

The comments to the Draft EIR/EA received during the public review period and responses to those comments are included in Appendix AB. Written comments on the Draft EIR/EA were received from the following agencies and organizations during the public review period:

- U.S. Fish and Wildlife Service, Laguna Niguel Field Office Imperial Irrigation District A-Able Plumbing, Inc., Oceanside California Department of Fish and Game Imperial County Department of Public Works Department of the Navy, El Centro 1.
- 1. 2. 3. 4.
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- 6.

### APPENDIX AA PUBLIC NOTICE MATERIALS

#### LEGAL AD'VERTISEMENT

ENVIRONMENTAL NOTE 'The Imperial County Planning Department and the U.S. Bureau of Land Management. El Centro Resource Area. are requesting comments regarding a joint Draft Environmental Impact Report/Environmental Assessment prepared for the proposed VCR Mining Operation (Conditional Use Permit. Beclamation Plan and Plan of Operations). The draft report has been prepared in accordance with the California Environmental Quality Act and under Federal regulations 40 CFR 1500, 43 CFR 2800 and 43 CFR 3809.

Gold Fields Operating Compang is proposing to: develope 4 open-pit gold mines; realign 8.5 miles of State Highway 78 to the south of the mine area: and to institute abandonment proceedings with the Camty of Imperial for the remainder of Zappone Road. Approximately 25 million tons per year of gold bearing ore and 8.25 million tons of overburden per year will be produced during a **20** year period. No new leach pads will he required for this project - the existing and permitted leach pads for the Mesquite Project will be ulitized. Over the life of the operation, approximately 1625 acres will be disturbed by these activities. The VCR project is located immediately east of the existing Mesquite Mine, approximately 35 miles east of Brawley.

Copies of the joint draft document **are** available for review at the Imperial County Planning **Office**, Courthouse, **El Centro**, CA, 92243 between 8: 00 am and 5:00 pm and/or at the Bureau of Land Management office, 333 South Waterman, El Centro, CA, 92243 between 7:45 am and 4:30 pm, Monday through Friday. A copy of the daft document may also be reviewed at the Imperial County Library, 1647 west Main in El Centro.

Written comments should be sent to the Imperial County Planning Office at the above address and must be received by October 8, 1987 in order to receive consideration. For additional information **concern**ing the Federal aspects of the Project, contact Peter Ertman. Chief, Branch of Resource Program Operations at 352-5842 or at the address above. For other information, contact the Imperial County Planning Department at 339-4236.

Jurg Heuberger Environmental Evaluation Committee G. Ben Koski Area Manager El Centro Resource Area No. 240 A 29 No. E-480 A 29

### OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET SACRAMENTO, CA 95814

October 9, 1987

Jim Kelley Inperial County/BLM 939 Main Street El Centro, CA 92243



#### Subject: Gold Fields VCR Mine SCH# 87052709

Dear Mr. Kelley:

The State Clearinghouse submitted the above named draft Environmental Impact Report (EIR) to selected state agencies for review. The review period is closed and the comments of the individual agency(ies) is(are) enclosed. Also, on the enclosed Notice of Completion, the Clearinghouse has checked which agencies have commented,_ Please review the Notice of Completion to ensure that your comment package is complete. If the package is not in order, please notify the State Clearinghouse immediately. Your eight digit State Clearinghouse number should be used so that we may reply promptly.

Please note that recent legislation **requires that** a responsible agency or other public agency shall only make substantive **comments** on a project which are within the **area** of the agency's expertise or which relate to activities which that agency must carry out or approve. (AB **2583**, Ch. **1514**, Stats. **1984**.)

These comments are forwarded for your use in preparing your final EIR. If you need more information or clarification, we suggest you contact the commenting agency at your earliest convenience.

Please contact Glenn Stober at 916/323-7480 if you have any questions regarding the environmental review process.

Sincerely,

**David C. Ninenkamp** Chief Office of Permit Assistance

Enclosures

cc: Resources Agency

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#### **REQUESTED COMMENTS BY:**

October 8, 1987

Dear Sir:

Please find enclosed a Draft Environmental Impact Report/Environmental Assessment on a proposed project in the County of Imperial. We are requesting you to assess the probable impact of this project as it relates to your agency and forward any comments you may have by the required date in the upper right hand comer of this letter so that we may consider any input you have in the Final Environmental Impact Report/Environmental Assessment. Comments received after the requested date may be taken into consideration, but may not be referred to **1n** the **Final EIR**.

Your cooperation is greatly appreciated.

Sincerely yours,

JIM KELLEY Planner III

JS:sp Enclosure

NOTICE OF CONFUSTION AND ENVIRONMENTAL POSSIGNT TRUNCHLITTAL REPORT

SCI #

1. Project Title: Gold Fields VCR Mine					
2. Lead Ageocy: Imperial County/BLM	3. Contact Person: Jim Kelley				
3a. Stree: Address: 939 Main Street	3b. City El Centro				
3c. County: <u>Imper</u> i al 3d. Ziga	<u>e. 92 Pooge:</u> (619) <u>339-4236</u>				
PROJECT LOCATION 4. County: Imparia City/Compunity:	6 Mi les East <u>of Gl</u> amis				
4b. Assessor's Parcel No. 739-330-01 4c. Section 3,4,9	E 10 Twp. 13 South Parge 19 East				
Sa.Cross streets: Ogilby Road 2 miles East	Sb. For Rural, Nearest Palo Verde				
6. Within 2 miles: a. State Hwy 78 b. ports Helip	wort c. Rail- raps None d. rater				
7. DOCIMENT TYPE 8. LOCAL ACTION TYPE	9. DEVELOPMENT TIPE				
CEQA 01. General Plan Updat	e 01. <u>Residential: Units</u> Acres				
01. X MOP 06. NOE 02. New Element	02. Office: Sq. Ft				
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03. Neg Dec 08, NOD 04. Master Plan	03. Shopping/Commercial: Sq. rt				
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OTHER 11. X Use Permit	09Taste Treatment: Type				
13. X Joint Document 12. Waste Mgmt Plan	10OCS Related				
14. Final Document 13. Cancel Ag Preserve	11Other				
15. Other14Other					
1D. TOTAL ACRES: 2, 500	11. TOTAL JOES CHEATED: 50 additional				
12. PROJECT ISSUES DISCUSSED IN DOCUMENT	15. Septic Systems 23. Mater Quality				
01. * Aesthetic/Visual x Flooding/Drainage	16. Sever Capacity 2 4. Vater Supply				
02. Agricultural Land 09. X Geologic/Seismic	17. Social 25Wetland/Riparnan				
Q3. X Air Quality 10. Jobs/Rousing Balance	18. X Soil Erosion 26. X Vildlife				
04. X archaeological/Ristorical 1 1 . X Kiperals	19. Solid Waste 27. G - h Inducing				
05. Coastal Zone 12. X Noise	20. Toxic/Hazardous 28!ncorratible Landuse				
05. Economic 13. Public Services	2 1x Traffic/Circulation is. X Cumulative Effects				
07. Fire Harard 14Schools	22. X Vegetation 30. Other				
13. MINDING (approx) Federal S State	5 Total 5				
14. PRESENT LARD USE AND ZONTING:					
'S' Open Space					

15. PROJECT DESCRIPTION:

See attached project description

16. SIGNATURE OF LEAD AGENCY REPRESENTATIVE: June Helley DATE: May 26, 1987

NOTE: Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. from a Notice of Preparation or previous draft document) please (1/1 it in.

REVIEWING AGENCIES

X Resources Agency	<u>x</u> Caltrans District <u>_ll</u>
Boating/Waterways	X Dept. of Transportation Plng
X Conservation	Aeronautics
$^{\chi}$ Fish and Game	CA Highway Patrol
Forestry	Housing & Community Dev't
Colorado River Board	Statewide Health Plng
Dept. Water Resources	Health
Reclamation	Food & Agriculture
Parks and <b>Rec</b>	Public Utilities Comm
Office of Historic Preservation	X Public Works
Native American Heritage Comm	Corrections
S.F. Bay Cons. & Dev't.Comm	General Services
Coastal <b>Comm</b>	OLA
Energy Comm	Santa Monica Mtns
State Lands <b>Comm</b>	TRPA-CALIRPA
<u> </u>	OPR - OLGA
Solid Waste Mgmt Board	OPR - Coastal
SWRCB: Sacto	$\underline{X}$ Bureau of Land Management
X RWQCB: Region #	Forest Service
Water Rights	Other:
Water Quality	Other:
	Catalog Number
Date Received at SCH	Amplicant
Date Review St <u>arts</u>	Concultant
Date to Agencies	
Date to SCH	Contact Phone
Clearance Date	ACGI 855
Notes:	



August 25, 1987

Dear Reader:

Enclosed please find a copy of the draft Environmental Impact Report/Environmental Assessment prepared for the Gold Fields Operating Co. VCR Mining Project. This project is located immediately east of the existing Mesquite Mine, approximately 35 miles east of Brawley, California, within Sections 2-4,9-1 1, 15, 19-22, 29, 30, and Tract 38, T13S,R19E, as well as Sections 23-26, T13S,R18E, Imperial County, California.

Gold Fields Operating Co. is proposing to develop four open-pit gold mines and realign 8.5 miles of State Highway 78 to the south of the mine area. Approximately 2.5 million tons per year of gold bearing ore and 8.25 million tons per year of overburden will be produced during a 20-year period. A total of about 1,625 acres will be disturbed over the life of the project. No new leach pads will be required for this project -- the existing and permitted leach pads for the Mesquite Project will be utilized.

Written comments should be sent to the Imperial County Planning Department, at the letterhead address. Comments must be received by October 8, 1987, in order to receive consideration. For additional information concerning the project, contact Jerry Santillan, planner, at 619/339-4236. For information concerning the Federal aspects of the project, call Peter Ertman of the Bureau of Land Management at 619/352-5842 or FTS/894-2248 1.

Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger anning Director, County of Imperial

939 MAIN ST., EL CENTRO. CALIFORNIA 92243-2856 (COURTHOUSE) (6 191339-4236 ANEQUAL OPPORTUNITY/ AFFIRMATIVE ACTION EMPLOYER



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

Coachella Valley Regional Library 200 Civic Center Mall Indio, California 92201

Dear Librarian:

Enclosed is a joint BLM/Imperial County draft environmental document which may be of interest to the public served by your library. The document addresses the potential impacts and proposed mitigations of a proposed gold mining operation located primarily on public land near Glamis in Imperial County, California. This draft document has a public review period which will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

Questions in regard to this document and/or the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842, or Imperial County Planning Department planner, Mr. Jerry Santillan, at 619/339-4236.

Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger Rlanning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

Los Angeles Public Library Document Department 361 South Anderson Street Los Angeles, California 90033

Dear Librarian:

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jung Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

Palm Springs Library Center 300 South Sunrise Way Palm Springs, California 92262

Dear Librarian:

Enclosed is a joint BLM/Imperial County draft environmental document which may be of interest to the public served by your library. The document addresses the potential impacts and proposed mitigations of a proposed gold mining operation located primarily on public land near Glamis in Imperial County, California. This draft document has a public review period which will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jung Heuberger Rlanning Director, Count of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

Riverside Public Library Post Office Box 468 Riverside, California 92502

Dear Librarian:

Enclosed is a joint BLM/Imperial County draft environmental document which may be of interest to the public served by your library. The document addresses the potential impacts and proposed mitigations of a proposed gold mining operation located primarily on public land near Glamis in Imperial County, California. This draft document has a public review period which will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

San Diego County Library 5555 Overland Avenue San Diego, California 92123

Dear Librarian:

Enclosed is a joint BLM/Imperial County draft environmental document which may be of interest to the public served by your library. The document addresses the potential impacts and proposed mitigations of a proposed gold mining operation located primarily on public land near Glamis in Imperial County, California. This draft document has a public review period which will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

San Diego Public Library 820 "E" Street San Diego, California 92101

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN R&PLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

Yuma Public Library 350 Third Avenue Yuma, Arizona 85364

Dear Librarian:

Enclosed is a joint BLM/Imperial County draft environmental document which may be of interest to the public served by your library. The document addresses the potential impacts and proposed mitigations of a proposed gold mining operation located primarily on public land near Glamis in Imperial County, California. This draft document has a public review period which will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

Questions in regard to this document and/or the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842, or Imperial County Planning Department planner, Mr. Jerry Santillan, at 619/339-4236.

Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure cc: Mr. Jerry Santillan

g Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



August 25, 1987

IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

The Honorable Duncan Hunter U.S. House of Representatives 366 South Pierce Street El Cajon, California 92020

Dear Congressman Hunter:

Enclosed is a joint BLM/Imperial County draft Environmental Impact Report/Environmental Assessment for a proposed open-pit gold mine located primarily on public lands near Glamis in Imperial County, California. This document has been prepared in compliance with Federal (NEPA + 43 CFR 3809) and State of California (CEQA + SMARA) regulations. A **45-day** public review period for this draft document will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

Any questions in regard to this document and/or the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842, or Imperial County Planning Department planner, Mr. Jerry Santillan, at 619/339-4236.

Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Enclosure

Jurg Heuberger Planning Director, County of Imperial



BUREAU OF LAND MANAGEMENT

El Centro Resource Area 333 South Waterman Avenue El Centro. California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

Carolyn Starr 1101 Airport Road, Suite D Imperial, California 9225 1

Dear Ms. Starr:

August 25, 1987

Enclosed is a joint BLM/Imperial County draft Environmental Impact Report/Environmental Assessment for a proposed open-pit gold mine located primarily on public lands near Glamis in Imperial County, California. This document has been prepared in compliance with Federal (NEPA + 43 CFR 3809) and State of California (CEQA + SMARA) regulations. A 45-day public review period for this draft document will end on October 8, 1987. All written comments in regard to this document should be submitted to the Imperial County Planning Department, 939 Main Street, El Centro, California 92243.

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Respectfully submitted,

G. Ben Koski Area Manager, El Centro Resource Area

Heuberger Planning Director, County of Imperial

Enclosure



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

#### MEMORANDUM

TO	: State Director, California (C-9 10)
Through	: District Manager, California Desert
FROM	: Area Manager, El Centro
SUBJECT	: Transmittal of VCR Mining Project EIR/EA

Enclosed is the draft EIR/EA which has been prepared for the Gold Fields Operating Co. VCR Mining Project. The VCR Mining Project is a proposed open-pit gold mining operation situated primarily on public land near Glamis in eastern Imperial County, California. A 45-day public review period for this document will end on October 8, 1987. Please keep the document available for public review, as identified in our news release. All written comments should be sent to this office at the letterhead address above.

Any questions in regard to this document and/or the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842 or (FTS) 895-6616.

J. Ben Koski

Enclosure



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO **CAMC-** 109887/121229 3809 (CA-067.20)

August 25, 1987

### MEMORANDUM

TO : District Manager, California Desert (CA-64.00)

FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

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150 -

Enclosure


BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



August 25, 1987

IN REPLY REFER TO CAMC-109887/121229 3809 (CA-067.20)

#### MEMORANDUM

TO : Area Manager, Barstow

FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

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Ben -



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

#### **MEMORANDUM**

TO : Area Manager, Indio

FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

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Me -

August 25, 1987



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO CAMC-109887/121229 3809 (CA-067.20)

August 25, 1987

#### MEMORANDUM

**TO** : Area Manager, Needles

FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

Enclosed is the draft EIR/EA which has been prepared for the Gold Fields Operating Co, VCR Mining Project. The VCR Mining Project is a proposed open-pit gold mining operation situated primarily on public land near Glamis in eastern Imperial County, California. A 45-day public review period for this document will end on October 8, 1987. Please keep the document available for public review, as identified in our news release. All written comments should be sent to this office at the letterhead address above.

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Ben



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



IN REPLY REFER TO

CAMC-109887/121229 3809 (CA-067.20)

MEMORANDUM

TO . Area Manager, Ridgecrest

FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

Enclosed is the draft EIR/EA which has been prepared for the Gold Fields Operating Co. VCR Mining Project. The VCR Mining Project is a proposed open-pit gold mining operation situated primarily on public land near Glamis in eastern Imperial County, California A 45-day public review period for this document will end on October 8, 1987. Please keep the document available for public review, as identified in our news release. All written comments should be sent to this office at the letterhead address above.

Any questions in regard to this document and/or the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842 or (FTS) 895-66 16.

J. Den Koole

Enclosure

August 25, 1987



BUREAU OF LAND MANAGEMENT El Centro Resource Area 333 South Waterman Avenue El Centro, California 92232



August 25, 1987

IN REPLY REFER TO

CAMC-1098871121229 3809 (CA-067.20)

#### MEMORANDUM

- TO : District Manager, Yuma
- FROM : Area Manager, El Centro

SUBJECT : Transmittal of VCR Mining Project EIR/EA

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Any questions in regard to this document **and/or** the proposed mining operation should be directed to Peter Ertman, Chief, Branch of Resource Program Operations, at 619/352-5842 or (FTS) 895-6616.

I. Den Koaki

### DRAFT EIR/EA MAILING LIST

_

NAME	COMPANY	CITY	STATE	ZIP N#	LETTER TYPE	DATE SENT	RECEIPT CONF	COPIES SENT	ADDRESS
001	Mr. Mitch Beachamp	National City	CA	92050 1	Dear Reader	9/1/87	9/2/87	1	835 East 8th Street
Chief Benny Benavides	Imperial County Office of E.S.	El Centro	CA	92243 2	Dear Reader	8/31/87	9/1/87	1	2514 La Brucherie Road
Mr. William C. Bleimeister	Gold Fields Mining Corporation	Lakewood	8	80228 3	ESI	8/26/87		1	200 Union Boulevard, Suite 500
Ms. Val Blume, Chairperson	Board of Supervisors	El Centro	CA	92243 4	Dear Reader	8/31/87	9/1/87	1	Courthouse
Mr. Warren Branscum, Director	Naval Facility Eng. Command, Real Estate Div. (C-:	San Bruno	CA	94066 5	Dear Reader	8/31/87	9/2/87	1	Box 727
Mr. Alden Sievers, Area Manager	Bureau of Land Management, Barstow Area Office	Barstow	CA	923116 S	pecial Letter	8/31/87	9/1/87	1	1506 Coldwater Lane
State Director, California	Bureau of Land Management, California Desert Dis	Riverside	CA	92507 7	Special Letter	8/31/87	9/1/87	1	1695 Spruce Street
District Manager	Bureau of Land Management, California Desert Dis	Riverside	CA	92507 8	Special Letter	8/31/87	9/1/87	1	1695 Spruce Street
Ms. Leslie Cone. Area Manager	Bureau of Land Management, Indio Area Office	Palm Springs	CA	92262 9	Special Letter	8/31/87	9/1/87	1	1900 East Tahquitz-McCallum Way, Suite B
Mr. Ev Haves, Area Manager	Bureau of Land Management, Needles Area Office	Needles	CA	92363 10	Special Letter	8/31/87	9/1/87	1	101 West Sikes Road
Ms. Patricia McLean, Area Manager	Bureau of Land Management, Ridgecrest Area Offic	Ridgecrest	CA	93555 11	Special Letter	8/31/87	9/1/87	1	112 East Dolphin Avenue
District Manager, Yuma District Office	Bureau of Land Management	Yuma	AZ	85364 12	Special Letter	8/31/87	9/1/87	1	Post Office Box 5680
James Cheshire. Chief. Enviromental Pla	California Department of Transportation, District	San Diego	CA	92138 13	Dear Reader	8/31/87	9/1/87	1	Post Office Box 65406
l ibrarian	Coachella Valley Regional Library	Indio	CA	192201 14	SpecialLetter	8/29/87	8/31/87	1	200 Civic Center Mall
Captain Boston	Commanding Officer	El Centro	CA	92243 15	Dear Reader	8/31/87	9/1/87	1	Naval Air Facility
Desert Protective Council	President	Palm Springs	CA	92262 16	Dear Reader	8/31/87	9/1/87	1	Post Office Box 4292
Desert Wildlife Unlimited	President	Brawley	CA	92227 17	Dear Reader	8/31/87	9/1/87	1	4780 Highway 111
Mr. PeterErtman Chief Branch of Resoul	ureau of Land Management, EI Centro Resource A	El Centro	CA	92243 18	ESI Letter	8/26/87		10	333 South Waterman
Mr. Bobert Filler	GFOC • Mesquite	Brawley	CA	92227 19	ESI Letter	8/26/87		3	HCR - 76. Glamis 100
Mr. John Fitz-Gerald	Gold Fields Mining Corporation	Lakewood	0	80228 20	ESI Letter	8/31/87		10	200 Union Boulevard. Suite 500
Mr. Stephen Flechper	Gold Fields Mining Corporation	New York	NY	10169 21	ESI Letter	8/26/87		1	230 Park Avenue, 32nd Floor
022	Gold Rock Ranch	Winterhaven	CA	92283 22	Dear Reader	9/1/87	9/2/87	1	General Delivery
Mr. Bichard Graeme	GFOC - Mesquite	Brawley	CA	92227 23	ESI Letter	8/26/87		3	HCR-76 Glamis 100
Mr Paul Hartley	Texas Gulf Minerals	Golden	0	80403 24	Dear Reader	8/31/87	9/2/87	1	5932 McIntyre Street
Mr. Vincient Havier	Quechan Indian Beservation	Yuma	AZ	85364 25	Dear Reader	8/31/87	9/1/87	1	Box 1352
The Honorable Duncan Hunter	LLS House of Benresentatives	ElCaion	CA	92020 26	Special Letter	8/31/87	9/1/87	1	366 South Pierce Street
Imperial Valley College	Barker Museum	El Centro	CA	92243 27	County to Send	[		1	442 Main Street
Linda Kosteli. Bealty Specialist	Bureau of Land Management	El Centro	CA	92242 28	Dear Reader	9/1/87	9/2/87	1	333 South Waterman
D K isak 11 Col	U.S. Marine Corps	Yuma	AZ	85369 29	Dear Reader	9/1/87	9/2/87	1	U.S. Marine corps Air Station
Mr. Jim Kelley	Imperial County Planning Department	El Centro	CA	92243 30	ESI Letter	8/27/87	\$*************************************	40	939 Main Street
Mr. Gall Kobetich	U.S. FAW Service	Sacramento	CA	95825 31	Dear Reader	9/1/87	9/2/87	1	2800 Cottage Way, Room E-1823
Lawrence LaPré, Ph. D.	Tierra Madre Consultants	Riverside	CA	92501 32	Dear Reader	8/31/87	9/1/87	1	4178 Chestnut Street
S. Harry Orfanos	Director, Public Works	El Centro	CA	92243-33	County to Send			1	155 South 11th Street
Los Angeles Public Library	Document Department	Los Angeles	CA	90033 34	Special Letter	8/31/87	9/1/87	1	361 South Anderson Street
Dennis O'Bryant, Environmental Program	Department of Conservation, Division of Mines & C	Sacramento	CA	95814 35	Dear Reader	9/2/87	9/6/87	1	1416 9th Street
Mr. Raiph Pisapia	U.S. F&W Service	Laguna Niguel	CA	92677 36	Dear Reader	9/1/87	9/6/87	1	24000 Avila Road
Ms. Lorraine Pritchett	Environmental Botanist	El Centro	CA	192243137	Dear Reader	9/2/87	9/3/87	1	1082 Hamilton
Librarian	Palm Springs Library Center	Palm Springs	CA	92262 38	Special Letter	8/31/87	9/1/87	1	300 South Sunrise Way
Mr. Randy Reister	Imperial County F&G Comm.	El Centro	CA	92243 39	County to Send			1	155 South 11th Street, Suite C
Librarian	Riverside Public Library	Riverside	CA	92502 40	Special Letter	6131187	9/2/87		Post Office Box 468
Librarlan	San Diego County Library	San Diego	CA	92123 41	Special Letter	8/31/87	9/1/87	1	5555 Overland Avenue
Librarian	San Diego Mineral & Gem Society, Inc.	San Diego	CA	92101 42	Dear Reader	9/1/87	9/2/87	1	Spanish Village, Balboa Park
Librarian	San Diego Public Library	San Diego	CA	92101 43	Special Letter	8/31/87	9/1/87	1	820 "E" Street
Charles L. Shreves, General Manager	Imperial Irrigation District	Imperial	CA	92251 44	County to Send			1	Post Office Box 937
Sierra Club	San Diego Chapter	San Diego	CA	92101 45	Dear Reader	9/1/87	9/2/87	1	1549 El Prado, Balboa Park
Soil Conservation Service	District Conservationist	El Centro	CA	92243 46	Dear Reader	9/1/87	9/2/87	1	1285 Broadway
Southwestern Prospectors & Miners Asso	President	San Diego	CA	92123 47	Dear Reader	8/31/87	9/1/87	1	8940 Gowdy Street
048	Ms. Carolyn Starr	Imperial	CA	92251 48	Special Letter	8/31/87	9/2/87	1	1101 Airport Road, Suite D
State Historic Preservation Office	Dan Bell	Sacramento	CA	95811 49	Dear Reader	8/31/87	9/2/87	1	Box 2390
050	Mr. Jim Strain	Holtville	CA	92250 50	Dear Reader	9/3/87	9/4/87	1 ,	1920 Underwood
K.M. Trompeter	Bureau of Reclamation	Yuma	AZ	85364 51	Dear Reader	8/30/87	8/31/87	1	Post Office Box D
Tim Vasquez	California Department of Transportation. District	San Diego	CA	92138 52	Dear Reader	8/28/87		1	2829 Juan Street
Fred Worthley, Begional Manager, Begion	State of California, Deptartment of Fish & Game	Long Beach	CA	90802 53	Dear Reader	8/31/87	9/1/87	1	245 West Broadway, Suite 350
l ibrarian	Yuma Public Library	Yuma	AZ	85364 54	Special Letter	8/31/87	9/2/87	1	350 Third Avenue
Mr. John Cook	Brian F. Mooney Associates	San Diego	CA	92131 55	Dear Reader	8/31/87	9/1/87	1	9903-B Businesspark Avenue
	City of Brawley	Brawley	CA	92227 56	Dear Reader	9/11/87	9/12/87	1	400 Main Street
	Little Trucking	Callpatria	CA	92233 57	Dear Reader	9/11/87	9/12/87	1	Post Office Box 1342
Mr. Mel Dill	Mel's Trucking	Brawley	CA	92227 58	Dear Reader	9/11/87	9/15/87	1	607 West E Street
1905 1997 1200 1200 1200 1200 1200 1200 1200 120			1	<u> </u>	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·

# DRAFT EIR/EA MAILING LIST (Continued)

	COMPANY	CITY	TATE 71P N # 1 FTFR TV	F DATE CENT	DECENT CONE	CONCE BENER
Mr Earl Hastings				- 1001- 000		CUPIES SENIAUDRESS
		Imperial C	A 92257 59 Dear Reader	9/1187	9/15/87	1 :2731 Hinbway 111
	Eins Equipment	Brawley C	A 92227 60 Dear Reader	9/11/87	9/12/87	Post Office Roy 1377
Mr. William Lee	Desert Gravel	El Centro {C	A 92243 61 Dear Reader	9/11/87	9/16/87	1 Post Office Boy ADD
MI. LON JORES	ScalTrans	El Centro {C	A §92243 §62 §Dear Reader	9/14/87	9/16/87	1605 Adama Avania
Mr. James Kemp	CalTrans	San Diego C	A 92138 63 Dear Reader	9/11/87	9/15/87	1 2829 Juan Streat
-						

APPENDIX AB DRAFT EIR/EA COMMENTS AND RESPONSES



2.

United States Department of the Interior FISH AND WILDLIFE SERVICE LACUNA NIGUEL FIELD OFFICE OCT 13 FII 2: 28 24000 AvilaRoad Laguna Niguel, 92656

October 8, 1967

- To: Area Manager, Bureau of Land Management, Bl Ceutro Resource Area, Bl Centro, California
- From: Acting Field Office Supervisor, Laguna Niguel, California
- Subject: Draft Environmental Impact Report/Environmental Assessment for the Proposed VCR Mining Project, Imperial County, California (SCH No. 87052709) (1-6-87-TA-3)

The Fish and Wildlife Service (Service) has reviewed the referenced document which describes plans to operate an open pit gold mine and relocate a portion of State Highway 76 on 1,625 acres in Imperial County. Kabitat in the project area consists primarily of creosote bush scrub and braided, smallwashes. Project impact4 would accrue over the 20-year life of the project and result in permanent 1044 of wildlife value4 in most of the area. The Service offer4 the following comments on the draft document.

Reclamation Plan. Pages 3-23 to 3-27. Many aspects of the proposed reclamation plan, such a4 salvage of plant material4 and desert tortoise education programs. do nothing to reclaim the habitat value which will be lost due to project implementation. These measures could be considered a4 part of an overall mitigation plan and should be identified a4 such. Activities which result in the reestablishment of native vegetation on disturbed area could be considered reclamation.

The Service would be interested in the methods and result4 of the' experimental program for establishing natural vegetation. The final document should contain more detailed information on work that ha4 been done on the Mesquite Project and ha4 been proposed for VCR. The applicant should also be required to submit the method4 and result4 of these experimental procedure4 to the Bureau of Land Management, the California Department of Fish and Game, and the Service in yearly reports. We also encourage the applicant to use some salvaged plant material, such a4 ironwoods and fairy dusters, along the route of the realigned state

highway. Runoff from the road'4 surface should help establish these species. The California Department of Transportation ha4 successfully used this technique along Interstate 15 near Victorville.

- 1. The Proposed Reclamation Plan includes three separate phases so that efforts commence early during project construction and continue throughout the operations period and at closure. Phase I of the plan includes activities such as salvage of plant materials. the employee tortoise education program, access restriction, and is designed to take place during the project development period. It is oriented toward encouraging general reclamation ideas and environmental conservation procedures. even before reclimation of the land or habitat is possible. Phases II and III of the reclamation plan include activities which are directed more specifically toward reclamation as portions of the site arc completed and become inactive during the operational period, and when the project comes to an end.
- 2. To date. revegetation research conducted in conjunction with the Mesquite project has been associated with landscaping in the vicinity of the Administration Building. During early 1987, GFOC initiated steps to determine an appropriate research organization, and will provide data about the selected consultant for BLM approval prior to construction of the highway realignment. If approved, the consultant's scope of work will include selecting representative species from the highway realignment for expairmentation. as part of the research program. Together with the consultant, GFOC will identify a completed portion of the project, such as portions of the Cherokee area, for conducting the research by July, 1988. If a suitable completed area is not available at that time, CFOC will provide test plot areas to be used for interim activities. As the research progresses, reclamation plane based on the studies will be evaluated for incorporation into both Reclamation Plan Phases II and III of the Reclamation Plan.

The Conditional Usc Permit and Plan of Operations for the Mesquite project require GFOC to make the methods, results, and status of the revegetation program available to the County and BLM, upon their rquest. Similar reporting requirements will apply for the VCR project These requirements provides the mechanism for the research to be available for review and use by other agencies.

The highway construction design includes provisions for placing stripped soils from washes on the outside of road slopes, to the extent that these soils are available. These soils are expected to have the highest probability of containing seeds which will promote natural revegetation. Also, roadside embankments will be consnucted at a shallow slope to minimize erosion. and the straight portions of the road will be crowned to direct rainfall runoff onto the slopes.

#### LETTER NO. 1 (Continued)

The Service recommends that roads be left in place at the end of the project only if they do not provide increased **access** to undisturbed habitat. Otherwise, these roads will contribute to

3. undisturbed habitat. Otherwise, these roads will contribute to increased adverse impacts and should be identified as such in the final document.

Sensitive Plant Species, Pages 4-33 to 4-35. As a point of

information, the singular form of the word "species" is also 4. species. This word is repeatedly misspelled throughout the document.

Wildlife. Pages 6-8 to 6-11. The measures outlined on these pages should reduce some impacts to resident wildlife species. We-request that the phrase "(w)hen appropriate" at the top of page 6-11 be clarified. Will all tortoises inside the fenced area be cleared immediately after fencing or will tortoise cleating occur only immediately before excavation begins? The old highway alignment seems to be an appropriate tortoise relocation site.

<u>Highway 78 Realignment, Page 6-11</u>. After the pavement from the existing_highway is removed. topsoil from a mined area should be spread over the former alignment end some salvaged plants moved to this area. We also strongly recommend an effective blockage of the old route at its junction with the new alignment. Public, use of the old alignment should not be permitted.

This concludes our comments on the subject project. If you have any questions, please call Ray Bransfield at this office at (714) 643-4270 or FTS 796-4270.

cc: CDFG, Indio, CA (Attn: K. Nicol) CDFG, Wiland, CA (Attn: R. Thompson) CDFG, Reg. 5, Long Beach, CA The County of Imperial, El Centro, CA

- 3. In general, roads constructed for the VCR Mining Project will be within a fenced area, adjacent to disturbed working areas. Therefore, these roads would not provide a substantial degree of access to undisturbed habitat areas. In addition, Phase III of the Reclamation Plan requires that selection of roads to be left in place at project completion will be detennined on the basis of their long-term beneficial use as determined in conjunction with the County. BLM. or other appropriate regulatory agencies. Roads which are left open to public access will be posted with BLM routes of travel markers.
- 4. This comment is appropriate and the text has been changed accordingly.
- 5. The text has been revised to eliminate the phrase "when appropriate." The relocation procedures will be in effect throughout the project life as a part of the ongoing Employee and Construction Workers Tortoise Training Program. The program specifies that supervisors be informed when tortoise in potentially dangerous areas are observed. Then the tortoise would be relocated using an established project procedure, which has been successfully implemented a number of times at the existing Mesquite project

Since publication of the Draft EIR/EA, Dr. Lawrence LaPré has performed an evaluation in the general vicinity of the project to evaluate suitable sites for relocating tortoises. During this evaluation, it was determined that the abandoned segment of Highway 78 may not be the most desirable area because of the potential for future land disturbance in the BLM Gravel Withdrawn Area (see Figure 4.3, Land Status Map). A more appropriate habitat was identified in a natural wash area near the GFOC production well field (see Figure 4.6, Ground Water Elevation Map). This area will be used for tortoise relocations.

6. Portions of the abandoned highway, outside of the project area, will b-c used as an unpaved road for access to the Gravel Withdrawn Area. In areas where the asphalt is removed and the road will be completely eliminated, the abandonment plan includes scarifying of the soil surface to enhance moisture retention and to promote seed germination. The plan does not include placement of relocated soil in the road because the project area contains virtually no topsoil (see page 4-9). Berms will be constructed where the realigned highway joins the existing highway alignment to deter the visual appearance that a prior roadway alignment existed, and to prevent access to the old roadbed at these locations (see page 5-25, and bottom visual simulation on page 5-27).

2



# MPERIAL IRRIGATION DISTRICT

OPERATING HEADQUARTERS . P. O. BOX 937 . IMPERIAL, CALIFORNIA 92251

IIDAGM

September 15, 1987



Mr. Jim Kelley, Planner III Inperial County Planning Department 939 Main Street El Centro, CA 92243

Dear Mr. Kelley:

Subject: Draft EIR/EA for the Proposed VCR Mining Project SCH No. 87052709

On behalf of the Imperial Irrigation District, I wish to reiterate our Comments regarding this project in my June 11, 1987 letter In response to Initial Study No. 1830-87, Gold Fields Open Pit Mining Project (Appendix 8 of subject EIR/EA).

1. The proposed project will have a detrimental impact on Imperial Irrigation District **power facilities as detailed in the** June 11, 1987 letter.

- Further, although the project's water requirements will be supplied from private wells, it is probable that the source will be from the same
- 2. (Anos-Ogilby Hydrologic Unit) basin that is collecting leak water from the All-American Canal (AAC). There is a project under discussion by member agencies on the Colorado River Board and the U. S. Bureau of Reclamation to recover MC leak water from that basin.

Sincerely,

CHARLES L. SHREVES General Manager

Copy to Mr. Rich Inman

VCR.MINE

 Sections 3.2.7 and 5.12. 1 of the EIR/EA include consideration of the concerns expressed in the IID's original June 11, 1987 letter (see Appendix B). GFOC plans to cooperate fully with the IID to establish the best arrangement for required realignments of portions of the 92 kV Power line, including provisions for IID's access for maintenance purposes. As with the original facilities for the Mesquite project, GFOC will agree to pay realignment costs required because of the VCR Mining Project and highway realignment. Finally, GFOC will cooperate with the IID and BLM in establishing a Power line access corridor, if the facilities are extended toward the west at some time in the future.

2. Comment noted.

#### **RESPONSE TO LETTER NO. 3 FROM A-ABLE PLUMBING, INC.**

A-ABLE PLUMBING, INC.

NEW CONSTRUCTION - REMODELING - REPAIRS 5 F.1 2: 1 C State Licenze #263329

F.O. Box 1146

Opposed to expanding The Misquite

1.

TO WHOM IT HAY CONCERN:

Is if right for a foreign government or foreign corporation
2. that is highly involved in South Africa to come co the United
States of America, and exploit au: natual resources, and divert millions of dollars in profits out of this county? Also for them
3. to aquire hundreds of acres of our best mineral lands for five dollars per acre? They do this under the pretext rhat they pay mandatory taxes and employ some citizens.

I chink these questions should be asked co the citizens of the United States of America

> Thank You MELVIN HELIT PRES. of A-ABLE Plumbing. Inc

Mich Stel & Pres

Written commente on The Enveronmental assessment analyzing Sold Fields Operating company proposal to expand the mesquite gold mine in Imperial county

VISTA 724-1166

-SERVING ENTIRE NORTH COUNTY -OCEANSIDE 722-5500

ESCONDIDO

Special Note:

This letter was the cover letter to a packet of copied materials consisting of various newspaper articles and legal theories concerning Gold Fields' rights to hold mining claims under the 1872 Mining Law. The BLM has reviewed these materials and determined that they represent no comment on the adequacy of the EIR/EA, but rather a disagreement over claim possession The process for the adjudication of rights under the Mining Law is separate from the 43 CFR 3809 Environmental Review Process which is designed to determine only if undue or unnecessary degradation of the Federal Lands will occur, what special operating measures are required, and what reclamation measures will be required of the operator. The adjudication of rights is performed in a Private Contest before an Administrative Law Judge, pursuant to 43 CFR 4.450-1. Gold Fields and Mr. Helit are currently involved in this process, and on July 22.1987. Judge Morehouse issued a decision (CA-19054) rejecting the theories raised by Mr. Helit. The attachments and a copy of Judge Morehouse's decision are on file in this casefile, located in the El Centro Resource Area office of the BLM.

#### Specific Comments

- 1. Comment noted.
- 2. see above.
- 3. Although this comment is not germane to the 3809 process, the 1872 Mining Law, as codified at 43 CFR 3862.4-6 and 43 CFR 3863.1(b) states that a claimant, upon discovery, may purchase the land for \$5.00 per acre for a lode claim and \$2.50 per acre for a placer claim. This is a benefit conferred by the Mining Law itself and is not subject to BLM modification.

#### **RESPONSE TO LETTER NO. 4** FROM CALIFORNIA DEPARTMENT OF FISH AND GAME

Mémorandum

1. Projects Coordinator Resources Agency

Date 1 October 2, 1987

- 2. County of Imperial Planning Department 939 Xain Etrect El Centro, CA 92243
- Department of Fish and Game From
- Draft Lnvlronnental Impact Report (EIR)/Environmental Assessment (EA.): cold Fieldo VCR Mino, D pnrial county SCRE/U52/U9 Subject :

uppariment of rish and G a me (Department) blolowists familie: with the project area have reviewed the subject document describing the potential environmental impacts of extending the Gold Fields mining operation. Gold Fields Operating Company is proposing to develop four open-pit gold mines and realign 8.5 miles of State Highway 78 to the south of the projectarea. Approximately 1,625 acres, including habitat for Couch's spadefoot to ad (Scaphiopus couchi), desert tortoise, and burro mule decr(Odocd Teus hemionus eremicus), would be disturbed over the life of the project. No newleach pade will be required for this project as the permitted leach pads for the nesquite Project would be utilized. The project in located immediately east of the existing Mesquite Mine project in located immediately east of the existing Mesquite Mine, approximately 35 miles east of Brawley.

we have the following comments and recommendations for your

the impacts of increased access Contents of Broparation for the berprovided in the Final EIR. the reas resulting from realignment of Highway 78. These ↓ and the reas were identified In chc Department's comments on the Not 200 of Proparation for this project and a response should

section 3.2.5.2, Alternative II, Without Highway 78 section 3.2.5.2, Alternative II, Without Highway 78 section. We recommend this alternative because it will be additional loss of habitat from the highway construction of the project and the subsequent measured is believed. Thases of the project and tho cubcequent access availability that would have been provided by the realignment.

- 3. Section 3.2.13.6, Restoration of Disturbed Areas. A more complete description of proposed revegetation procedures is necessary, including details of "proceduros to be determined by research program for the adjacent Mesquite project." These procedures will negd to include use of the original top soil in revegetation of impacted areas to ensure the best opportunity for achieving an effective revegetation program.
- 4. sections 4.5.3 and 4.5.4.1(see also Appendix C). Wash size is not a critical habitat feature with respect to Couch's spadefoot toad. A more important habitat feature is the presence of pooled water following late summer

- 1. The Draft EIR/EA does consider impacts of the realigned highway for wildlife at the road and in adjacent areas. Specific impacts to vegetation due to increased access to the area resulting from the realignmentwere not specifically addressed. Additional discussion about these impacts has been added to Sections 5.4.2 and 5.5.2. The impact which would accrue as a result of providing a **paved** road into **areas** which were previously accessibleby a **number** of unpaved roads and washes is **expected** to be minor.
- 2. Comment noted.
- 3. A schedule for selection of the consultant tperform revegetation research for the adjacent Mesquite Mine, and for implementing the program. has been established as discussed in Response No. 2 to Letter No. 1. Theresearch program will be directed toward determining the most appropriate procedures to promote natural revegetation as areas reach their ultimate completion configuration. Results of the research program will be completion program will be directed during both the Phase II (operational) and Phase III (project completion) reclamation phases. Because of the description entry memory and the reveal of the description of the research program. no topsoil at the site in the usual sense. Soils insome washes may containseeds or have properties which could assist natural revegetation. For highway construction, efforts will be made 10 place soils from disturbed washes onto the outside slopes of the shallow roadway embankment.

4. See following page.

-2-

thundorstorms Surveys for Couch's spadefoot toad and its habitat should be conducted following these storms and cooldinated with the Department -and the Bureau of Land Management. Habitatand enhancement feature6 providfa should be similar to those proposed for projects on the Imperial Sand Dunes.

It is possible that on-site documented burro muledeer densities were "low" during the inventory period because movements of these animals are extensive, especially during late summer periods of scattered thunderstorms. Additionally, habitat appearing "sparse" may initially support deer repending upon the availability of horbaceous forage. More importantly, deer moving through the project Arda Would be displaced if the proposed facilities are constructed. Habitat improvements, including development of water facilities and forage plantings in adjacent areas, may be required to accommodate deer. Department biologists are available to meet with the project sponsor to help identify appropriate mitigation measured to offset impacts to the deer populations.

5. Section 6.5.1, VCR MiningArea, Compensation far loss of desert tortoise habitat mustinclude a replacementratio of no less than fivo acres purchased for each acrelost.

rence construction must include mechanisms designed to allow for tortoise mobility and not provide perchingcitor for avian predators.

Diversion or obstruction of the natural flowor changes in the channel, bed, or bank of any river, stream, or lake will require notification to the Department as called for in the Fish and Game code. This notification (with free) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to **review** and comment on this project. If you have any questions, please contact Fred Worthley, keglonal Hanager of Rogion 5. at 245 W.Broadway, Suite 350, Long Beach, cA 90802-4467 or by telephone at (213)590-5113.

Pete Bontadelli Acting Director 4. A significance difference between washes c Wash to the west is related to the potential The upstream watershed area contributing i while most washes in the VCR project orig much more water, at deeper depths. passet in more and larger pooled areas in the Purg Bccausc Couch's Spadefoot Toad habitat d special habitat enhancement procedures are

As indicated in Section 4.5.3 and Appendix **extremely** uncommon in **the project** area. T deer. and special mitigation measures arc no that artificial water facilities should not be

5. The field survey for desert tortoise, as repredensities to be. low throughout the project desert tortoise habitat andbecause the project the desert tortoise. the BLM does not conswarranted. Because of the low density of not include special screening to preclude tor wire will be used along the top of chain linused.

#### RESPONSE TO LETTER NO. 5 FROM IMPERIAL COUNTY DEPARTMENT OF PUBLIC WORKS

"The Largest Irrigated District in the World"

TELEPHONE 619-339-4462

S. HARRY ORFANOS Director of Public Works County Road Commissioner County Engineer County Engineer



DEPARTMENT OF PUBLIC WORKS 155 South 11th Street EL Centro, California 92243-2853

October 9, 1907

Hr. Jurg Reuberger Planning Director County of Imperial Courthouse El Centro, CA 92243

> SUBJECT: Comments on Proposed Realignment ,**Of** State Highway 78, VCR Mining Project, for Final Environmental Impact Report/Environmental Assessment

Dear Jurg,

We have several areas of concern with the proposed alignment of State Highway 78.

(1) In the event there are private lands or materials claims north of State Highway 78, access must be provided from existing roads or new constructed access.

Portion6 of State Highway 78 may need to remain to provide the access.

- (2) Portions of Highway 70 not used should be abandoned and obliterated.
- (3) Any proposed abandonments of County roads will have to be processed through the Imperial County

- 1. A portion of the BLM Gravel Withdrawn Area is located north of the proposed State Highway 78 realignment GFOC will provide a new route for access to the abandoned Highway 78 roadbed so that a portion can **be** used as an unpaved road for access to the **Gravel** Withdrawn Area.
- 2. The proposed acdon includes abandonment and obliteration of potions of the highway which will not be used.
- 3. See following page.

# LETTER NO. 5 (Continued)

# RESPONSE TO LETTER NO. 5 (Continued)

October 9, 1987 -2-Jurg Heuberger

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Department of Public works with the appropriate applications and must be heard by the Board of Supervisors.

Sincerely yours,

S. HARRY ORFANOS Director of Public works

BY: BOAN Eater Bob D. Estes Assistant County Surveyor

1js





DEPARTMENT OF THE NAVY NAVAL AIR FACILITY EL CENTRO, CALIFORNIA 32243

**5090** Ser 32/1075 03 Sep 87

Imperial county Planning Department 939 Main street El Centro, CA 92243-2856

Gentlemen:

The draft Environmental Impact Report/Environmental Assessment prepared for the .Gold Fields Operation Co. VCR Mining Project has been reviewed.

No impact on Navy El Centro operations or property is foreseen at this time. However, in view of the adjacentproximityto the Chocolate Mountains Aerial Gunnery Range, the Commanding Officer, Marine Corps Nr Station, Yuma, AZ should be given the opportunity to review this proposal.

Thank you for the opportunity to review and comment on this project.

Sincerely.

M. D. SCHIFFNER /// Lieutenant Commander Civil Engineer Corps, U. S. Navy Public Works officer By direction of the Commanding Officer

Copy to: MCAS Yuma



1. A copy of the Draft EIR/EA was sent to the Commanding Officer of the Marine Corps Air Station at Yuma, Arizona.