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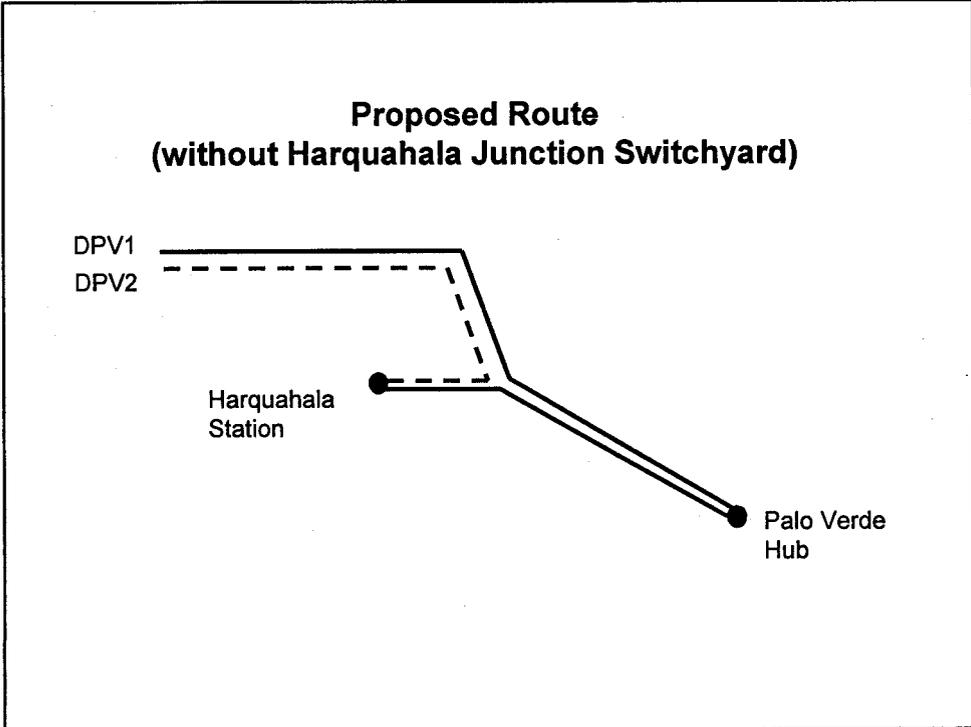
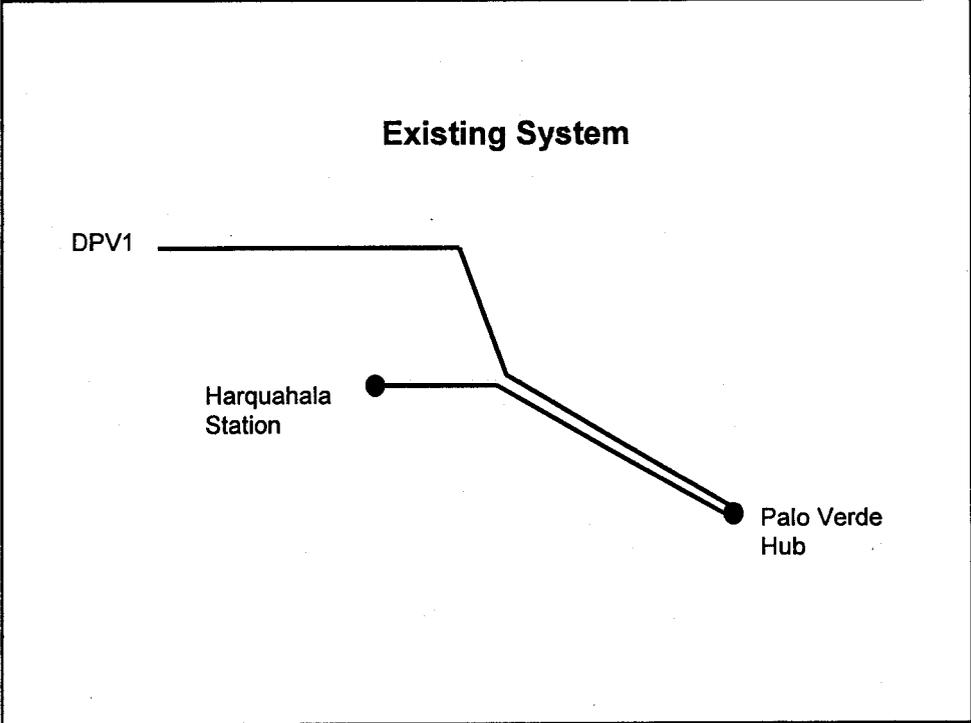
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DOCUMENT CONTROL

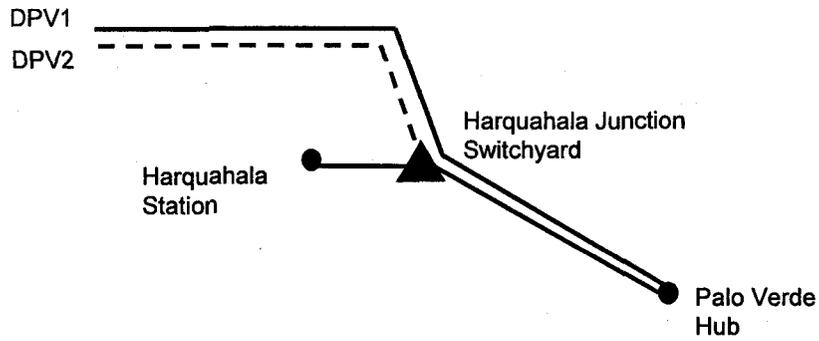
Transcript Exhibit(s)

Docket#(s): L-00000A-06-0295-00130

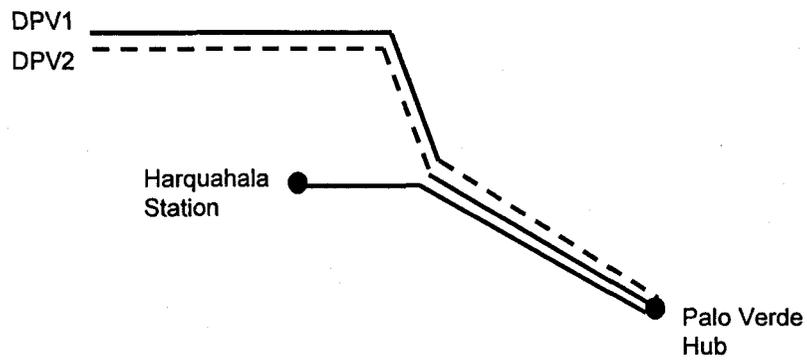
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**Proposed Route
(with Harquahala Junction Switchyard)**



Palo Verde Subalternate Route



Harquahala-West Subalternate Route

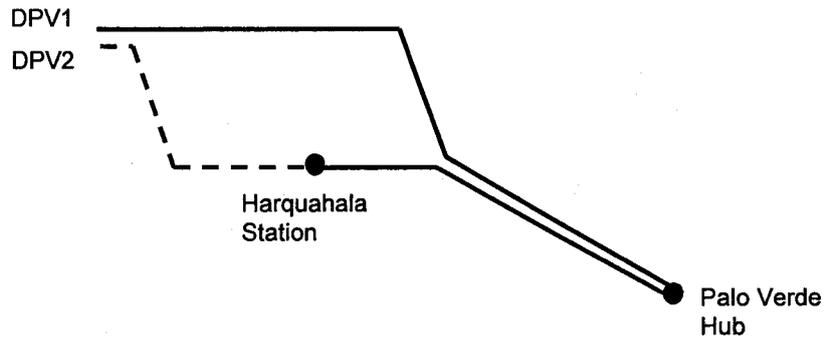
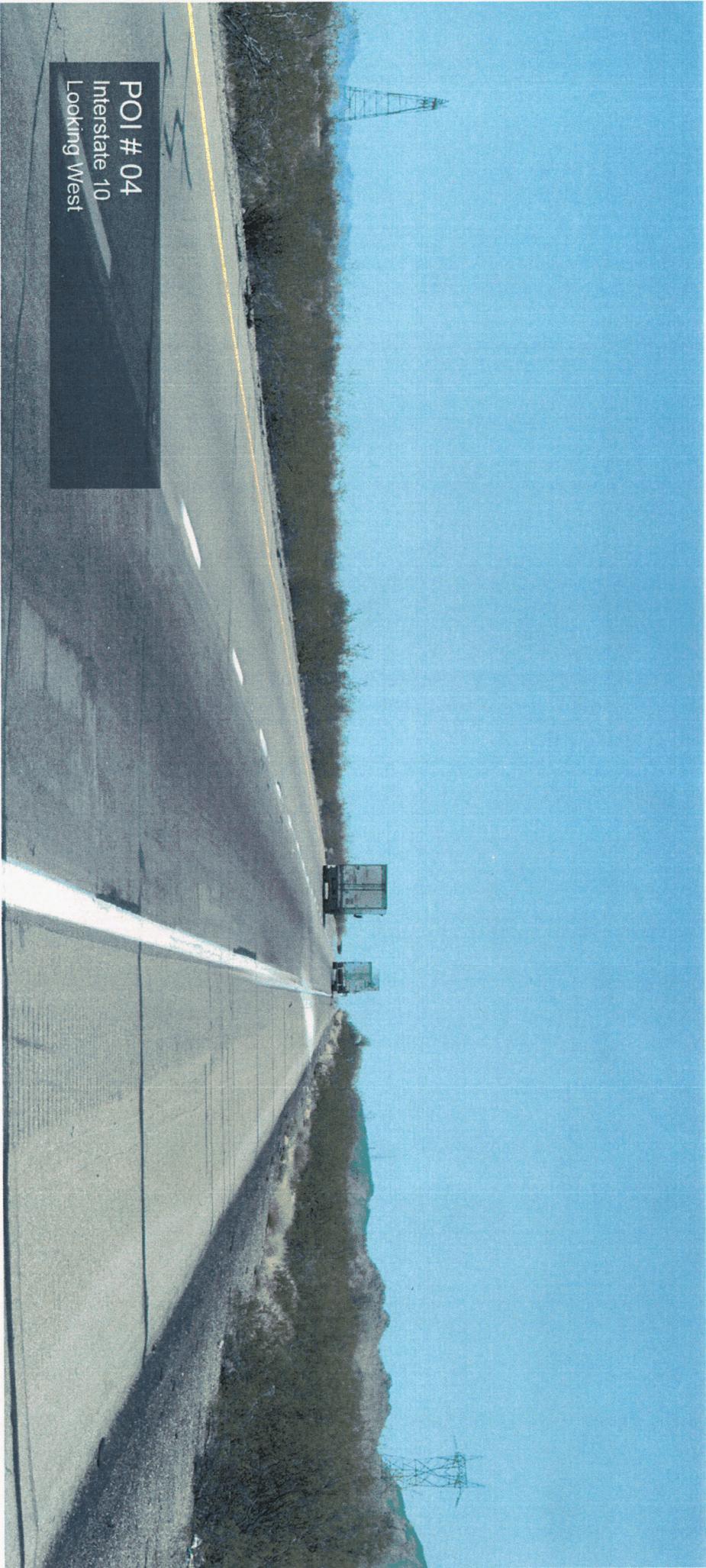
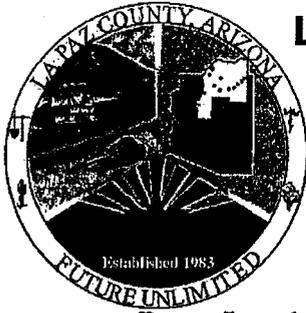


EXHIBIT
A-5
Admitted

POI # 04
Interstate 10
Looking West



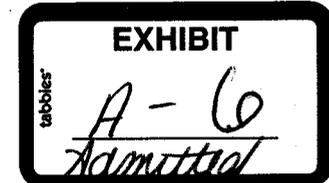


La Paz County Department of Community Development
B. Scott Bernhart, Director

1112 Joshua • Suite 202 • Parker, Arizona 85344
(928) 669-6138 • Fax (928) 669-5503 • TDD (928) 669-8400

Date: June 14, 2006

Southern California Edison
Fred Salzman- Project Manager
P.O. Box 800
2131 Walnut Grove Ave.
Rosemead, California 91770



RE: SCE Devers-Palo Verde No. 2 500kV Transmission Project

Dear Mr. Salzman,

I have taken the time to look through the three volume document entitled, Environmental Impact Report/EIS, Southern California Edison Company's Application for Devers-Palo Verde No. 2 Transmission Line Project, SCH 2005101104 dated May 2006. While I did not complete an exhaustive study of the report, I do want to both provide information and request information related to the study:

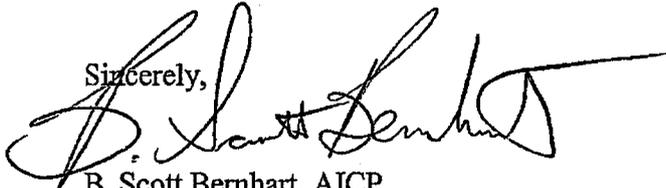
1. There are numerous construction yards identified in the study. Numbers 30, 50, 60, 70, 80, 90 and 100 appear to be located within La Paz County. In the event that any of these construction yards are located on private unincorporated County property, please contact my office with regard to operations and possible need for permits. Yard number 30 and 70 appear to be the only potential sites located near or on private property. If it is SCE's intention to operate the yards on SCE ROW, please let us know. Please be aware that the Colorado River Crossing location appears to be south of a proposed gas line crossing at the river. Although this gas line crossing appears to be north of the existing SCE line, you may want to contact the gas company about their plans.
2. Are there any proposed improvements to the Cunningham Communications site as shown in the study?
3. Staff agrees with the US Fish and Wildlife assessment (D.3-39) of the Kofa National Wildlife Refuge VRM Class II status as shown on D.3-21 of the report. There should be ways to mitigate the visual impacts associated with an additional line in this sensitive area. Please consider using towers equal to the height of existing towers with similar line arrangements. This will limit the potential visual impact of a higher tower with completely different arrangement of cables. In fact, if the intent is to protect the existing visual quality from a nearby roadway, a tower & cable system could be designed to mirror the existing lines as closely as

possible, when viewed from the road right-of-way. To my knowledge, this has never been done before and could mitigate the visual impacts of another line. In my opinion only, this would be a better alternative to locating a whole new ROW for the proposed power lines elsewhere.

4. Staff has identified potential development near Ave. 75 E. as previously described by e-mail on May 31, 2006. Additional information has been gathered regarding other potential areas in the County:
 - a. Please find the attached background documents regarding permits issued in T2N, R18W, Section 14 and 24. Section 14 appears to have a gas compressor station and section 24 has a residential single family home.
 - b. Figure D.4-1 Specific Land Uses, identifies a specific residential area directly south of Quartzsite on Highway 95, surrounding the SCE alignment. This area appears to be BLM land and does not contain any private lands upon which development could occur within unincorporated La Paz County. This area appears to be within T2N, R19W, sections 3 & 4. Please let us know of any pending BLM land sales or possible land trades involving this or any other area of the County.

If you have any questions, please contact me at 928-669-6138.

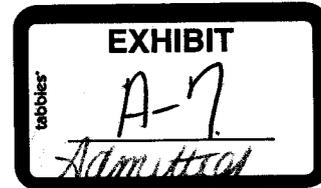
Sincerely,



B. Scott Bernhart, AICP
La Paz County
Community Development Director
1112 Joshua Street
Suite 202
Parker, Arizona 85344
928-669-6138
sbernhart@co.la-paz.az.us



U.S. Department of the Interior
Bureau of Land Management
U.S. Fish and Wildlife Service



Yuma Field Office
Kofa National Wildlife Refuge

October 1996



Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness Interagency Management Plan and Environmental Assessment



The Bureau of Land Management is responsible for the balanced management of the public lands and resources and their various values so that they are considered in a combination that will best serve the needs of the American people. Management is based upon the principles of multiple use and sustained yield; a combination of uses that take into account the long term needs of future generations for renewable and nonrenewable resources. These resources include recreation, range, timber, minerals, watershed, fish and wildlife, wilderness and natural, scenic, scientific and cultural values.

The U.S. Fish and Wildlife Service is an agency of the Department of the Interior with a two-fold mission: to protect and manage wildlife in the interest of the American people and to provide wildlife oriented recreational and educational opportunities to the American people.

The Service currently manages the National Wildlife Refuge System, many National Fish Hatcheries, and several wildlife research centers. Additionally, it monitors and protects endangered species; provides technical help to international, federal, state and local agencies, Native American tribes, and private landowners on fish and wildlife matters; administers a program of federal monetary aid to state wildlife agencies; and enforces federal laws and regulations to protect wildlife and their habitats.

BLM/AZ/PL-97/002



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Yuma Field Office
2555 Gila Ridge Road
Yuma, AZ 85365

U.S. FISH AND WILDLIFE SERVICE

Kofa National Wildlife Refuge
356 West First Street
Yuma, AZ 85365

In reply refer to:
8560 (050)
AZA 25502

Dear Reader:

Contained herein is the Final Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness - Interagency Management Plan, Environmental Assessment, and Decision Record. Impacts expected from implementing the proposed plan are analyzed in the Environmental Assessment. The Plan will provide long-term management guidance for the Kofa National Wildlife Refuge and New Water Mountains Wilderness.

A draft version of this document was released for public review and comment in January 1996. Comments on the draft plan were analyzed and revisions were made for inclusion in the final document where appropriate. A compilation of the comments is available upon request.

The Environmental Assessment and Decision Record are subject to appeal in accordance with procedures contained in 43 Code of Federal Regulations, Part 4, Subparts E and G. Implementation of this plan will not begin until 30 days after the date of this letter.

The Kofa National Wildlife Refuge and Yuma Field Office staffs thank all who contributed to the development of this document. We encourage your continued participation in the effort to ensure that our natural resources are properly managed for current and future generations.

Sincerely,

Milton Haderlie
Refuge Manager
Kofa National Wildlife Refuge

Gail Acheson
Field Manager
Yuma Field Office

1 Enclosure

- 1 - Final Kofa National Wildlife Refuge
& Wilderness and New Water Mountains
Wilderness - Interagency Management Plan

**Kofa National Wildlife Refuge and Wilderness
and
New Water Mountains Wilderness**

**Interagency Management Plan,
Environmental Assessment, and
Decision Record**

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

U.S. Department of the Interior
U.S. Fish and Wildlife Service

Arizona Game and Fish Department

Yuma and La Paz Counties, Arizona
EA Number: EA-AZ-055-95-105

October 1996

Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness Interagency Management Plan

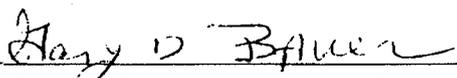
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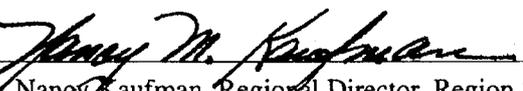
Signature by the Arizona State Director represents an agreement by the Bureau of Land Management to work cooperatively within the scope of agency jurisdiction, with the U.S. Fish and Wildlife Service, Arizona Game and Fish Department, and the public, to implement public land provisions of the Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness - Interagency Management Plan.

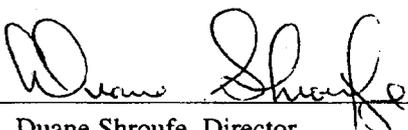
Signature by the Regional Director, Region 2, represents an agreement by the U.S. Fish and Wildlife Service to work cooperatively within the scope of agency jurisdiction, with the Bureau of Land Management and Arizona Game and Fish Department to implement appropriate provisions of this Plan.

As Secretary to the Arizona Game and Fish Commission, signature by the Director of the Arizona Game and Fish Department represents an agreement by the Commission and the Department to work cooperatively with the Bureau of Land Management and U.S. Fish and Wildlife Service to implement provisions of this plan as authorized by Arizona Revised Statutes Title 17.

For lands administered by the Bureau of Land Management, this plan complies with provisions of the Sikes Act and the Master Memorandum of Understanding Between State of Arizona, Arizona Game and Fish Commission and Department of the Interior, Bureau of Land Management.

Approved by: 
Denise Meridith, Arizona State Director
Bureau of Land Management

Approved by: 
Nancy Kaufman, Regional Director, Region 2
U.S. Fish and Wildlife Service

Approved by: 
Duane Shroufe, Director
Arizona Game and Fish

Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness Interagency Management Plan

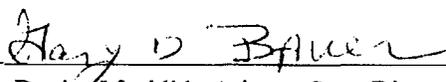
Responsibilities

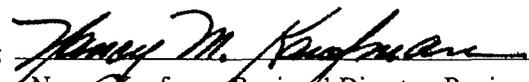
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Denise Meridith, Arizona State Director
Bureau of Land Management

Approved by: 
Nancy Kaufman, Regional Director, Region 2
U.S. Fish and Wildlife Service

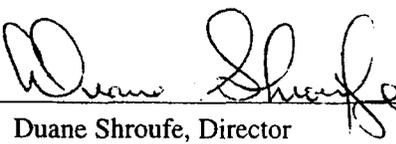
Approved by: 
Duane Shroufe, Director
Arizona Game and Fish

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PART 1 — Background Information

The Planning Area

Adjacent locations and common wilderness management and wildlife habitat concerns led to a coordinated effort between the U.S. Fish and Wildlife Service (Service) and the Bureau of Land Management (BLM) to develop one management plan that will cover both (Map 1) the New Water Mountains Wilderness (New Waters) and the Kofa National Wildlife Refuge and Wilderness (Kofa). This document focuses on the ecological commonality of the two wildernesses while recognizing the different legal mandates of both administering agencies.

Managed by the Service, the Kofa contains a total of 665,400 acres, including 510,900 acres which are designated wilderness. Managed by the BLM, the New Waters is all wilderness and encompasses 24,600 acres. A mineral land patent covering 475.77 acres is contiguous to the northeastern portion of the New Waters and is also part of the planning area.

A more detailed Comprehensive Management Plan (CMP) for the Kofa National Wildlife Refuge has also been developed as part of the Service's planning requirements. Available separately, the CMP is a compilation of all existing guidance for use by the Refuge Manager that includes the management program outlined in this joint agency planning document.

The La Posa Interdisciplinary Plan addresses management concerns for lands on the west and north side of the New Waters and Kofa. Several actions in the La Posa Plan have been coordinated with this planning effort to assist in preserving natural values of this planning area.

Historical Context

The Kofa and New Waters play a central wildlife and wild lands conservation role in western Arizona. In the earlier part of this century, declining populations of desert bighorn sheep (*Ovis canadensis mexicana*) became a concern. During that time, it was also recognized that a special management focus to address the recovery of desert bighorn sheep had become necessary beyond the establishment of legal protection provided for this species by the Arizona State Game code which had been enacted in 1913. Ultimately, the Kofa Game Range was established in 1939 by Executive Order 8039 specifically for the recovery of bighorn sheep populations.

Administrative responsibility for the Kofa was shared by the Service and the U.S. Grazing Service until 1946. In 1946, the game range came under joint management of the Service and the newly established BLM. The Service and BLM co-managed the Kofa until sole jurisdiction of the refuge was given to the Service with Public Law 94-223 in 1976. As with all Federal lands, the BLM still manages mining claim recordation processes for the Kofa.

With passage of the Arizona Desert Wilderness Act of 1990, portions of the Kofa and New Water Mountains were designated as part of the National Wilderness Preservation System. This gave both the Service and BLM a common legal mandate for managing these specially designated areas.

Plan Purpose

This document provides management direction for the foreseeable future of the planning area. Direction for the New Waters in this plan is in conformance with the Lower Gila South Resource Management Plan. All other previous management direction for the planning area is amended and replaced by this plan. Any future management guidance whose sphere of influence covers this planning area shall abide by the provisions of this document and become an amendment thereto.

For the Service, amended and replaced by this plan is the Planning Needs Assessment (1985). For the BLM, amended and replaced plans where they apply to the New Water Mountains Wilderness are: The Yuma District Supplemental Interim Wilderness Fire Management Plan (1992) and the Wildlife Operations and Maintenance Plan for the Trigo Mountains, Muggins Mountains, New Water Mountains, and Eagletail Mountains Wilderness Areas (1993).

Revision of this plan can occur at any time upon mutual agreement of the BLM, the Service, and the AGFD. Minor revision or modification documents will be approved by the BLM Yuma Field Manager, the Kofa Refuge Manager, and the AGFD Regional Supervisor. Major revisions or amendments must be reauthorized by the original signatories.

Legal Guidance

The Wilderness Act of 1964 and the Arizona Desert Wilderness Act of 1990 provide general legal guidance for all wilderness portions of the planning area. However, there are different legal mandates that affect each agency and management will also be guided for each respective jurisdiction as follows:

Executive Order 8039, the legal authority that established the Kofa National Wildlife Refuge, 6 Refuge Manual 8, and Title 50, Code of Federal Regulations, Parts 1 to 199 and Parts 400 to 499, will provide general management guidance for portions of the project area administered by the Service.

Additional general guidance for the Service will be provided by the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668 et seq.), Executive Order 12996, and the Refuge Recreation Act of 1962 (16 U.S.C. 460 et seq.). The Refuge CMP referenced at the beginning of this document contains a more inclusive list of legal mandates that provide management direction for the Kofa.

BLM Manual 8560 and Title 43, Code of Federal Regulations, Subpart 8560 (43 CFR 8560) will provide general management guidance for BLM portions of the project area. Additional BLM guidance will also be provided by the Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.).

National Wilderness Management Policies

Each agency also has national wilderness management policies that are expressed as objectives or goals. These national policies are listed below:

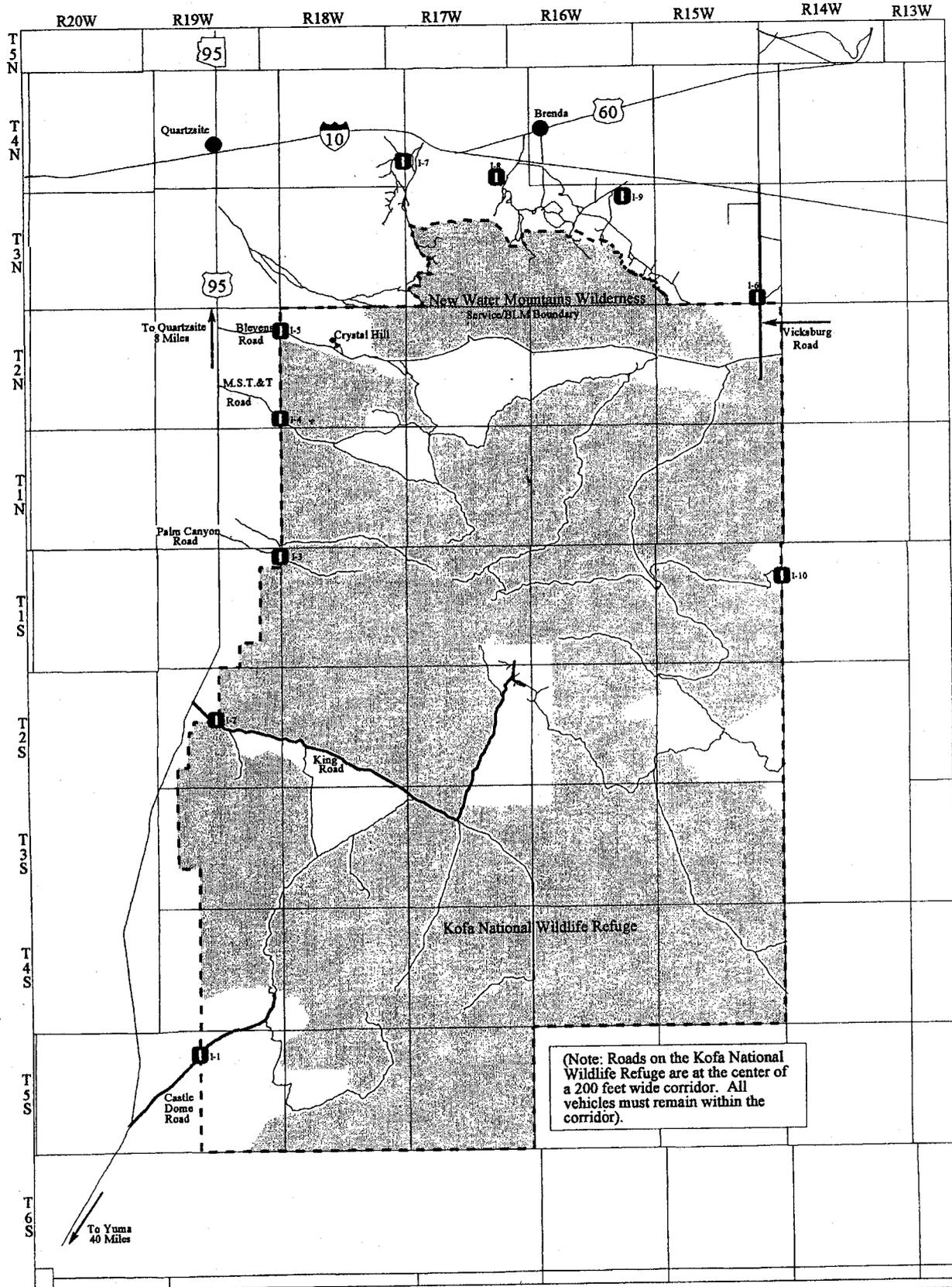
Service Wilderness Objectives (Manual 6 RM 8.2 and 8.3):

1. Manage so as to maintain the wilderness resource for future benefit and enjoyment;
2. Preserve the wilderness character of the biological and physical features of the area;
3. Provide opportunities for research, solitude, and primitive recreational uses;
4. Retain the same level of pre-wilderness designation condition of the area; and
5. Ensure that the works of man remain substantially unnoticeable.

BLM Wilderness Goals (BLM Manual 8561):

1. Provide for the long-term protection and preservation of the area's wilderness character under a principle of non-degra

PLANNING AREA & ACCESS

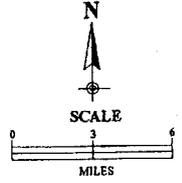


(Note: Roads on the Kofa National Wildlife Refuge are at the center of a 200 foot wide corridor. All vehicles must remain within the corridor).

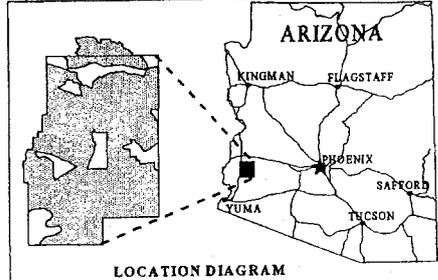


LEGEND

- Wilderness
- Planning Area Boundary
- Roads
- County Maintained Roads
- Township & Range
- Informational Displays



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
YUMA FIELD OFFICE
AUGUST 1994



MAP - 1

dition. The area's natural condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historical value present will be managed so that they will remain unimpaired.

2. Manage the wilderness area for the use and enjoyment of visitors in a manner that will leave the area unimpaired for future use and enjoyment as wilderness. The wilderness resource will be dominant in all management decisions where a choice must be made between preservation of wilderness and visitor use.
3. Manage the area using the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective. The chosen tool, equipment, or structure should be the one that least degrades wilderness values temporarily or permanently. Management will seek to preserve spontaneity of use and as much freedom from regulation as possible.
4. Manage nonconforming but accepted uses permitted by the Wilderness Act and sub-

sequent laws in a manner that will prevent unnecessary or undue degradation of the area's wilderness character.

Arizona Game and Fish Department Role

A third agency also has a key interest in the development of this management plan. The Arizona Game and Fish Department (AGFD), acting under the authority of the Arizona Game and Fish Commission, and Arizona Revised Statutes Title 17, has responsibilities for the protection and management of all wildlife species in the State of Arizona.

Cooperative management guidance for BLM portions of the planning area are guided by BLM Manual 8560.34 and the Master Memorandum of Understanding between the Arizona Game and Fish Commission and Department of the Interior BLM, March 1987 (AGFD-BLM MOU). For wildlife resources on national wildlife refuges within the State of Arizona, the Service and the AGFD have always considered themselves as cooperative wildlife managers. Therefore, the AGFD also plays a major role in the development and implementation of this interagency document.



Looking south at Kofa across a former travel route in New Waters.

PART II — Environmental Setting & Management Situation

Geology

The planning area is in the Basin and Range physiographic province and consists of Precambrian to Quaternary age rocks. There is an underlayment composed primarily of Quaternary basalt and Cretaceous rhyolite and andesite. Smaller amounts of Paleozoic and Mesozoic limestones, shale, sandstone, and quartzite also exist.

Three major block-faulted mountain ranges (Kofa, Castle Dome, and New Water Mountains) typified by extensive exposures of bedrock, sparse vegetative cover, and a lack of soil development are within the planning area. Steep slopes and structurally controlled drainage systems furnish the area's primary relief.

Elevations on the refuge range from 680 feet on the desert floor to 4,877 feet atop Signal Peak. The highest elevation in the New Waters is 3,639 feet on Black Mesa and the lowest elevation is about 1,800 feet on peripheral alluvial washes along the northeastern wilderness boundary. Shallow, stony soils and rock outcrops are predominant in the mountainous and steep slope areas. Deep, gravelly, moderately fine textured soils high in lime concentrations characterize alluvial fans and valley floors.

Climate

Winter and spring seasons are affected by sparse rainfall from prevailing Pacific frontal storms that have depleted most of their moisture. During the summer, there is a prevailing influence from convectional storms that originate in the tropics. Periods of prolonged drought may occur throughout the year (Brown 1982).

Temperatures range from lows near 25 degrees F. in the months of December and January, to highs that may exceed 115 degrees F. from July through September. Precipitation generally ranges from 2 to 8 inches per year.

Air Quality

The planning area is within a Class II airshed as classified by the Clean Air Act. No site specific air quality data exists for the area. However, the lack of nearby agricultural lands or industrial activities provides for good air quality. The southwestern portion of the refuge may occasionally be affected by dust from military activities on the U. S. Army Yuma Proving Ground.

Water

In the extremely dry Sonoran Desert ecosystem, water is the primary limiting factor. Over the years, wildlife managers have learned to optimize the conservation of water in the desert for wildlife purposes through the management of wildlife water sources.

Artificial and natural wildlife water sources are aimed at improving wildlife population health and distributions. Both Kofa and the New Waters have wildlife water sources, natural and developed (Map 2 and Appendix A). The wildlife water sources typically consist of windmill powered wells, modified springs or seeps, and rain water collection systems associated with tanks or naturally occurring pot-holes. Several of these watering areas occasionally go dry during extended dry periods. To prevent large scale wildlife movement away from these areas, or worse, wildlife die-offs, water is hauled to these drought susceptible sites when needed. In a dry year, as much as 10,000 gallons of water may be hauled to individual areas.

Development of wildlife water sources has been carried out on the refuge since it was first established. Throughout the years wildlife managers have managed under the supposition that managed water developments and natural sources for bighorn sheep have been instrumental in helping to restore the species to sustainable populations. All

Kofa waters are monitored primarily by refuge personnel and are maintained with assistance from AGFD and the Arizona Desert Bighorn Sheep Society.

In the New Waters, the four watering areas present in the wilderness are monitored by AGFD. Maintenance of these areas is the responsibility of AGFD with cooperative assistance from BLM.

Vegetation

Comprised of 2 Sonoran Desert subdivisions, the planning area is in a Tropical-Subtropical Desertland climatic zone (Brown 1982). The most arid portion of the Sonoran Desert is the Lower Colorado River Valley subdivision which covers approximately 50 percent of the planning area. The Arizona Upland subdivision accounts for the other 50 percent.

The Sonoran Desert ecosystem is comprised of relatively sparse vegetation throughout, with the exception of tree and shrub corridors along dry washes that descend to alluvial fans and basins from the desert mountains. Creosote, ironwood, palo verde, and mesquite comprise much of the vegetation with many types of cacti, most notably the saguaro, dominating the landscape.

A notable feature of the habitat is the desert flora that emerges only after sufficient winter rains occur. Generally there is enough moisture to provide for the germination of dormant grass and forb seeds that produce an abundant growth of annual vegetation for brief periods.

During the very dominant dry seasons, the soils form a thin crust that harbors seeds for many years in some cases. Generally, if sufficient moisture occurs to soften the crust and penetrate seed coats, germination occurs. When the short growing cycle is completed, the ground once again forms into a thin cryptobiotic crust.

From 1983 to 1992, the refuge staff monitored vegetation along 242 permanent transects to document any changes that would occur from the cessation of grazing on the

refuge. Some improvements have been noted, but the growth of desert vegetation is normally extremely slow, taking many years to recover from past land management practices. Since that time, the refuge has instituted a new program using videography to develop a comprehensive picture of the refuge's vegetation resources. It is expected that this information will be useful for determining habitat suitability, conditions, and wildlife uses in the long-term. However, the videography project will not be finalized until 1999.

Wilderness Values

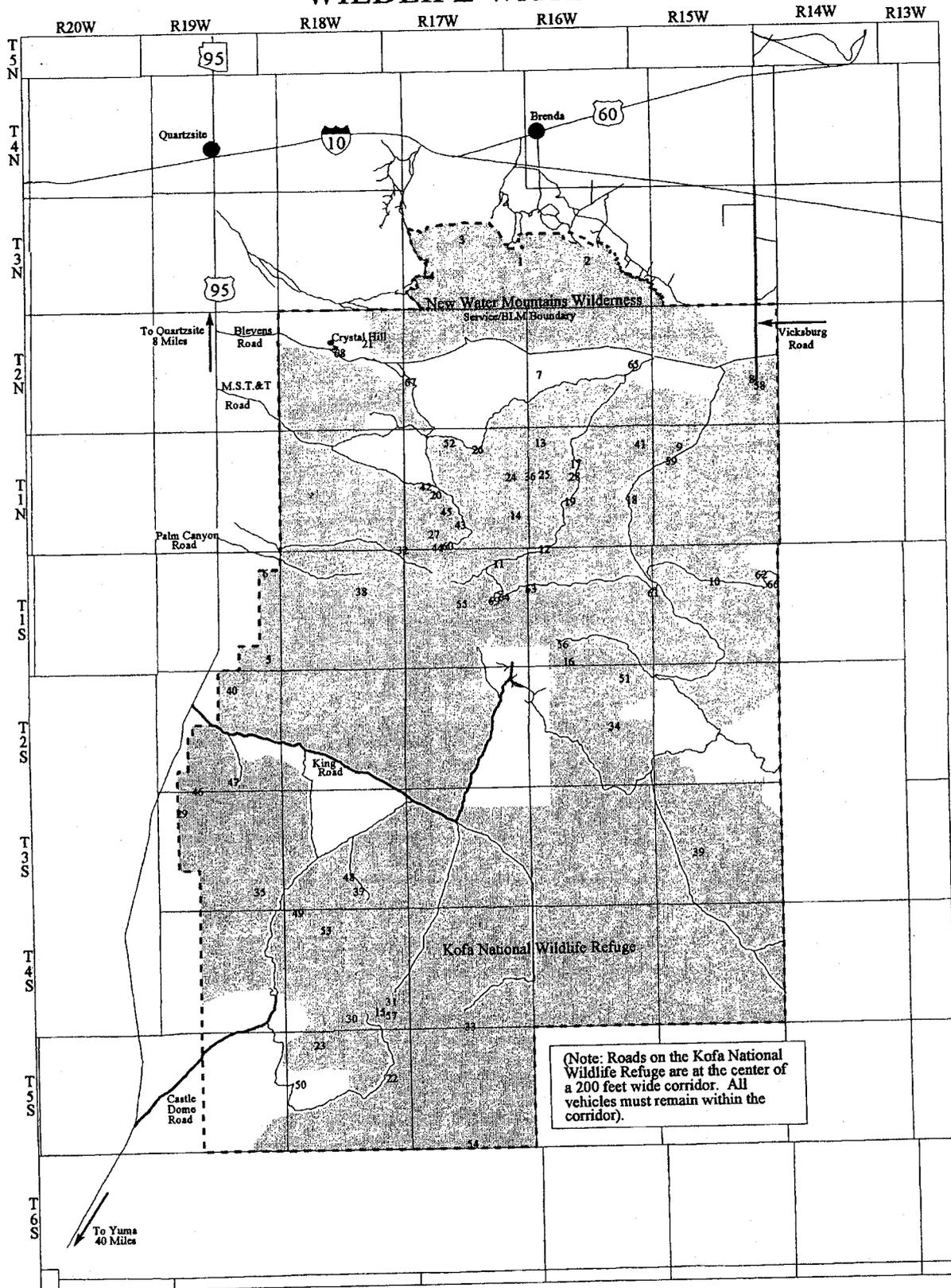
Designated wilderness in the planning area covers approximately 510,900 acres on the Kofa and all 24,600 acres of the New Waters. The wilderness has a predominant natural appearance. However, there are several areas with surface disturbances or debris from past mining and exploration activities and from former vehicle routes (Map 3). Some of the former vehicle routes have begun to blend into the landscape with the camouflaging effects of recently established vegetation. Several surface disturbances are of a magnitude that will require management intervention to minimize adverse visual impacts.

Species Diversity

Forty nine mammal species, 188 species of birds, 41 species of reptiles and amphibians, and 425 taxa of plants are represented in the planning area. Appendices B, C, D and E list animal and plant species confirmed or expected by range distribution within the planning area.

There have been no recent observations of resident or migrating endangered species in the planning area. However, the area provides suitable habitat for the peregrine falcon. Occasionally, brown pelicans are blown onto the refuge by summer thunderstorms developing over the Gulf of California to the south.

WILDLIFE WATERS



LEGEND

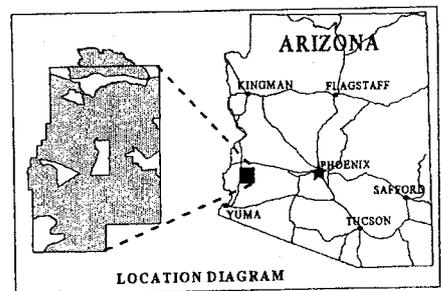
- Wilderness
- Planning Area Boundary
- Roads
- County Maintained Roads
- Township & Range
- 1-69 See Appendix A

N

 SCALE

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 MILES

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MAP - 2

Desert Bighorn Sheep

Desert bighorn population estimates have remained stable in the planning area with estimates ranging between 700 to 1,100 sheep since 1985. Fourteen years of aerial surveys (Table 1) reflect a stable population with the exception of a low count in 1991. Since 1986, there has been an average of 17 sheep hunting permits issued yearly for the planning area. The New Waters' role in bighorn sheep management is significant as it contains some of the planning area's important lambing grounds (Map 4).

Both the Service and BLM continue a cooperative management relationship with the AGFD in their efforts to protect all wildlife populations. Cooperative wildlife management activities conducted by the AGFD and BLM on wildernesses administered by the

BLM in Arizona are guided by an existing memorandum of understanding.

Sheep Transplantation Program

Every year since 1979, with the exception of 1991, the refuge has participated in a transplant program (Table 2) of bighorn sheep in cooperation with AGFD. Refuge employees assist the AGFD in the capture using net guns from helicopters. The animals are then transported to various locations within the southwestern U. S. in an effort to assist in the restoration of indigenous populations.

Sheep were captured in the New Waters during 1987, 1988, and 1990 (Table 2). The BLM has traditionally participated in capture activities and plans to continue.

Table 1 — Kofa (K) & New Waters (NW) Bighorn Sheep Survey Results 1980-1994

Year	Rams		Ewes		Lambs		Unclassified		Total Observed		Est. # Sheep		Lambs per 100 Ewes	
	K	NW	K	NW	K	NW	K	NW	K	NW	K	NW	K	NW
1980 ¹	125		195		31		1		352				16	
1981	143	7	229	23	44	14	1	0	417	46		85	21	61
1982	141	13	234	38	51	11	1	0	427	66			23	29
1983 ²	147		260		50		1		458				19	
1984	175	17	284	29	44	6	0	0	503	55		69	15	21
1985	149	27	264	31	61	3	0	0	474	79		173	23	10
1986	168	29	282	26	44	7	2	0	496	79		188	16	27
1987*	92	13	122	31	19	10	0	0	233	61	874	92	16	32
1988*	98	21	134	31	19	6	0	2	251	64	881	82	14	19
1989*	89	11	150	15	25	4	0	0	264	32	929	42	17	27
1990*	93	26	106	36	39	10	0	0	238	78	788	112	37	28
1991*	69	24	84	32	21	2	3	0	177	61	638	97	25	6
1992	139	19	255	26	46	4	0	2	440	54	739	117	18	15
1993 ³		19		24		7		0		57		116		29
1994	151	11	270	33	36	7	2	1	459	61	887	124	14	21
Total	1779	237	2869	375	530	91	11	5	5189	793			18avg	25avg

* Modified survey covering approximately half of the refuge's sheep habitat.

1. New Waters data was not compiled for 1980.

2. A survey was not conducted for New Waters in 1983.

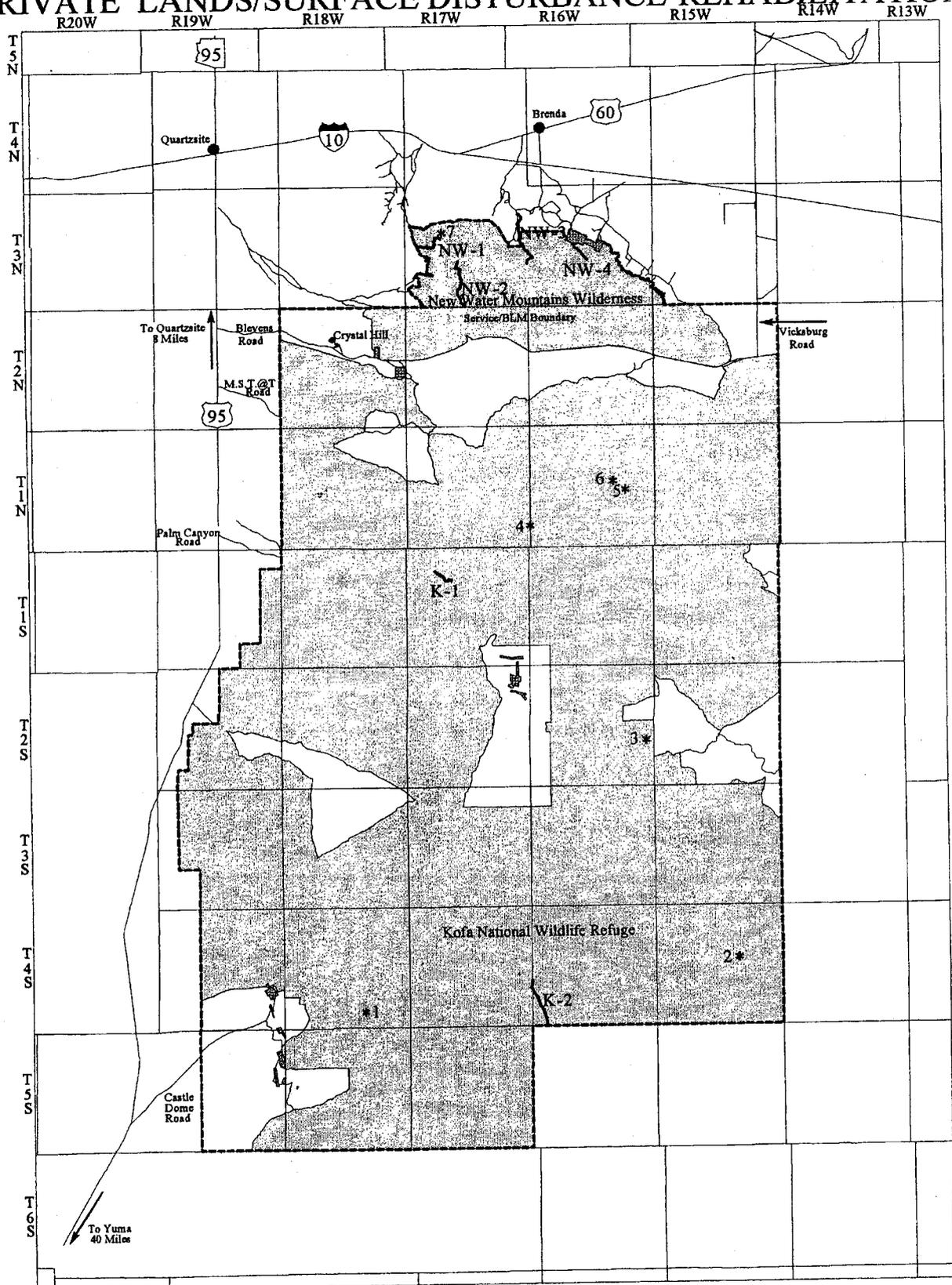
3. A survey was not conducted on Kofa in 1993.

Table 2 — Kofa¹ (K) & New Waters (NW) Bighorn Sheep Removal Harvest/Transplants

Year	Harvested Rams		Transplanted				Transplant Location	Grand ² Total
	K	NW	Rams K	Rams NW	Ewes K	Ewes NW		
1979	9		4		4		Colorado/Devils Canyon (NPS)	20
1979			0		2		Texas/Black Gap (TX Game and Fish Dept.)	
1980	8		7		11		Arizona/Goat Mountains (USFS)	33
1980			0		6		New Mexico/Peloncillo Mtns. (BLM)	
1981	9		3		8		Arizona/Red Field Canyon (USFS)	28
1981			2		4		Arizona/Goat Mountains (USFS)	
1982	9		4		0		New Mexico/Peloncillo Mountains (BLM)	24
1982			0		10		New Mexico/Peloncillo Mountains (BLM)	
1983	11		8		16		Arizona/Horse Mesa (USFS)	35
1984	11		8		22		Arizona/Coffee Flat (USFS)	43
1985	13		6		15		Arizona/Black Mountain (BLM)	57
1985			7		13		Arizona/Lion Mountain (USFS)	
1986	12		9		21		Arizona/Peloncillo Mountains (BLM)	42
1987	14	4	8	5	22	7	(K) Arizona/Superstition Mountains (USFS)	45
							(NW) Arizona/Gila Bend Mountains	17
1988	16	4	6	3	24	9	(K) Arizona/Giliuro Mountain (USFS)	47
							(NW) Arizona/Gila Bend Mountains	16
1989	14		5		25		Arizona/Superstition Mountains (USFS)	44
1990	14	3	2	1	13	8	(K) Arizona/Peloncillo Mountains (BLM)	29
							(NW) Arizona/Gila Bend Mountains	12
1991	14		0	0	0			14
1992	13		7		17		Arizona/Superstition Mountains (USFS)	38
1993	15		5		25		AZ/Saucedo Mtns. (USAF)	46
1994	12		7		23		AZ/Granite Wash Mtns. (BLM)	42
1995	16		6		20		AZ/Harcuvar	42

1. Unless indicated otherwise, the data is for Kofa.
2. Includes mortalities during capture.

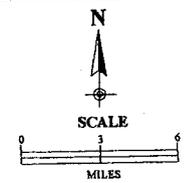
PRIVATE LANDS/SURFACE DISTURBANCE-REHABILITATION



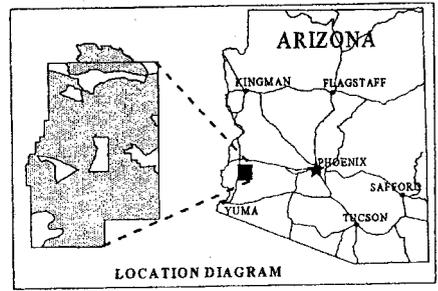
LEGEND

- Private Lands
- Wilderness
- Planning Area Boundary
- Roads
- Township & Range
- Disturbance/Rehabilitation (K-1 K-2, NW-1 thru NW-4)
- Mining Debris

MAP - 3

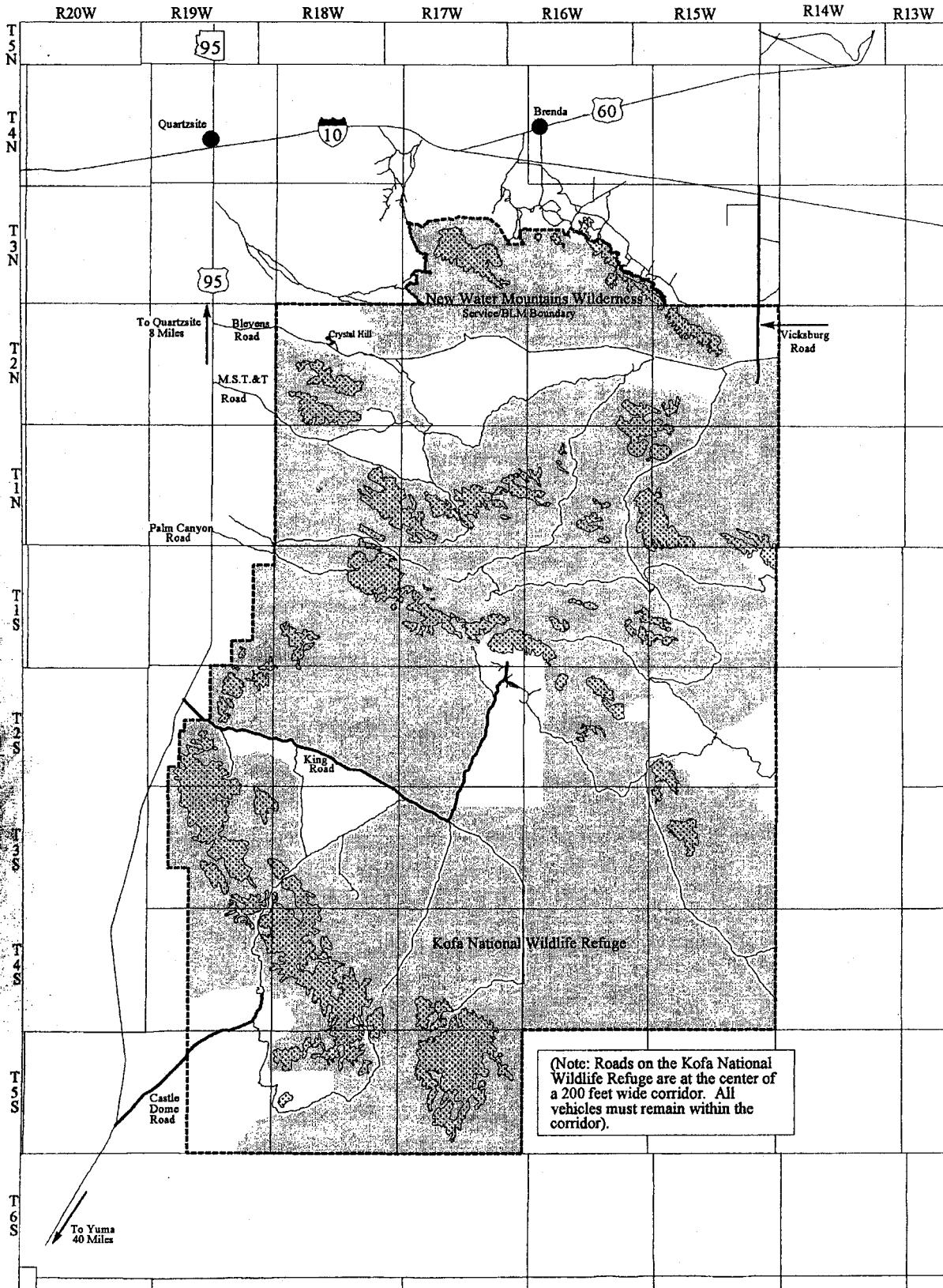


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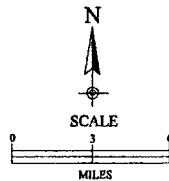


LOCATION DIAGRAM

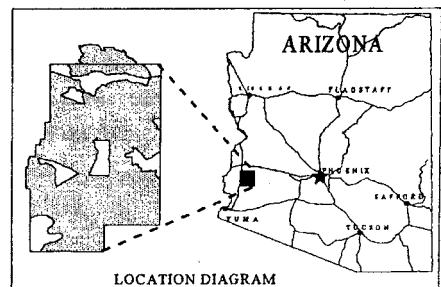
BIGHORN SHEEP LAMBING GROUNDS



LEGEND	
	Wilderness
	Lambing Grounds
	Planning Area Boundary
	Roads
	County Maintained Roads
	Township & Range



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MAP - 4

Desert Mule Deer

Annual desert mule deer surveys (Table 3) are conducted on the refuge. This species is also counted during the aerial sheep survey. Wildlife surveys are conducted with AGFD participation. The New Waters is included in wildlife surveys (Table 3) for AGFD Game Management Unit 44B.

In keeping with the special focus on wildlife management and the purpose for which the refuge was established, the Service and AGFD have established an Alternative Hunt Program on the Refuge. The alternative hunt program emphasizes a quality hunting experience by giving managers the option of limiting permits issued to allow increased hunter success. This enhances the range of opportunities for unique wildlife related recreational experiences on the refuge. It is unlikely that the New Waters would be

included in the Alternative Hunt Program.

Sonoran Desert Tortoise

Limited knowledge of this tortoise population is the reason for recent emphasis on gathering more data. Abundant data on the Mojave population in California cannot be extrapolated to Arizona populations because of differences in habitat selections between the two. Long-term field data on Sonoran tortoises should help answer management and disease questions that are now unknown.

Information from surveys conducted in 1979, 1989, and 1990 indicates the tortoise population at Kofa is healthy and of low density requiring a stabilized habitat. Cover site potential, highest in the less resistant volcanic base material, is the critical limiting factor resulting in patchy, isolated populations. The density/diversity of vegetation and the aspect seem to be of secondary and tertiary importance to distribution.

Table 3 — Kofa (K) & New Waters¹ (NW) Annual Aerial Deer Survey Results 1985-1996.

Year	Bucks		Does		Fawns		Unclassified		Total	
	(K)	(NW)	(K)	(NW)	(K)	(NW)	(K)	(NW)	(K)	(NW)
1985	42	3	83	19	47	6	12	0	184	28
1986	37	12	102	20	18	12	3	6	160	50
1987	48	9	155	13	48	4	8	1	259	27
1988	29	7	117	9	23	7	5	1	174	24
1989	49	8	121	16	37	5	1	0	208	29
1990	24	6	125	19	17	8	0	0	166	33
1991	36	4	113	6	62	3	11	0	222	13
1992*	16	0	31	3	10	2	3	0	60	5
1993*	19	1	51	23	25	7	2	0	97	31
1994*	16	2	50	6	21	5	0	0	87	13
1995*	10	2	40	6	14	5	3	0	67	13
1996*	6	2	19	7	3	1	1	0	29	10
Total	332	56	1007	147	325	65	49	8	1713	276

* Modified surveys. Modified surveys in years 1992 through 1996 are a sampling of approximately 16% of the total surveyable deer habitat.

1. New Waters has never been independently surveyed for mule deer. The Wilderness has always been included in the aerial surveys for Game Management Unit 44B. In addition to the wilderness, Unit 44B includes the Plomosa Mountains and has a total area of 630 mi.², of which there is an estimated 524 mi.² of mule deer habitat. Because of the mountainous terrain in the wilderness, aerial surveys are difficult to conduct. Unit 44B is considered a low-density deer unit.



A natural "pothole" in Kofa catches rainwater.

A desert tortoise survey was conducted on a one square mile plot in the New Water Mountains, adjacent to the Wilderness Area. Similar to the Kofa survey, desert tortoise distribution was associated with patchy cover sites. Pre-designation wilderness inventories established that portions of the New Waters were important desert tortoise habitat. In conformance with BLM Policy and the document, Desert Tortoise Habitat Management on the Public Lands: A RANGEWIDE PLAN (1988), the New Waters has been classified as Category II desert tortoise habitat. The management goal for Category II tortoise habitat is to maintain stable, viable populations and halt further declines in tortoise habitat values.

Livestock Grazing

There are portions of two grazing allotments in the New Waters. Neither of the two allotments have any range developments in the wilderness.

The Crowder-Weisser Allotment (#3022) is a perennial-ephemeral allotment and includes about 17,568 acres of the wilderness on the eastern side. Yearlong use has averaged 500 head over the last 10 years. Ephemeral use is authorized by the BLM when conditions warrant. The maximum

number of livestock grazed during the five years preceding 1995 was 2,000 head for 3 months under an ephemeral license.

However, due to terrain and distance from water, livestock grazing within wilderness portions of the allotment is minimal.

The Scott Allotment (#3075) is an ephemeral allotment and includes approximately 7,032 acres on the extreme western side of the wilderness. Since 1975, there has been little use of this allotment and since 1980 no use has been applied for. There were no grazing related issues identified for the BLM portion of the planning area.

There is no livestock grazing on the refuge. Livestock that occasionally stray onto the refuge from adjacent BLM allotments are removed. An existing fencing program on the refuge prevents the entry of cattle from refuge boundaries which are adjacent to BLM grazing allotments. The fencing program also deters off-road vehicle violations. Other than routine fence maintenance, there are no grazing issues for the planning area. Vehicle access is necessary on the eastern refuge wilderness boundary for fence maintenance.

Burro Management

The New Waters and Kofa are not within a wild horse or burro herd area. There are no records of burros ever being established in or making transient use of the New Waters.

There are a few resident burros in the refuge. Occasionally, they attempt to expand their range from the U. S. Army Yuma Proving Ground onto the Kofa. Management provisions provide for the removal of non-resident burros by BLM. Most wildlife waters on the refuge contain fences designed to exclude burros.

Public Access

The western boundary of the New Waters has legal public access via the Gold Nugget Road south of Interstate 10 at exit 26. To reach the north-central area, the Ramsey Mine Road south of Highway 60 provides a route

which also connects with primitive roads leading easterly and westerly north of the wilderness boundary. Approximately a 1/3-mile portion of the Ramsey Mine Road crosses private land. Physical access to the Hidden Tank area also requires passage through approximately a 1/2-mile route segment that crosses private land. The southernmost portion of the New Waters is contiguous with the Kofa and this area can be reached by turning east on Blevens Road from Highway 95 (Map 1).

Legal public access to the Kofa is provided by several roads that were left as non-wilderness corridors. From Highway 95, there are several routes that lead to the western refuge boundary and which are in close proximity to designated wilderness. The northeast refuge area can be reached from Interstate 10 as shown on Map 1.

Mechanized, vehicular traffic is limited to designated roads in the planning area and all off-road vehicle travel is prohibited. All vehicles must remain within 100 feet of designated roads. All vehicles, including all terrain vehicles, and motorcycles and all operators must be licensed and insured for highway driving. Speed is limited to 25 miles per hour unless otherwise posted. Bicycles are considered as vehicles. Most of the roads that provide access to the planning area are primitive and high clearance four-wheel drive vehicles are recommended.

Recreation

The National Wildlife Refuge System Administration Act of 1966 (16 U. S. C. 668dd-668ee) allows the Refuge Manager to "permit the use of any area within the System for any purpose, including, but not limited to, hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which the areas were established." In addition, the Refuge Recreation Act of 1962, as amended (76 Sts. 653; 16 U. S. C. 460k), prescribes the same compatibility standards with a focus on recre-

ational uses including those that do "not directly relate to the primary purposes and functions of the individual areas," and that do not interfere with the primary purposes of the refuges. Also under this act, the refuge must certify that funds are available for managing recreational activities.

Kofa allows recreational uses that are compatible with the purposes for which the refuge was established. Those that are allowed to occur within designated wilderness must also conform to wilderness management guidelines and ethics. However, unlike the New Waters, wildlife management is the primary function of the Kofa NWR and all other uses are secondary. These uses must undergo compatibility analysis and the refuge must certify that funding is available for the management of these activities. At Kofa, hunting, camping, rock climbing and repelling, hiking, wildlife observation, photography, sightseeing, and environmental education activities are allowed and considered compatible with both the purposes of the refuge and with wilderness designation. Estimates based on traffic counter data indicate that there are approximately 50,000 visitors per year to the refuge. However, visitation has fluctuated from year to year over the past decade. Reliable traffic counters have not been in place on the refuge long enough to determine long term trend information. It is expected that trend information will not be available until 2005.

Rockhounding has been a concern for the Refuge. Unrestricted rock collection in the Crystal Hill area (nonwilderness) has led to the extraction of commercial quantities of minerals. There have also been several instances of visitor use conflicts and public safety concerns that have arisen from this recreational activity in the Crystal Hill area. A compatibility analysis has determined that rockhounding in its current magnitude is not compatible with the purposes for which the refuge was established.

Recreational activities in the New Waters include hunting, wildlife observation, hiking, and camping and rockhounding. As a desig-

nated wilderness, the BLM manages these activities within wilderness management guidelines. It is estimated that there are less than 500 visitors per year to this BLM wilderness.

In addition to being a popular hunting location, recreational access to the Hidden tank area of the New Waters is through patented land described by Mineral Survey 3207. Acquiring this land or an easement would provide legal public access to this portion of the wilderness and increase opportunities for public recreation.

Minerals and Mining

The Kofa has been closed to mineral entry since February 1974. There are several active claims in the refuge that were established before the area was withdrawn from mineral entry. Several of these claims are in the Kofa Wilderness and there is a potential for mining activities to occur in the future. The Service is interested in developing a Memorandum of Understanding with the BLM to have mineral validity examinations performed if future mining operations are proposed on active claims in the Kofa Wilderness.

As with all public lands, the BLM still administers mining claim records and monitors procedures that must be followed by claimants to maintain their claims in an active state. As of June 22, 1995, BLM Arizona State Office records listed 40 claims on the Kofa. Twenty-nine of these claims were declared abandoned for failure to meet the annual filing requirements of the 1872 Mining Law, as amended. These decisions are presently under appeal to the Interior Board of Land Appeals.

A minerals investigation conducted jointly by the U. S. Geological Survey (USGS) and the U. S. Bureau of Mines in 1986 provided an assessment of mineral resources for the New Waters. There are varying degrees of mineralization throughout the planning area. USGS Bulletin 1702-B (1989) contains additional geological information and a pub-

lished account of the mineral assessment conducted in 1986. There are no active mining claims in the New Waters and the Arizona Desert Wilderness Act of 1990 withdrew this area from mineral entry.

Lands

The patented land (Mineral Entry Patent 546603, September 22, 1916; Map 3) adjacent to the northeast portion of the New Waters is within the planning area. This land also adjoins an area described by USGS Bulletin 1702-B as having moderate mineral resource potential.

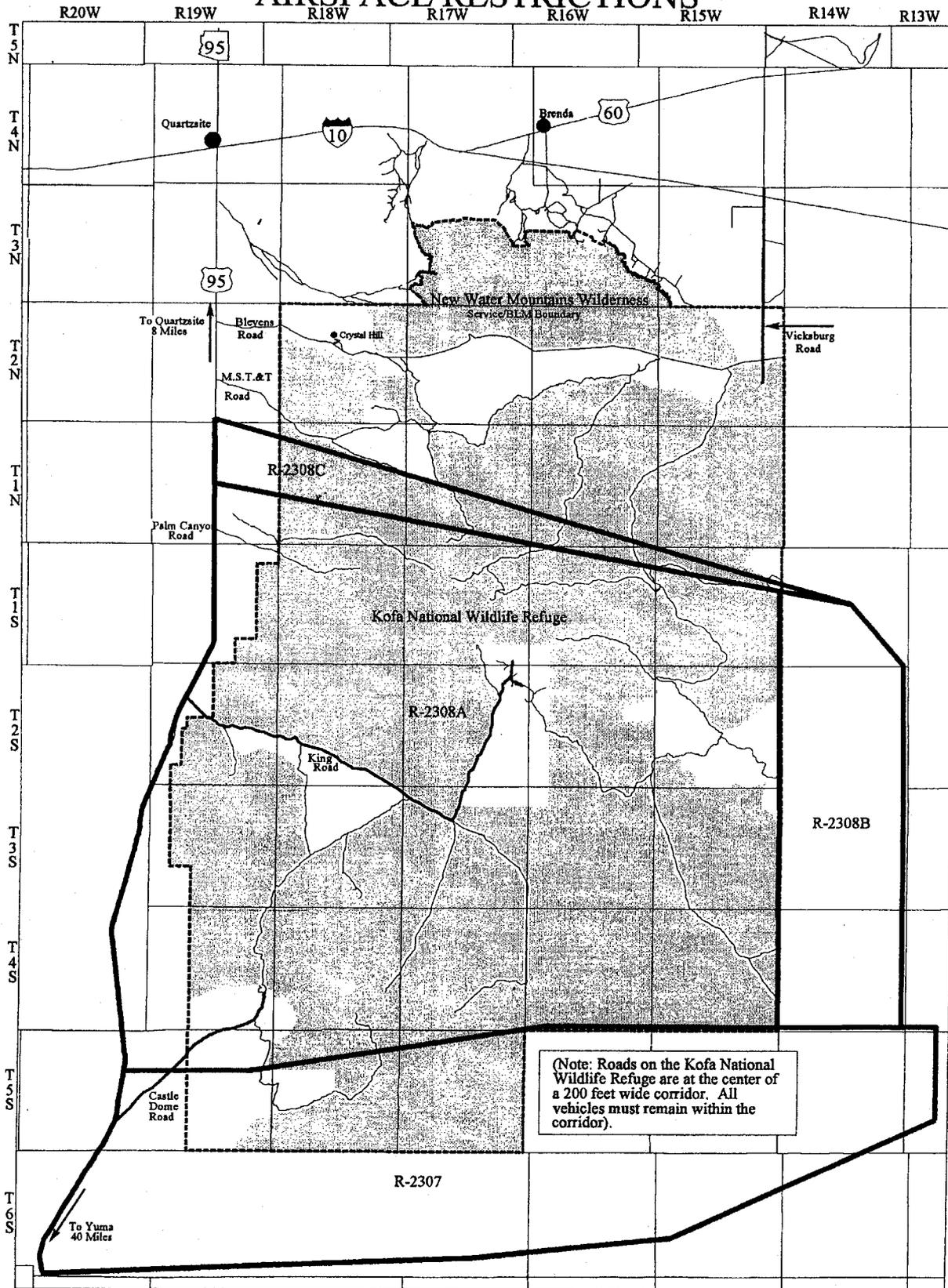
There are several non-Federal inholdings within the Kofa. Forty-six patented mining claims (Map 3) totaling approximately 865 acres are located in nonwilderness portions of the refuge. Most of these are situated on the southern edge of the Kofa Mountains in the vicinity of the historic King of Arizona Mine and on the southern edge of the Castle Dome Mountains. There are two non-mineral private holdings within the refuge totaling 240 acres.

A 58-mile common boundary on the southern half of the refuge exists with the U. S. Army Yuma Proving Ground. The Secretary of the Interior has granted the Army permission to use airspace over 171,000 acres (surface to unlimited altitude; Area R-2307; Map 5) of the refuge as a buffer/flyover zone for weapons and associated munitions testing. An additional 316,660 acres of restricted military airspace (1,500 to 80,000 feet above ground level; Areas R-2308 A and R-2308 C; Map 5) occurs over the refuge.

Three county roads within the refuge are maintained by La Paz and Yuma counties: (1) Castle Dome Road (5 miles); (2) King Valley Road (17 miles); and, (3) Vicksburg Road (3 Miles). The MST&T Road (11 miles), Blevens/Crystal Hill Road (7.6 miles), and Palm Canyon Road (9 miles) are maintained by the refuge.

There are several utility rights-of-way within the refuge that are administered by the Service. None of the rights-of-way are within

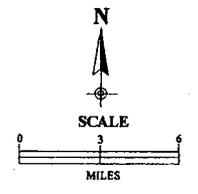
AIRSPACE RESTRICTIONS



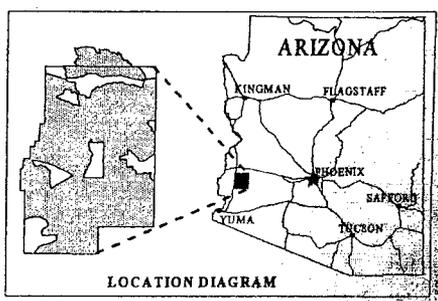
LEGEND

- Wilderness
- Planning Area Boundary
- Roads
- County Maintained Roads
- Township & Range
- Airspace Restriction Boundary

R-2308A & C (1,500 to 80,000 ft above ground level)
 R-2308B (surface to 80,000 ft above ground level)
 R-2307 (surface to unlimited altitude)



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MAP - 5

wilderness. The New Waters does not contain any rights-of-way. Following is a listing of rights-of-way on the refuge:

U.S. West (Formerly, Mountain States Telephone and Telegraph) — A 100-foot square microwave repeater tower site is located in the Livingston Hills in the northwest corner of the refuge. The right-of-way includes a 7-mile, 33-foot-wide access road right-of-way from the western boundary to the tower site.

Arizona Public Service — This right includes a 6-mile, 20 foot-wide 12 KV transmission line right-of-way from the western boundary to the U.S. West microwave tower.

El Paso Natural Gas Company — This right includes a 130 foot-wide right-of-way that accommodates four buried natural gas pipelines plus a maintenance road that runs 24 miles (east/west) across the entire northern portion of Kofa.

Southern California Edison Power Company — This right includes a 160 foot-wide right-of-way accommodating a 500 KV power transmission line running 24 miles



Petroglyphs in the planning area.

(east/west) across the entire northern portion of the refuge parallel to the El Paso Natural Gas pipeline.

Cultural Resources

Both Kofa and the New Waters have cultural resources that fit within two broad categories: prehistoric sites which contain artifacts or evidence of activity by aboriginal inhabitants prior to European contact and historic locations that may include physical remains or other indications of activities by European/Asian peoples. Many of these sites have not been catalogued by either agency. Some have undergone evaluation relative to the Archeological Resource Protection Act or the National Historic Preservation Act. The planning area does not contain sites that are listed on the National Register.

Service files contain variable records of approximately 92 known or recorded archeological and historic sites on the Kofa Refuge. However, the number of reliably locatable sites may prove to be somewhat less, since more than half of the reported 92 site records offer only vague locational references. This site information comes from the field notes of Malcolm J. and Frederick S. Rogers (1929-1941), and from more recent linear site surveys conducted in 1977 and 1980-81 for pipeline and transmission line right-of-way projects. The linear survey conducted by Westec Services for the Palo Verde to Devers Transmission Line (1980-81) offers the highest specificity of site information on the refuge. Recent site recording efforts by refuge volunteers Connel and Dawn Bergland also offer detailed information for rock art and other sites in the northern extent of the range.

As would be expected of such a marginal environment, all sites indicate past ephemeral uses of the Kofa. Cleared circles, rock rings and rock alignments, lithic and pottery scatters, small occurrences of ground stone artifacts and bedrock mortars, foot trails, and rock art sites point to highly transitory occu-

pations either for short-term subsistence gathering purposes, or for travel and trade across the area. Notations concerning the existence of several "intaglios" (geoglyphs), and also observations about a cremation site have been attributed to archaeologist Malcolm Rogers; but to date, there has been no verification of either. The San Diego Museum of Man is the repository for Rogers' field records and the records have not been fully analyzed or interpreted.

There are no independent archeological dates for any of the Kofa sites. However, a small number of temporally diagnostic artifacts recovered at several locations offer clues to the chronology of the prehistoric occupation here. The majority of the sites point to the late prehistoric time period (A.D. 700 to post-1500) and are recognized as ancestral Yuman. Rogers also reported several dart points attributed to the Archaic period (6000 B.C. to A.D. 300). Further detailed analysis of the rock art imagery, particularly in the eastern part of the range, could shed light on a possible Yuman/Hohokam ethnic boundary during the late prehistoric period.

Not much has been formally catalogued by the BLM within the New Water Mountains. The Lower Gila South Wilderness Environmental Impact Statement (EIS) indicates that no National Register eligible cultural resource sites have been identified in the New Waters. However, prehistoric petroglyph sites occur in the area. In addition to petroglyphs on several rock panels, one site

with occupancy estimated to about the year 5 B.C. contains a cave with the remains of a rock wall near the entrance. No additional sites with the same degree of development as this cultural feature are known within this wilderness. A general inventory of cultural resources in this area would probably result in the discovery of additional sites.

Fire

Fire has not played a significant role in the planning area. There are no records of fire incidents within the New Waters. On the refuge, several fires have been caused by human activity. Fires have historically burned out virtually without suppression efforts. It is unlikely that any fires will continue beyond the first 24 hours (initial burning period) due to sparse fuels throughout the planning area.

Law Enforcement and Emergency Services

There have been several cases where emergency services have been needed in the planning area due to visitor accidents and to persons becoming lost. Rock climbing accidents have resulted in 2 fatalities on the refuge.

During the World War II era, military training activities occurred on portions of the refuge and unexploded ordnance has been recovered. There may still be a potential for the discovery of military ordnance.

PART III — Issues

An issue is considered to be a problem or opportunity arising from agency directives, resource conflicts, and expectations as identified in the initial stage of this effort, by agency resource specialists and the public. In addressing the identified issues, there are dominant wilderness and wildlife management themes for the planning area that include guidelines both agencies must follow. The agencies have made an effort to learn what issues are most important to the public within considerations of how the area's resources are to be managed for the long-term.

The issues that were identified are separated into two categories: activity plan issues and issues solved by policy. Following is the final list of issues:

Activity Plan Issues

Issue #1: Preservation of Wilderness Values — The long-term preservation of wilderness values is mandated by the Wilderness Act. Concerns to address are: Effects of visitor uses, illegal vehicle trespass, monitoring of effects of uses, management of exotic species, and opportunities for environmental education, interpretation, and public outreach.

Issue #2: Wildlife and Habitat Management — The Service has mandated habitat and wildlife management responsibilities. BLM manages wildlife habitat. In coordination with AGFD, both agencies are striving to manage the range of habitats within the planning area to support a diversity of wildlife. Included in this issue is the management of the various facilities and associated maintenance of wildlife waters in and outside the wilderness areas. This plan establishes a range of wildlife and habitat management strategies within the context of wilderness and

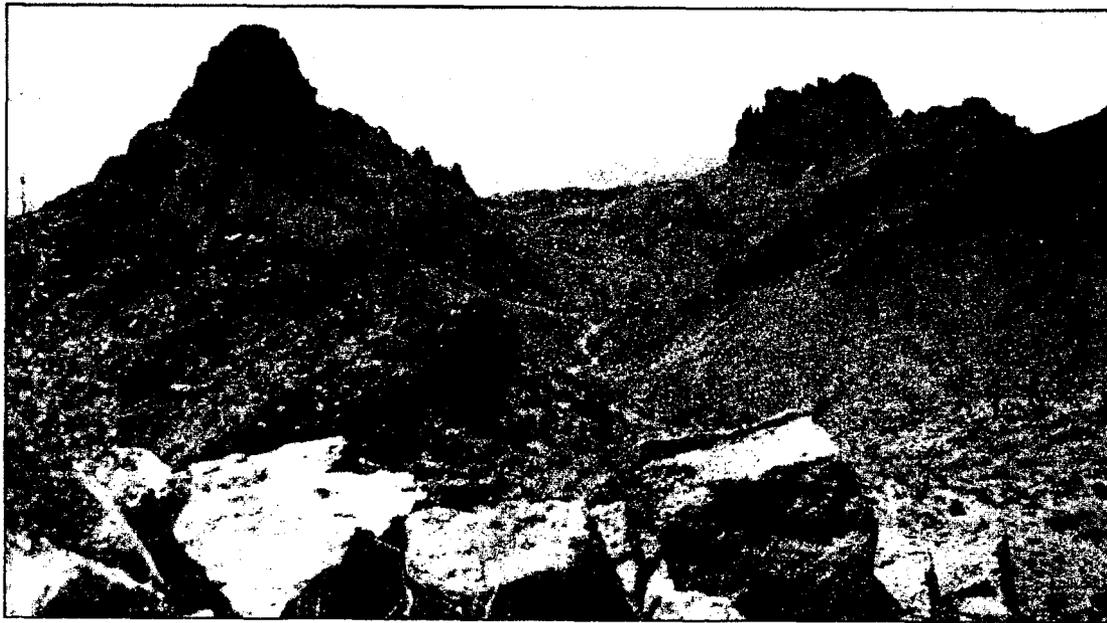
the surrounding areas. Topics of concern include: Cooperative management; scarcity of data; desert bighorn sheep; wildlife waters; endangered, threatened, candidate species, and other sensitive and special status species; management of exotic/ non-native species including pathogenic organisms; and fire management.

Issue #3: Recreation and Public Access — Access routes for hunting, wildlife observation, and camping have presented resource protection challenges throughout the refuge and the northwestern portion of the New Waters area. Legal public access needs to be acquired through patented land along the northwest portion of the New Waters. Items to address are: Legal access; hunting; wildlife observation, camping, and photography; wilderness opportunities for solitude; and noncompatible uses of the planning area.

Issue #4: Minerals Management - Active Mining Claims — Several unpatented mining claims exist within the Kofa. Future activities in these areas could affect visual resource values and wildlife habitat within the planning area. This plan will establish strategies for minimizing impacts of all claims.

Issue #5: Minimizing potential impacts from private lands — There are several private inholdings within the non-wilderness portion of Kofa and one private land parcel adjacent to the north end of the New Waters. Future activities in these areas could affect visual resource values and wildlife habitats within the planning area. This plan will establish strategies for eliminating potential impacts from these non-federal lands.

Issue #6: Surface Disturbances — The wilderness portion of the planning area contains several surface disturbances that affect the area's natural appearance. This plan determines some strategies for minimizing the effects of existing disturbances on wilderness values.



Squaw Peak — Kofa

Issues Resolved Through Existing Policy

Both agencies have existing policies as noted to address the following issues.

Issue #7: Cultural Resource Management — Several cultural features are contained within the planning area. These areas will be managed in compliance with the Archeological Resource Protection Act and the National Historic Preservation Act of 1966. Cultural resource studies will be authorized on a case-by-case basis and guided by existing policy in BLM Manual 8560.32 on the New Waters, and regulations in 50 CFR 27.63 and 35.11 for the refuge.

Issue #8: Management of Utility Rights of Way — Guidance for the management of utility easements in nonwilderness portions of Kofa NWR can be found in 50 CFR 29.21. No additional guidance is needed.

Issue #9: Scientific Research — Studies for management, scientific, or educational purposes in the New Waters will be guided by BLM Manual sections 8560.18. Studies on the refuge will be guided by 6 Refuge Manual

8.9(h), 50 CFR 27.63, and 50 CFR 35.11.

Issue #10: Law Enforcement and Emergency Services — There are established wilderness management policies and regulations in BLM Manual 8560.39 and 43 CFR 8560.3, and 6 Refuge Manual 8.8 and 50 CFR 35.5, that provide for law enforcement and emergency access and equipment uses in incidents involving public health and safety and violations of civil and criminal law. No additional guidance is needed.

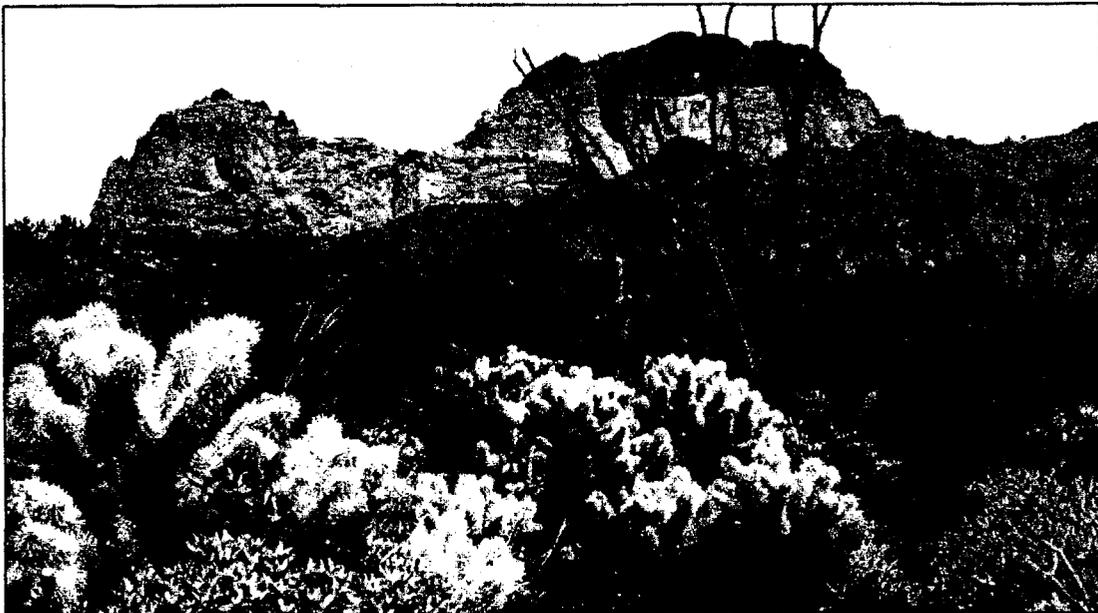
Issue #11: Military Ordnance Contamination — A possibility of ordnance contamination exists on the Refuge portion of the planning area due to past military activities. Ordnance has previously been recovered from the refuge. In the event that unexploded ordnance is discovered, the Department of Defense will be contacted for its removal using the minimum tool required for safe removal in accordance with 6 Refuge Manual 8.8 - A. This concern is not an issue for the New Waters.

Issue #12: Native American Religious Access — There have been no instances in which the Service or the BLM has been contacted by Native American tribes for arrange-

ments to access spiritual sites. However, both agencies acknowledge that certain sites within the planning area are considered to be sacred. Both agencies will provide for Native American access in accordance with the Native American Religious Freedom Act.

Issue #13: Military Overflights — The Arizona Desert Wilderness Act of 1990 states that: "Nothing in this title shall preclude low level overflights of military aircraft, the designation of new units of special airspace, or the use or establishment of military flight training

routes over wilderness areas designated by this title." The BLM and Service will continue to cooperate with the military in pursuing mutually beneficial opportunities to protect the integrity of wilderness airspace and the protection of natural resources within the planning area. The Department of the Interior remains vigilant in working directly with the various military branches to eliminate and/or reduce low level flights that would impact wildlife and other natural resources within the refuge and the planning area as a whole.



Twin Peaks — New Waters

PART IV — Management Program

Management Strategy

The management program is designed to protect natural resources and values of the planning area for the long-term, and to provide for public appreciation of the refuge as appropriate and compatible with the purposes for which it was established. In addition, the management program addresses national goals established for the National Wildlife Refuge System and the National Wilderness Preservation System.

This plan is issue driven. Within the framework of the legal mandates and policy guidelines outlined earlier, plan objectives are established to address planning area issues. Management actions are designed to meet the objectives. With the exception of administering two potentially shared law enforcement positions, each agency is responsible for accomplishing management actions specified for the areas within their respective jurisdiction.

Where possible, target dates to accomplish proposed actions are assigned. Monitoring will be conducted to gauge the effectiveness of management actions and determine if plan objectives are being met. In cases where motorized or mechanized equipment and vehicles are authorized in wilderness, activities should be scheduled for weekday periods instead of weekends to minimize potential impacts to visitors. During maintenance or repair of existing developments, every effort should be made to reduce visual impacts and minimize the need for maintenance that requires the use of motorized or mechanized equipment and vehicles in wilderness.

A rationale is included immediately below several items in this section to provide additional clarification.

Objective 1: Preservation of Wilderness Values

Maintain or enhance the wilderness values of naturalness, outstanding opportunities for solitude and primitive recreation, and special features of the planning area by:

- Minimizing impacts of recreational use and visual impacts of authorized developments.
- Reducing or eliminating unauthorized vehicle/mechanized use.
- Minimizing low level non-military administrative aircraft use through cooperation in scheduling with involved agencies.
- Reducing the frequency and need for administratively authorized motorized travel into wilderness.
- Preventing the establishment of a resident burro population in the New Waters.
- Preventing the establishment of exotic plant species, especially salt cedar.
- Providing public education/information to prevent impacts to wilderness from recreational uses by 1997.
- Minimizing visual impacts from mining scars and former vehicle routes.

Rationale: The elements of objective #1 are important aspects of both agencies' responsibilities to carry out mandates of the Wilderness Act of 1964 and the Arizona Desert Wilderness Act of 1990. Meeting this objective will provide long-term preservation of the planning area's wilderness values by addressing aspects of issues 1,2,3,4,5,and 6 (in Part III of this document), and portions of each respective agency's wilderness manage-

ment policies.

Management Actions

1. New Waters — Allow rockhounding as a use on the New Waters but limit use to hand methods that do not cause surface disturbances.

Kofa —Restrict rockhounding as a use on the Kofa NWR to the Crystal Hill area (Map 1). Boundaries will be posted as per the following legal description: Township 2 N, Range 18 W, E 1/2 of Section 9; and all of Section 10. No detection equipment or hand tools will be allowed. Only the taking of surface occurring rocks will be permitted. If it is determined in the future that rockhounding activities are degrading the landscape, the Service may determine that rockhounding at any level "materially detracts and/or interferes with the purpose for which the refuge was established" and thus, may determine the use to be not compatible. Rockhounding is eliminated from the remainder of the Kofa NWR. Incorporate information regarding not leaving surface disturbances into agency outreach materials by 1997.

Rationale: Surface disturbances have routinely been left unreclaimed in the New Waters. In reference to rockhounding, BLM Manual 8560.31.E states: "Limit such use to hand methods or detection equipment that does not cause surface disturbance, such as metal detector or Geiger counter. In addition, methods must not be permitted that in any way adversely affect or degrade the wilderness resource or the experiences of visitors in the area."

In reference to rockhounding on the Kofa NWR, restrictions are set in place in accordance with 50 CFR 25.31. Past unrestricted rockhounding has resulted in the removal of large quantities of nonrenewable refuge resources. A compatibility determination was made that this use at past levels is not compatible so as to "materially detract from and/or interferes with the purposes for which the refuge was established." [Refuge Manual 5 RM 20.60] By restricting the use to the

Crystal Hill area only, and limiting the activity to hand methods, the use is determined to be compatible. These restrictions are also implemented because it is not lawful to convert national public resources to private/commercial uses depleting resources that are not sustainable or renewable.

2. Continue adequate signing and distribution of information concerning restrictions (Information Displays, Map 1) to unauthorized vehicular/mechanized transport within wilderness areas. Emphasize practices that minimize surface disturbances.
3. Install barriers at the wilderness boundaries where signing alone is not effective in controlling unauthorized vehicle entry. Boulders, berms, plants or other natural materials will be preferred for use as barriers. However, if these prove ineffective, post and cable barriers will be constructed.

Rationale for Actions 2 and 3: Most of the potential for unauthorized mechanical/vehicle use is on the refuge portion of the planning area. These actions will improve opportunities for solitude, provide for the re-establishment of vegetation on existing surface disturbances, and prevent additional adverse impacts from unauthorized vehicle/mechanical use in wilderness.

4. Control the establishment of salt cedar (Tamarisk) or other exotic plant species at wildlife waters and remove discovered plants physically or with authorized chemicals.
5. Maintain existing burro fences and remove any nuisance burros that expand their range to include the planning area. The use of helicopters for burro removal will be allowed.

Rationale for Actions 4 and 5: By refuge policy, nonindigenous species are to be

controlled and if possible removed from refuge lands. Burros are extremely competitive for scarce vegetative and watering resources with native wildlife. Tamarisk is a very aggressive exotic plant species that eventually displaces native vegetation.

6. Education and outreach will include: work with the Arizona Game and Fish Department to include visitor use impacts information in the annual hunting regulations by 1998; develop a joint agency brochure/map by 1998; participate in annual Quartzsite pow wow public information booth.

Rationale: Both agencies recognize the need to improve on efforts that provide public information for promoting practices that minimize adverse impacts to our natural resources and allow greater enjoyment of appropriate recreational and other opportunities. National Wildlife Refuge System goals call for management actions that foster public appreciation for wildlife and habitat resources and that are compatible with refuge purposes.

7. Clean up debris at 6 abandoned unpatented mining sites within Kofa and 1 site within the New Waters (Map 3) by the year 2001.
8. Reclaim 2 former vehicle routes (3.5 miles) in the refuge and 4 former vehicle routes (4.5 miles - Map 3) in the New Waters using hand tools and other non mechanized methods to minimize visual impacts and enhance wilderness values and opportunities.

Rationale for Actions 7 and 8: Past (within the last 40 years) mining activities and former vehicle routes have resulted in disturbances to natural features of the planning area and in some cases could affect public safety. Implementing these actions will provide for the restoration of natural features and enhance wilderness values and opportunities. Wildlife habitat will be enhanced by the revegetation of surface disturbances. There

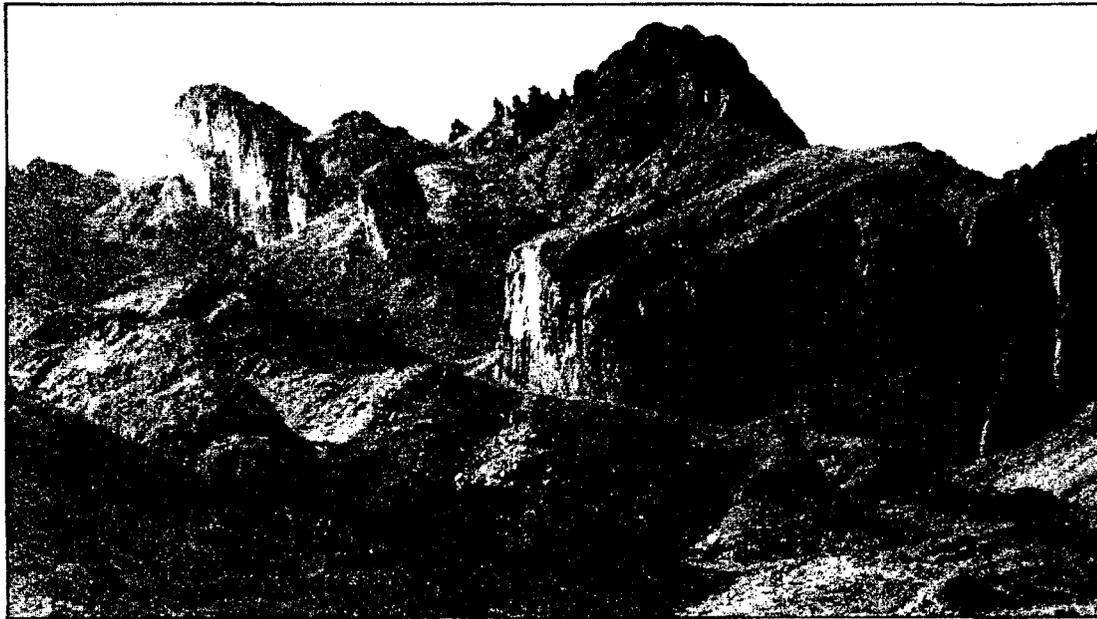
will also be less potential for adverse impacts to wildlife from continued vehicle use in wilderness.

9. The Service will coordinate with the military to remove military debris as warranted.
10. Pursue options to establish 2 field positions by 1998 for the purpose of implementing resource protection, monitoring, and public outreach provisions of this management plan for the entire planning area.

Rationale: This action will provide for the attainment of resource protection plan provisions and the acquisition of needed data concerning potential conflicts between wildlife and recreation objectives. Issues 1, 2, 3, and 10, and components of objectives 2 and 3, are addressed by this action. Additionally, this proposal falls within the guidelines of current Departmental goals to shift more existing positions to the field level.

Monitoring for Objective 1.

1. Inspect wildlife water sites during routine inspections to check for the establishment of Tamarisk or other exotic plant species and implement action 4 as necessary.
2. During routine patrols of the planning area, monitor existing burro fences for impacts and presence of nuisance burros that expand their range to include the planning area. Implement action 5 as needed.
3. Monitor and document unauthorized uses of the planning area. Implement action 3 if warranted.
4. Monitor and document impacts of all authorized visitor uses within the planning area and recommend needed mitigation during yearly plan evaluations.
5. The Service will monitor rockhounding activity on Crystal Hill.



Twin Spires Canyon — Kofa

Objective 2. Wildlife and Habitat Management

Within a dominant wilderness context, both agencies will maintain and enhance the natural diversity of flora and fauna within the Kofa/New Waters planning area by:

- Managing fire to maintain the areas natural values.
- Preventing the introduction of new exotic pathogens into the area that could adversely impact wildlife.
- Managing wilderness portions of the planning area using the minimum tools needed for maintaining an optimal desert bighorn sheep population while providing for maximum viable species diversity.
- Providing for allowable resource uses within an ecologically compatible and sustainable framework while minimizing impacts to wilderness values.
- Identifying sensitive wildlife areas and minimizing visitor use conflicts.
- Eliminating potential impacts to wildlife habitat from probable mining activity on nonfederal lands within the

planning area.

Management Actions

1. Reported fires will be monitored by air with minimum altitudes of 1000 feet above ground level, or by foot access. In the New Waters, fires that exceed or are expected to exceed a 5 chain per hour rate of spread will be suppressed. Kofa fires that threaten private property, have other than a low potential for spreading beyond the planning area, or present a significant threat to unique natural resources (i.e., native palms), or health and safety for the public, will be suppressed. Use non-motorized hand tools for suppression activities within wilderness portions of the planning area. Complete the rehabilitation of disturbances caused by fire suppression activities in accordance with BLM Manual 8560.35 and Refuge Manual 6 RM 8.8C, before suppression forces are released.

Rationale: There has been no recorded history of fires in the New Waters. Plant communities within the planning area are not fire adapted and suppressing fires that exceed a 5 chain per hour rate of spread will protect the area's natural values. Fires that have occurred on the refuge have been caused by

human activity. These fires have burned themselves out with minimal intervention during the first burning period. There have been no long-term adverse impacts to wildlife or habitat from fire occurrence in the planning area.

2. Bighorn sheep capture and transplant work in the planning area will be considered annually in consultations between the AGFD and Kofa/BLM staff.

Rationale: Sheep capture within the New Waters is governed by the AGFD-BLM MOU. On the Kofa, the quantity of sheep designated for capture is dependent upon sheep surveys and habitat evaluations conducted on the refuge. The AGFD and the Kofa staff meet and agree upon the number of bighorn to be removed and time periods for capture. Factors to be considered are:

- Estimated population and trends.
- Minimum estimated population of 120 in the New Waters.
- Minimum estimated population of 800 on the refuge.
- Herd demographics (minimum of 50% ewes, 14 lambs:100 ewes).

The preceding factors will be considered but they will not mandate a permit denial or a removal of bighorn sheep.

The Service and AGFD will continue to track the overall level of achievement (i.e., attainment of long range goals) of the efforts to repopulate the desert bighorn in their natural range. Transplant goals are to reestablish bighorn sheep throughout all suitable historic habitat. To achieve that, the following factors are considered:

- Suitable historic habitat (sufficient area, quality etc.).
- Conflicts with the success of the release (e.g. domestic sheep, human disturbance, etc.).
- Viability of current population in the transplant site.
 - Genetic viability (minimum

sheep population of 50).

- Predator threshold viability (dependent upon local influences).

3. Allow helicopter use as the minimum tool necessary for bighorn sheep capture operations.

Rationale: The use of helicopters to capture sheep for eventual transplantation has aided efforts to recover the desert bighorn in its natural range. Desert bighorn sheep recovery is a primary component of the Kofa's defined purpose. Other methods may incur extended intrusions into the wilderness with means that could be more harmful. For the BLM, this method of capture is defined in the AGFD-BLM MOU.

4. Accomplish routine inspections of all wildlife waters with the exception of Charlie Died Tank, by non-mechanical means. Maintenance of wildlife waters in wilderness will also be conducted by non-mechanical means with the exception of those listed below:
 - At Kofa #1 and Kofa #2, Adam's Well, King Well, and Charlie Died Tank, maintenance, and water supplementation will be allowed by vehicle.
 - If needed during drought periods, water will be supplemented at Nugget Tank using motorized equipment or vehicles.
 - The access method for emergency situations at wildlife waters will be determined by the Field Manager and/or Refuge Manager on a case-by-case basis, and where applicable, in consultation with AGFD. Maintenance, modification, and/or repair by motorized/mechanical means may be considered on a case by case basis.

5. The Service, BLM, and AGFD will evalu-

ate options to install buried water systems at Charlie Died Tank and Modesti Tank, and improve the visual characteristics and/or reliability of Kofa #1 and #2 by redeveloping or relocating the wildlife waters.

6. Improve, redevelop, or enhance Nugget Tank to minimize visual impacts and reduce the need for water supplementation by 1998. The use of mechanized equipment will be allowed.

Rationale for Actions 4, 5, and 6:

Traditionally, these have been inspected using vehicle transport. Wildlife water sources on the Kofa are important components of wildlife management for the refuge. The Service recognizes the newer context created by wilderness designation. The options to be evaluated will assist in lessening the frequency of administrative use of vehicles and mechanical equipment, while allowing for fulfillment of Kofa's important role in the recovery of bighorn sheep.

Inspection of waters by aerial means is not precluded by the wilderness act or by this plan. If aircraft landings are required within designated wilderness, advance approval by the Service or the BLM is necessary unless otherwise stated in this plan. Emergency and safety reasons are the exception.

7. Provide for the following flight operations. A 2 week advance notification of planned flights by AGFD to the appropriate agency is desirable.
 - One low level bighorn sheep survey, averaging 8 hours of flight time in the New Waters and 60 hours on the refuge during the period of October 1 through November 30.
 - One low-level javelina and mule deer survey, averaging 8 hours of flight time in the New Waters and 15 hours on the refuge during the period from January 1 through

March 31.

- In addition, flights for monitoring water levels, supplemental wildlife surveys, or in response to emergency situations may occur if necessary.
- Helicopter landings will be allowed for the retrieval of telemetry equipment from a sick or dead animal.

Rationale: Implementing these provisions will minimize the number of flights over designated wilderness and improve efficiencies in time and money to acquire needed biological information throughout the planning area. Advance approval by the Service or BLM is necessary for aircraft landings within wilderness that are not provided for in this plan. Emergency and safety reasons are the exception.

8. Continue cooperative effort to identify needs and collect baseline data. The Service will complete all phases of the already established aerial videography project by the year 1999.

Rationale: All agencies recognize the need to collect as much relevant scientific data as possible to assist in efforts to manage habitat and wildlife in the planning area for its biologically diverse suitability and capability. The aerial videography project will provide fundamental vegetation baseline data once digitized.

9. Appropriate agencies will coordinate to establish seasonal closures of sensitive habitat to protect wildlife and plant species when needed. Such areas may include drought period water sources, lambing sites (Map 4), abandoned mine shafts and other sensitive habitats.
10. By 1998, inventory abandoned mine sites, the majority of which are outside the wilderness, and install gates in such a

way as to allow for continued use of bats and other wildlife. If appropriate, the mine opening may be closed. For those mine openings that are found to be within wilderness, and present a safety hazard to the public, the manager will install the appropriate wildlife amenable gates using the minimum tool. Mechanized/motorized equipment will be allowed for installing gates or closing mine sites.

Rationale for Actions 9 and 10: These actions will minimize the potential for adverse impacts from visitors on wildlife during crucial periods. The agencies must be able to maintain the integrity of natural and appropriate manipulative processes so that wildlife, habitat, and wilderness mandates are met. In the case of abandoned mine shafts, closure will minimize risks to human safety.

11. Purchase from willing sellers, private inholdings (Map 3) within the Kofa portion of the planning area. There will be a purchase target of at least 1 inholding per year.

Rationale: This action will provide for the protection of wildlife habitat and visual values of the planning area.

Monitoring for Objective 2

1. Maintain monitoring logs of the administrative use of vehicles and/or mechanized equipment. Evaluate the logs annually and explore options to reduce the need for these type of administrative uses.
2. Monitor burn areas for the establishment of exotic plant species.
3. Monitor visitor uses and intensities of uses as to their effects and/or impacts on natural resources within the planning area. Recommend and implement mitigation to minimize adverse impacts as need-

ed.

Objective 3: Recreation, Legal Access and Public Information

Maintain high quality opportunities for recreation within the planning area, and where applicable, wildlife dependent, and/or primitive recreation that is compatible with the purposes for which the Kofa NWR and New Water Mountains Wilderness were established. These uses include wildlife observation, hiking, hunting, camping, photography, and solitude. This objective will be accomplished by:

- Providing public information that allows for public enjoyment of recreational opportunities in the planning area while promoting low impact use ethics for visitors.
- Establishing methods that will allow for the public to continually assess the quality of their recreational opportunities and thereby assist in determining



Native Palms — Kofa

appropriate future management decisions.

- Providing legal public access routes that promote dispersed use.
- Acquiring private lands that provide added recreational opportunities.
- Enhancing the quality of recreational opportunities by establishing special programs.
- Maintain environmental standards (air and water quality) to provide for enhanced visitor experience.

Rationale: All recreational activities on National Wildlife Refuges are secondary uses and are allowed when compatible with the primary purposes for which the refuges were established. Any existing recreational use must undergo annual review and any proposed use must undergo compatibility analysis. The above listed uses are those that have been determined to be compatible with the Kofa.

Management Actions

1. Establish (I-8 on Map 1 by 1998) and maintain information and interpretive displays at access points (Map 1) to the planning area as funding and staff levels permit.
2. As staffing and funding allow, conduct routine patrols of the planning area at least once per month.
3. Promote "Leave No Trace!" land use ethics by making appropriate information available at information displays and administrative sites.
4. By the end of 1998, include visitor registers at information displays (Map 1) to provide for public assessment and comment about the quality of their recreational and wildlife appreciation opportunities. Develop an appropriate register form to assist in providing needed monitoring

information.

5. Keep existing authorized public access routes (Map 1) open to promote dispersed visitor use and maintain opportunities for solitude.
6. The BLM will pursue options to acquire a public easement through or purchase the entire land parcel described by Mineral Entry Patent 546603, adjacent to the New Waters in the northeast portion of the planning area (Map 3) by 1999.

Rationale: Providing legal public access would assist in meeting Objective 3 through more dispersed visitor use that would be allowed by making a larger portion of the New Waters legally accessible to the public. This property currently provides some of the more popular camping sites in the BLM portion of the planning area. Also, this action will provide for the protection of wildlife habitat and visual resources of the planning area, and therefore assist in meeting Objective 2.

7. The Service will continue to work with AGFD to manage the Alternate hunt (mule deer) Program on the Kofa portion of the planning area (State Game Management Unit 45).

Rationale: This action will allow for continuation of a quality deer hunt on the Kofa portion of the planning area. The objective is to reduce potential hunter crowding and increase hunter success rates. This action also contributes to the achievement of Objective #2.

8. Prohibit the use of permanent anchors and the marking of routes in support of technical rock climbing and rappelling in the planning area as authorized by 43 CFR 8560.1-2 and 50 CFR 25.21.
9. Allow horses, mules, burros, and llamas as recreational livestock in the planning

area under these conditions: The use of feeding containers is required, water is to be packed in for livestock, and surface disturbances at campsites are to be restored. Use of pelletized feed is recommended.

Rationale: The use of feeding containers will assist in preventing the introduction of exotic plants and pathogens from domestic livestock. Packing in water will eliminate any need for livestock to use water resources developed specifically for wildlife within the planning area. Cumulative habitat/resource degradation will be prevented from continued recreational livestock use. It is recognized that the use of recreational livestock by hunters and other users is one method of transporting game across long distances or as an alternative recreational opportunity. This action contributes to the achievement of Objective 2 and is authorized by 50 CFR 26.33 and 27.52 on Kofa and 43 CFR 8560.1-1 on the New Waters.

10. Allow campfires in the New Waters using dead, down and detached wood. Provide information at wilderness access displays to minimize use of campfires. Visitors to the New Waters will be encouraged to bring their own firewood. The BLM will consider campfire restrictions as a last resort.

11. Allow the use of dead, down, and detached wood for campfires in the non-wilderness corridors and other non-wilderness areas within the Kofa NWR. Prohibit wood gathering and the possession of ironwood on Kofa NWR wilderness areas as authorized by 50 CFR 25.21 and 25.31. The Service will require visitors to Kofa NWR designated wilderness areas to bring their campfire wood as authorized by 50 CFR 26.33 or to bring charcoal or propane stoves. No native wood will be removed from the refuge.

Rationale for actions 10 and 11:

Generally, campfires are used along non-wilderness corridors and throughout wilderness boundary perimeters where visitor use occurs more often. No data exists that compels the Service to completely disallow the use of dead, down and detached wood for campfires. However, the Service is compelled to conserve wilderness values until additional research can confirm the resources' sustainability. This action also contributes to the achievement of Objective 2.

12. Enforce 25 mi/hr speed limit on all refuge maintained roads. Recommend to Yuma and La Paz County officials the implementation and enforcement of a 25 mi/hr speed limit on all county maintained roads within the Kofa NWR.

Rationale: The lower speeds on these dirt roads will reduce the number of dust particulates in the air to provide for maintaining air quality and will reduce mortalities to all wildlife, especially reptiles.

Monitoring for Objective 3

1. Inspect campsites where livestock use has occurred. Compile data on adverse impacts and assess the need to establish a special recreation permit system for livestock use on a yearly basis in the Kofa portion of the planning area.
2. Monitor for potential adverse impacts in the vicinity of frequently used campsites throughout the planning area and evaluate to determine if mitigation is needed.
3. Monitor visitor uses and intensities of uses as to their effects and/or impacts on natural resources within the planning area. Recommend and implement mitigation to minimize adverse impacts as needed.
4. Monitor data from public assessments of recreational opportunities in the planning area to assist in determining whether group size limits are warranted.

5. Compile visitor non-compliance data; evaluate annually and implement needed mitigation that will include appropriate interpretive messages at information displays.

Objective 4: Minerals Management

Minimize the environmental impacts of mining activities on all lands and resources within the planning area especially those directly related to wilderness by:

- Acquiring unpatented mining claims within the planning area.
- Monitoring activities on unpatented claims and performing mineral validity examinations if mining operations are proposed.

Management Actions

1. Encourage non-government entities to purchase unpatented claims on the Kofa NWR and allow claims to lapse. Contact

at least 2 non-governmental entities by end of 1998.

2. By 1999, the Service will develop a Memorandum of Understanding with the BLM for mining claim validity examinations that would be performed if mining operations are proposed on active claims within Kofa wilderness. Provisions are to be made for project funding.

Rationale for Actions 1 and 2:

Implementation of these actions will assist in the resolution of issue 4, and achieve BLM Wilderness Management Goals, and Service Wilderness Management Policy Objectives. Achievement of the objective will result in long-term preservation of the area's wilderness values while allowing both agencies to accomplish wildlife and habitat management mandates.

Monitoring for Objective 4

Monitoring for the fulfillment of Objective 4 will be accomplished during annual plan evaluations.

PART V — Plan Evaluation

In coordination with AGFD, the Yuma Field Manager and the Kofa NWR project leader (refuge manager) will conduct annual evaluations of the plan to:

1. Document completed management actions and adjust schedules for the following year if necessary.
2. Monitor to determine if the plan objectives are being met.
3. Recommend new management actions if needed.
4. Determine if the plan needs to be revised.

Needed revisions will amend the plan and be available for public review before being implemented.



Nolina — Kofa

Part VI — Implementation Schedule and Cost Estimates

Table 4 — Recurring Tasks

Task/Activity	Workmonths (\$3500/mo.)	Task Assignment
Monthly Wilderness Patrols, Facilities Maintenance, Information Displays, Signs	6	Park/Law Enforcement Rangers/Wilderness Specialist
Participate in annual Quartzsite Pow Wow public information booth	.5	Refuge/Resource Area Staff
Monitoring — Visitor Use, establishment of exotic species	3	Park/Law Enforcement Ranger/ Wilderness Specialist/ Biologists
Plan Evaluation	.5	Area/Refuge Managers/ Interdisciplinary Team/AGFD

Table 5 — Non-Recurring Tasks

Task/Activity	Target Date	Costs	Task Assignment
1. Implement restrictions on: rockhounding; fuel wood gathering; rock climbing; and use of recreational livestock Develop educational materials for posting at locations I-1 to I-10 on Map 1 to promote low impact uses and inform the public of restrictions .	1998	\$ 2,500	Wilderness Specialist/ Refuge and Field Managers
2. Work with AGFD to provide information about fuel wood gathering restrictions on Kofa and requirements for livestock use in planning area for inclusion on yearly hunting regulations.	1998	\$ 1,000	State Office/Res. Area Wilderness Specialists/ Field/Refuge Managers
3. Construct information display at location I-8 on Map 1 in New Waters.	1998	\$ 400	Park Ranger/Wilderness Specialist
4. Establish visitor registers at locations I-1 to I-10 on Map 1.	1998	\$ 900	Refuge Manager/ Wilderness Specialist
5. Develop BLM/Service MOU for mining validity examinations.	1999	¹	Refuge/Field Managers
6. Clean up debris at abandoned mining sites on Map 3 as follows: *1 to *6 *7	1996 to 2001 1997	\$15,000 \$ 1,000	Refuge Manager Pk. Ranger/W. Specialist
7. Reclaim former routes K-1 and K-2 and NW-1 to NW-4 on Map 3 as follows: K-1 & K-2 NW-1 to NW-4	1997 & 1998 1997 to 2000	\$ 5,000 \$ 10,000	Refuge Manager Pk. Ranger/W. Specialist
8. Pursue options to establish 2 field positions on Kofa.	1998	\$ 60,000	Refuge Manager
9. Inventory and gate or close abandoned mines on Kofa as appropriate.	1998	\$ 25,000	Refuge Manager
10. Repair gabion and improve water collection system at Nugget Tank.	2000	\$ 5,000	AGFD/Biologists
11. Improve water developments at: Charlie Died Tank Modesti Tank	1998 2000	\$ 30,000 \$ 30,000	Refuge Manager
12. Relocate water developments Kofa #1 and #2. Kofa #1 Kofa #2	2004 2005	\$ 30,000 \$ 30,000	AGFD/ BLM/Service- Wildlife Biologists
13. Complete Kofa aerial videography project.	1999	\$ 5,000	Refuge Manager
14. Acquire public easement through or all property on Mineral Entry Patent 546603.	1999	\$100,000	State Office Realty Specialist/ Field Manager
15. Acquire private inholdings from willing sellers on Kofa.	2010	²	Refuge Manager
16. Acquire active mining claims from willing sellers on Kofa.	2010	²	Refuge Manager

1. No operational funding is needed; approximately 1 workmonth will be needed for Tasks 5 and 6.

2. Tasks 16 and 17 are long-term goals and acquisition estimates were not readily available.

PART VII — Appendices

Appendix A

Kofa National Wildlife Refuge and New Water Mountains Wilderness

Wildlife Waters

New Water Mountains Wilderness

Catchments

- | | |
|----------------|----------------------------|
| 1. 959 Tank | T. 3 N., R. 17 W., sec. 24 |
| 2. Hidden Tank | T. 3 N., R. 16 W., sec. 21 |
| 3. Nasca Tank | T. 3 N., R. 17 W., sec. 16 |
| 4. Nugget Tank | T. 3 N., R. 17 W., sec. 29 |

Kofa National Wildlife Refuge

Catchments

- | | |
|------------------------|----------------------------|
| 5. 736 (Kofa Mtns # 1) | T. 1 S., R. 19 W., sec. 36 |
| 6. 737 (Kofa Mtns # 2) | T. 1 S., R. 19 W., sec. 12 |

Dams

- | | |
|---------------------|----------------------------|
| 7. Charco # 3 | T. 2 N., R. 16 W., sec. 20 |
| 8. Charco # 4 | T. 2 N., R. 15 W., sec. 23 |
| 9. Cholla Tank | T. 1 N., R. 15 W., sec. 8 |
| 10. Crowder Dam | T. 1 S., R. 15 W., sec. 9 |
| 11. Crowder # 1 | T. 1 S., R. 17 W., sec. 2 |
| 12. Crowder # 2 | T. 1 N., R. 16 W., sec. 31 |
| 13. Four Peaks Dam | T. 1 N., R. 16 W., sec. 6 |
| 14. Geyser Dam | T. 1 N., R. 17 W., sec. 25 |
| 15. Ketcherside Dam | T. 4 S., R. 18 W., sec. 35 |
| 16. Kofa Dam | T. 1 S., R. 16 W., sec. 32 |
| 17. Owl Head Dam | T. 1 N., R. 16 W., sec. 9 |
| 18. Red Rock Dam | T. 1 N., R. 16 W., sec. 23 |

Springs

- | | |
|-------------------------|----------------------------|
| 19. Alamo Spring | T. 1 N., R. 16 W., sec. 20 |
| 20. Budweiser Spring | T. 1 N., R. 17 W., sec. 20 |
| 21. Covered Well Spring | T. 2 N., R. 18 W., sec. 11 |
| 22. Dixon Spring | T. 5 S., R. 18 W., sec. 13 |
| 23. Doc Carter Spring | T. 5 S., R. 18 W., sec. 5 |
| 24. High Tank # 2 | T. 1 N., R. 17 W., sec. 13 |
| 25. Holly Seep | T. 1 N., R. 16 W., sec. 18 |
| 26. Jasper Spring | T. 1 N., R. 17 W., sec. 3 |
| 27. Tunnel Spring | T. 1 N., R. 17 W., sec. 32 |
| 28. Wilkerson Seep | T. 1 N., R. 16 W., sec. 16 |

Tanks

29. Black Tank	T. 3 S., R. 19 W., sec. 8
30. Blue Rock Tank	T. 4 S., R. 18 W., sec. 34
31. Castle Rock Dam	T. 4 S., R. 18 W., sec. 25
32. Cereus Tank	T. 1 S., R. 18 W., sec. 1
33. Chain Tank	T. 5 S., R. 17 W., sec. 4
34. Charlie Died Tank	T. 2 S., R. 16 W., sec. 23
35. Chuckwalla Tank	T. 3 S., R. 19 W., sec. 35
36. Drill Hole Tank	T. 1 N., R. 16 W., sec. 18
37. Figueroa Tank	T. 3 S., R. 18 W., sec. 34
38. Fishtail Tank	T. 1 S., R. 18 W., sec. 11
39. Frenchman Tank	T. 3 S., R. 15 W., sec. 20
40. Hidden Valley Tank	T. 2 S., R. 19 W., sec. 3
41. High Tank # 3	T. 1 S., R. 17 W., sec. 1
42. High Tank # 6	T. 1 N., R. 17 W., sec. 17
43. High Tank # 7	T. 1 N., R. 17 W., sec. 28
44. High Tank # 8	T. 1 N., R. 17 W., sec. 32
45. High Tank # 9	T. 1 N., R. 17 W., sec. 28
46. Hollow Rock Tank	T. 3 S., R. 19 W., sec. 4
47. Horse Tank	T. 2 S., R. 19 W., sec. 34
48. Little White Tank	T. 3 S., R. 18 W., sec. 27
49. McPherson Tank	T. 4 S., R. 18 W., sec. 6
50. Modesti Tank	T. 5 S., R. 18 W., sec. 18
51. Moonshine Tank	T. 2 S., R. 16 W., sec. 2
52. Red Hill Tank	T. 1 N., R. 17 W., sec. 4
53. Saguaro Tank	T. 4 S., R. 18 W., sec. 8
54. Salton Tank	T. 5 S., R. 17 W., sec. 33
55. Squaw Tank	T. 1 S., R. 17 W., sec. 16
56. Yaqui Tank	T. 1 S., R. 16 W., sec. 29

Wells

57. Adams Well	T. 4 S., R. 18 W., sec. 25
58. Coyote Peak Well	T. 2 N., R. 15 W., sec. 23
59. Craven Well	T. 1 N., R. 15 W., sec. 7
60. De La Osa Well	T. 1 N., R. 17 W., sec. 33
61. Hoodoo Well	T. 1 N., R. 15 W., sec. 18
62. Hovatter Well	T. 1 S., R. 15 W., sec. 12
63. King Well	T. 1 N., R. 16 W., sec. 18
64. Mid Well	T. 1 N., R. 17 W., sec. 14
65. New Water Well	T. 2 N., R. 16 W., sec. 13
66. Red Raven Well	T. 1 S., R. 15 W., sec. 12
67. Scotts Well	T. 2 N., R. 17 W., sec. 19
68. Twelve Mile Well	T. 2 N., R. 18 W., sec. 16
69. Wilbanks Well	T. 1 N., R. 17 W., sec. 14

Appendix B

Kofa National Wildlife Refuge and New Water Mountains Wilderness

Mammals

Reference for the following mammal list is Banks et al. 1987.

Common Name	Scientific Name
Order Chiroptera	
California Leaf-nosed Bat	<i>Macrotus californicus</i>
Yuma Myotis	<i>Myotis yumanensis</i>
Little Brown Bat	<i>Myotis lucifugus</i>
Cave Myotis	<i>Myotis velifer</i>
California Myotis	<i>Myotis californicus</i>
Western Pipistrelle	<i>Pipistrellus hesperus</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Spotted Bat	<i>Euderma maculatum</i>
Pallid Bat	<i>Antrozous pallidus</i>
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>
Western Mastiff-bat	<i>Eumops perotis</i>
Pocketed Free-tailed Bat	<i>Nyctinomops femorosaccus</i>
Townsend's Big-eared Bat	<i>Plecotus townsendii</i>
Order Lagomorpha	
Black-tailed Jack Rabbit	<i>Lepus californicus</i>
Desert Cottontail	<i>Sylvilagus audubonii</i>
Order Rodentia	
Harris' Antelope Squirrel	<i>Ammospermophilus harrisi</i>
Round-tailed Ground Squirrel	<i>Spermophilus tereticaudus</i>
Botta's Pocket Gopher	<i>Thomomys bottae</i>
Little Pocket Mouse	<i>Perognathus longimembris</i>
Arizona Pocket Mouse	<i>Perognathus amplus</i>
Long-tailed Pocket Mouse	<i>Perognathus formosus</i>
Bailey's Pocket Mouse	<i>Perognathus baileyi</i>
Desert Pocket Mouse	<i>Perognathus penicillatus</i>
Rock Pocket Mouse	<i>Perognathus intermedius</i>
Merriam's Kangaroo Rat	<i>Dipodomys merriami</i>
Desert Kangaroo Rat	<i>Dipodomys deserti</i>
Southern Grasshopper Mouse	<i>Onychomys torridus</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Canyon Mouse	<i>Peromyscus crinitus</i>
Cactus Mouse	<i>Peromyscus eremicus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Brush Mouse	<i>Peromyscus boylii</i>

White-throated Woodrat
Desert Woodrat
Porcupine
Desert Shrew

Neotoma albigula
Neotoma lepida
Erethizon dorsatum
Notiosorex crawfordi

Order Carnivora

Coyote
Kit Fox
Gray Fox
Ringtail
Badger
Striped Skunk
Western Spotted Skunk
Mountain Lion
Bobcat

Canis latrans
Vulpes macrotis
Urocyon cinereoargenteus
Bassariscus astutus
Taxidea taxus
Mephitis mephitis
Spilogale putorius
Felis concolor
Lynx rufus

Order Artiodactyla

Mule Deer
Desert Bighorn Sheep
Collared Peccary
Burro

Odocoileus hemionus crooki
Ovis canadensis mexicana
Tayassu tajacu
Equus asinus

Appendix C

Kofa National Wildlife Refuge and New Water Mountains Wilderness

Herptiles

Sources of information for distribution ranges, common names, and scientific names are Banks et al. 1987, Behler et al. 1989, and Smith et al. 1982.

Common Name

Scientific Name

Amphibians

Couch's Spadefoot
Colorado River Toad
Great Plains Toad
Red-spotted Toad

Scaphiopus couchii
Bufo alvarius
Bufo cognatus
Bufo punctatus

Reptiles

Desert Tortoise
Western Banded Gecko
Zebra-tailed Lizard
Collared Lizard
Long-nosed Leopard Lizard
Desert Horned Lizard
Desert Night Lizard
Chuckwalla
Desert Iguana
Desert Spiny Lizard
Colorado Desert Fringe-toed Lizard
Long-tailed Brush Lizard
Tree Lizard
Side-blotched Lizard
Western Whiptail
Banded Gila Monster
Western Slender Blind Snake
Rosy Boa
Glossy Snake
Banded Sand Snake
Western Shovel-nosed Snake
Night Snake
Common Kingsnake
Coachwhip
Spotted Leaf-nosed Snake
Pine - Gopher Snake
Sonoran Coral Snake
Long-nosed Snake
Ground Snake

Gopherus agassizii
Coleonyx variegatus variegatus
Callisaurus draconoides rhodostictus
Crotaphytus insularis bicinctores
Gambelia wislizenii wislizenii
Phrynosoma platyrhinos calidiarum
Xantusia vigilis vigilis
Sauromalus obesus obesus
Dipsosaurus dorsalis dorsalis
Sceloporus magister magister
Uma notata rufopunctata
Urosaurus graciosus graciosus
Urosaurus ornatus symmetricus
Uta stansburiana elegans
Cnemidophorus tigris tigris
Heloderma suspectum cinctum
Leptotyphlops humilis cahuilae
Lichanura trivirgata gracia
Arizona elegans noctivaga
Chilomeniscus cinctus
Chionactis occipitalis annulata
Hypsiglena torquata ochrorhyncha
Lampropeltis getulus californiae
Masticophis flagellum piceus
Phyllorhynchus decurtatus perkinsi
Pituophis melanoleucus affinis
Micruroides euryxanthus
Rhinocheilus lecontei lecontei
Sonora semiannulata

Western Patch-nosed Snake
Checkered Garter Snake
Western Lyre Snake
Sidewinder
Western Diamondback Rattlesnake
Mojave Rattlesnake
Speckled Rattlesnake
Black-tailed Rattlesnake

Salvadora hexalepis hexalepis
Thamnophis marcianus marcianus
Trimorphodon biscutatus lambda
Crotalus cerastes laterorepens
Crotalus atrox
Crotalus scutulatus scutulatus
Crotalus mitchellii pyrrhus
Crotalus molossus molossus

Appendix D

Kofa National Wildlife Refuge and New Water Mountains Wilderness

Bird List

		S	S	F	W
Grebes					
Pied-billed Grebe	<i>Podilymbus podiceps</i>	x			
Pelicans					
Brown Pelican	<i>Pelecanus occidentalis</i>		r	r	
Hérons					
Great Blue Heron	<i>Ardea herodias</i>		r	r	
Snowy Egret	<i>Egretta thula</i>	r		r	
Geese & Ducks					
Greater White-fronted Goose	<i>Anser albifrons</i>			x	
Canada Goose	<i>Branta canadensis</i>				x
Green-winged Teal	<i>Anas crecca</i>			r	
Mallard	<i>Anas platyrhynchos</i>				x
Northern Pintail	<i>Anas acuta</i>	r		o	
Blue-winged Teal	<i>Anas discors</i>			r	
Cinnamon Teal	<i>Anas cyanoptera</i>	o		r	r
Northern Shoveler	<i>Anas clypeata</i>			o	
American Wigeon	<i>Anas americana</i>				r
Redhead	<i>Aythya americana</i>				x
Bufflehead	<i>Bucephala albeola</i>	r			r
Red-breasted Merganser	<i>Mergus serrator</i>				x
Ruddy Duck	<i>Oxyura jamaicensis</i>				x
American Vultures					
Turkey Vulture*	<i>Cathartes aura</i>	c	c	c	u
Hawkes & Eagles					
Northern Harrier	<i>Circus cyaneus</i>			o	o
Sharp-shinned Hawk	<i>Accipiter striatus</i>	c	c	c	c
Cooper's Hawk	<i>Accipiter cooperii</i>	o		c	u
Northern Goshawk	<i>Accipiter gentilis</i>			x	
Harris' Hawk	<i>Parabuteo unicinctus</i>				r
Red-tailed Hawk*	<i>Buteo jamaicensis</i>	c	c	c	c
Ferruginous Hawk	<i>Buteo regalis</i>				r
Rough-legged Hawk	<i>Buteo lagopus</i>				r
Golden Eagle*	<i>Aquila chrysaetos</i>	u	u	u	u

		S	S	F	W
Falcons					
American Kestrel*	<i>Falco sparverius</i>	c	c	c	c
Peregrine Falcon	<i>Falco peregrinus</i>	r	r	r	r
Prairie Falcon	<i>Falco mexicanus</i>	o	o	o	o
Quail					
Gambel's Quail*	<i>Callipepla gambelii</i>	c	c	c	c
Rails & Coots					
American Coot	<i>Fulica americana</i>				x
Plovers					
Killdeer	<i>Charadrius vociferus</i>		o	o	
Stilts & Avocets					
Black-necked Stilt	<i>Himantopus mexicanus</i>			r	
American Avocet	<i>Recurvirostra americana</i>			r	
Sandpipers & Phalaropes					
Greater Yellowlegs	<i>Tringa melanoleuca</i>		r	r	
Solitary Sandpiper	<i>Tringa solitaria</i>			r	
Willet	<i>Catoptrophorus semipalmatus</i>	x			
Spotted Sandpiper	<i>Actitis macularia</i>	r		o	
Long-billed Curlew	<i>Numenius americanus</i>		x		
Western Sandpiper	<i>Calidris mauri</i>		x		
Wilson's Phalarope	<i>Phalaropus tricolor</i>				x
Red-necked Phalarope (Northern)	<i>Phalaropus lobatus</i>			x	
Doves					
White-winged Dove*	<i>Zenaida asiatica</i>		c	c	c
Mourning Dove*	<i>Zenaida macroura</i>	c	c	c	u
Common Ground Dove	<i>Columbina passerina</i>		o	o	
Cuckoos & Roadrunners					
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>		x		
Greater Roadrunner*	<i>Geococcyx californianus</i>	o	o	o	o
Owls					
Barn owl	<i>Tyto alba</i>	o	o		
Flammulated Owl	<i>Otus flammeolus</i>		x		
Western Screech-Owl	<i>Otus kennicotti</i>	c	c	c	c
Great Horned Owl*	<i>Bubo virginianus</i>	u	u	u	u
Elf Owl	<i>Micrathene whitneyi</i>	c	c		
Long-eared Owl	<i>Asio otus</i>	r	r	r	r

		S	S	F	W
Goatsuckers					
Lesser Nighthawk	<i>Chordeiles acutipennis</i>	o	o	r	
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	c	c	c	r
Swifts					
Vaux's Swift	<i>Chaetura vauxi</i>			o	
White-throated Swift*	<i>Aeronautes saxatalis</i>	u	u	u	u
Hummingbirds					
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	o	o		
Anna's Hummingbird	<i>Calypte anna</i>	o		o	o
Costa's Hummingbird*	<i>Calypte costae</i>	c	u	u	u
Rufous Hummingbird	<i>Selasphorus rufus</i>	o		o	
Kingfishers					
Belted Kingfisher	<i>Ceryle alcyon</i>		o	o	
Woodpeckers					
Lewis' Woodpecker	<i>Melanerpes lewis</i>	r	r	r	r
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>			r	
Gila Woodpecker*	<i>Melanerpes uropygialis</i>	c	c	c	c
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>			r	
Ladder-backed Woodpecker*	<i>Picoides scalaris</i>	o	o	o	o
Red-shafted Flicker	<i>Colaptes auratus</i>	c		c	c
Guilded Flicker*	<i>Colaptes chrysoides</i>	c	c	c	c
Tyrant Flycatchers					
Olive-sided Flycatcher	<i>Contopus borealis</i>	o			o
Western Wood-Pewee	<i>Contopus sordidulus</i>	c	u	c	c
Willow Flycatcher	<i>Empidonax traillii</i>	u		u	
Hammond's Flycatcher	<i>Empidonax hammondii</i>	o		o	
Dusky Flycatcher	<i>Empidonax oberholseri</i>	u		u	
Gray Flycatcher	<i>Empidonax wrightii</i>	o	o	o	
Cordilleran Flycatcher (Western)	<i>Empidonax occidentalis</i>	c		c	
Black Phoebe	<i>Sayornis nigricans</i>	o	o	o	
Say's Phoebe *	<i>Sayornis saya</i>	c	u	c	c
Vermilion Flycatcher	<i>Pyrocephalus rubinus</i>	r			
Ash-throated Flycatcher*	<i>Myiarchus cinerascens</i>	c	c		r
Brown-crested Flycatcher*	<i>Myiarchus tyrannulus</i>	r	r		
Western Kingbird	<i>Tyrannus verticalis</i>	u	u	u	
Larks					
Horned Lark	<i>Eremophila alpestris</i>			o	r

		S	S	F	W
Swallows					
Tree Swallow	<i>Tachycineta bicolor</i>		x		
Violet-green Swallow	<i>Tachycineta thalassina</i>	u	u	u	u
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>		o	o	
Cliff Swallow	<i>Hirundo pyrrhonota</i>		o		r
Barn Swallow	<i>Hirundo rustica</i>			r	
Jays & Crows					
Steller's Jay	<i>Cyanocitta stelleri</i>			r	r
Scrub Jay	<i>Aphelocoma coerulescens</i>	o	r	o	o
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>			r	
Common Raven	<i>Corvus corax</i>	o	o	o	o
Verdins					
Verdin*	<i>Auriparus flaviceps</i>	c	c	c	c
Nuthatches					
Red-breasted Nuthatch	<i>Sitta canadensis</i>				o
Wrens					
Cactus Wren*	<i>Campylorhynchus brunneicapillus</i>	c	c	c	c
Rock Wren*	<i>Salpinctes obsoletus</i>	c	c	c	c
Canyon Wren*	<i>Catherpes mexicanus</i>	c	c	c	c
Bewick's Wren	<i>Thryomanes bewickii</i>			o	o
House Wren	<i>Troglodytes aedon</i>	c		c	u
Kinglets & Gnatcatchers					
Ruby-crowned Kinglet	<i>Regulus calendula</i>	c		c	c
Blue-gray Gnatcatcher*	<i>Polioptila caerulea</i>	o	o	o	o
Black-tailed Gnatcatcher*	<i>Polioptila melanura</i>	c	c	c	c
Thrushes					
Western Bluebird	<i>Sialia mexicana</i>			o	o
Mountain Bluebird	<i>Sialia currucoides</i>	o			o
Townsend's Solitaire	<i>Myadestes townsendi</i>	o		o	r
Swainson's Thrush	<i>Catharus ustulatus</i>	u		r	
Hermit Thrush	<i>Catharus guttatus</i>	o		u	o
American Robin	<i>Turdus migratorius</i>	o		u	o
Mockingbirds & Thrashers					
Brown Thrasher	<i>Toxostoma rufum</i>			x	
Gray Catbird	<i>Dumetella carolinensis</i>			r	
Northern Mockingbird*	<i>Mimus polyglottos</i>	c	u	c	u
Sage Thrasher	<i>Oreoscoptes montanus</i>	o		o	o
Bendire's Thrasher*	<i>Toxostoma bendirei</i>	u	u		
Curve-billed Thrasher*	<i>Toxostoma curvirostre</i>	c	c	c	c
Crissal Thrasher*	<i>Toxostoma crissale</i>	o	o	o	o
LeConte's Thrasher	<i>Toxostoma lecontei</i>	o	o		

		S	S	F	W
Pipits					
American Pipit (Water)	<i>Anthus rubescens</i>			r	
Waxwings					
Cedar Waxwing	<i>Bombycilla cedrorum</i>	o		o	
Silky Flycatchers					
Phainopepla*	<i>Phainopepla nitens</i>	c	u	c	c
Shrikes					
Loggerhead Shrike*	<i>Lanius ludovicianus</i>	c	c	c	c
Starlings					
European Starling*	<i>Sturnus vulgaris</i>	o			o
Vireos					
Gray Vireo	<i>Vireo vicinior</i>	r		o	
Solitary Vireo	<i>Vireo solitarius</i>	o		o	
Hutton's Vireo	<i>Vireo huttoni</i>			r	
Warbling Vireo	<i>Vireo gilvus</i>	c		c	
Philadelphia Vireo	<i>Vireo philadelphicus</i>			x	
Wood-Warblers					
Orange-crowned Warbler	<i>Vermivora celata</i>	c		c	
Nashville Warbler	<i>Vermivora ruficapilla</i>	c		u	
Lucy's Warbler*	<i>Vermivora luciae</i>	r	r		
Yellow Warbler	<i>Dendroica petechia</i>	c		c	u
Yellow-rumped Warbler (Audubon's)	<i>Dendroica coronata</i>	c		c	u
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	u	c	u	u
Townsend's Warbler	<i>Dendroica townsendi</i>	c		o	
Hermit Warbler	<i>Dendroica occidentalis</i>	u		u	
American Redstart	<i>Setophaga ruticilla</i>	x			
Prothonotary Warbler	<i>Protonotaria citrea</i>			x	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	x			
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	c		u	
Common Yellowthroat	<i>Geothlypis trichas</i>	x			
Wilson's Warbler	<i>Wilsonia pusilla</i>	c		u	
Painted Redstart	<i>Myioborus pictus</i>			r	
Yellow-breasted Chat	<i>Icteria virens</i>			r	
Tanagers					
Hepatic Tanager	<i>Piranga flava</i>			o	
Western Tanager	<i>Piranga ludoviciana</i>	c	u	c	

Cardinals & Grosbeaks

Northern Cardinal	<i>Cardinalis cardinalis</i>		o		
Pyrrhuloxia	<i>Cardinalis sinuatus</i>	r			r
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	x			
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	u	o	u	
Blue Grosbeak	<i>Guiraca caerulea</i>		r		
Lazuli Bunting	<i>Passerina amoena</i>	c		u	

Towhees & Sparrows

Green-tailed Towhee	<i>Pipilo chlorurus</i>	u	u	u	o
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	u	u	o	o
Canyon Towhee*	<i>Pipilo fuscus</i>	c	c	c	c
Abert's Towhee	<i>Pipilo aberti</i>	x			
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	r	r	r	r
Chipping Sparrow	<i>Spizella passerina</i>	c	c	u	o
Brewer's Sparrow	<i>Spizella breweri</i>	c		c	u
Black-chinned Sparrow	<i>Spizella atrogularis</i>	o	o	o	o
Vesper Sparrow	<i>Poocetes gramineus</i>	u		o	r
Lark Sparrow	<i>Chondestes grammacus</i>	o	o	o	
Black-throated Sparrow*	<i>Amphispiza bilineata</i>	c	c	c	c
Sage Sparrow	<i>Amphispiza belli</i>			u	u
Lark Bunting	<i>Calamospiza melanocorys</i>			x	
Savannah Sparrow	<i>Passerculus sandwichensis</i>			x	
Fox Sparrow	<i>Passerella iliaca</i>		o		o
Lincoln's Sparrow	<i>Melospiza lincolnii</i>			o	
White-throated Sparrow	<i>Zonotrichia albicollis</i>				x
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	c	u	u	o
Dark-eyed Junco (Oregon)	<i>Junco hyemalis</i>	o		c	u
Dark-eyed Junco (Gray-headed)	<i>Junco hyemalis</i>			o	o

Blackbirds & Orioles

Red-winged Blackbird	<i>Agelaius phoeniceus</i>	r			r
Western Meadowlark	<i>Sturnella neglecta</i>			o	o
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>		o	o	
Rusty Blackbird	<i>Euphagus carolinus</i>			r	u
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>			o	
Brown-headed Cowbird	<i>Molothrus ater</i>	u	u	o	o
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	o		o	o
Hooded Oriole*	<i>Icterus cucullatus</i>	o	o	r	
Bullock's Oriole	<i>Icterus bullockii</i>	u	c	u	
Scott's Oriole*	<i>Icterus parisorum</i>	c	c	u	o

Finches

Purple Finch	<i>Carpodacus purpureus</i>			r	r
Cassin's Finch	<i>Carpodacus cassinii</i>			u	u
House Finch*	<i>Carpodacus mexicanus</i>	c	c	c	c
Pine Siskin	<i>Carduelis pinus</i>			o	
Lesser Goldfinch	<i>Carduelis psaltria</i>	o	o	u	r
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	u		o	
American Goldfinch	<i>Carduelis tristis</i>	x			

Old World Sparrows

House Sparrow	<i>Passer domesticus</i>			o	o
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Seasons

S (Spring) March-May
 S (Summer) June-August
 F (Fall) September-November
 W (Winter) December-February

Status

c - common
 u - uncommon
 o - occasional
 r - rare
 x - accidental
 * - confirmed refuge nester

Appendix E

Kofa National Wildlife Refuge and New Water Mountains Wilderness

Plants

POLYPODIOPHYTA (Ferns)

Polypodiaceae (Fern Family)

Notholaena californica D.C. Eaton California Cloak Fern

Notholaena parryi D.C. Eaton [= *Cheilanthes parryi* (D.C. Eaton) Domin], Parry's Cloak Fern

PINOPHYTA (Gymnosperms)

Ephedraceae (Joint-fir Family)

Ephedra fasciculata A.Nels. Mormon Tea

Ephedra nevadensis Wats. Nevada Joint-fir

MAGNOLIOPHYTA (Flowering Plants)

LILIOPSIDA (Monocots)

Typhaceae (Cat-tail Family)

Typha angustifolia L. Narrow-leaved Cattail

NAJADACEAE (Naiad Family)

Najas marina L. Holly-leaved Water Nymph

Poaceae (Grass Family)

Aristida adscensionis L. Six-weeks Three-awn

Aristida arizonica Vasey. Arizona Three-awn

Aristida purpurea Nut. var. *glauca* (Nees.) A. Holmgr. & N. Holmgr. Reverchon Three-awn

Aristida parishii Hitchc. Parish Three-awn

Aristida ternipes Cav. var. *ternipes* Spider Grass

Aristida ternipes Cav. var. *minor* (Vasey) Hitchc.

Avena fatua L. Wild Oat

Bothriochloa barbinodis (Lag.) Herter Cane Beardgrass

Bouteloua aristidoides (H.B.K.) Grisb. Six-weeks Needle Grass

Bouteloua barbata Lag. Six-weeks Grama

Bouteloua curtipendula (Michx.) Torr. Side-oats Grama

Bouteloua curtipendula (Michx.) Torr. var. *caespitosa* Gould & Kapadia

Bouteloua trifida Thurb. Red Grama

Bromus arizonicus (Shear) Stebbins Arizona Brome

Bromus rubens L. Red Brome, Foxtail Chess

Cenchrus insertus M.A. Curtis, Field Sandbur

Chloris virgata Swartz. Feather Fingergrass

Cynodon dactylon (L) Pers. Bermuda Grass, Pata de Gallo

Digitaria californica (Benth.) Chase Cotton-top

Diplachne dubia (H.B.K.) Nees. Green Sprangletop

Diplachne fascicularis (Lam.) Gray Beaded Sprangletop

Diplachne viscida Scribn. [= *Leptochloa viscida* (Scribn.) Beal] Sticky Sprangle Top
Echinochloa colonum (L.) Link. Jungle Rice
Enneapogon desvauxii Beauv. Spike Pappusgrass
Eragrostis cilianensis (All.) Mosher. Stink Grass
Eragrostis pectinacea (Michx.) Nees. [incl. *E. diffusa* Buckl.] Spreading Lovegrass
Eriochloa aristata Vasey
Eriochloa lemmoni Vasey & Scribn. var. *gracilis* (Fourn.) Gould (*E. gracilis*) Small
 Southwestern Cupgrass
Erioneuron pulchellum (H.B.K.) Tateoka.-Fluff Grass
Heteropogon contortus (L.) Beauv. Tangle-head
Hilaria rigida (Thurb.) Benth. Big Galleta
Leptochloa filiformis (Lam.) Beauv. Red Sprangletop
Mulenbergia microsperma (DC.) Kunth Littleseed Muhly
Mulenbergia porteri Scribn. Bush Muhly
Panicum arizonicum Scribn. & Merr. Arizona Panicum
Panicum capillare L. var. *occidentale* Rybd. Witchgrass
Panicum obtusum HBK. Vine Mesquite
Pennisetum setaceum (Forsk.) Chiov. Fountain Grass
Phalaris caroliniana Walt. Carolina Canary Grass
Phalaris minor Retz. Littleseed Canary Grass
Poa bigelovii Vasey & Scribn. Bigelow's Bluegrass
Schismus arabicus Nees. Arabian Grass
Schismus barbatus (L.) Thell. Mediterranean Grass
Setaria macrostachya H.B.K. Plains Bristlegrass
Sorghum halepense (L.) Pers. Johnson Grass
Sporobolus airoides Torr. Alkali Sacaton
Sporobolus contractus Hitchc. Spike Dropseed
Stipa speciosa Trin. & Rupr. Desert Needlegrass
Tridens eragrostoides (Vasey & Scribn.) Nash
Tridens muticus (Torr.) Nash Slim Tridens
Vulpia octoflora (Walt.) Rydb. var. *octoflora* Six-weeks Fescue
Vulpia octoflora (Walt.) Rydb. var. *hirtella* (Piper) Henr. Six-weeks Fescue

Cyperaceae (Sedge Family)

Cyperus aristatus Rottb.
Cyperus esculentus L. var. *esculentus* Chufa
Cyperus rotundus L. Purple Nut Grass, Purple Nut Sedge

Areceaceae (Palm Family)

Washingtonia filifera Wendl. California Fan Palm, Desert Palm

Liliaceae (Lily Family)

Allium parishii Wats. Onion
Calochortus kennedyi Porter Desert Mariposa
Dichelostemma pulchellum (Salisb.) Heller Bluedick, Coveria
Hesperocallis undulata Gray Ajo, Desert Lily

Agavaceae (Agave Family)

Agave deserti Englem. Desert Agave
Agave deserti Englem. ssp. *simplex* Gentry Desert Agave
Nolina bigelovii (Torr.) Wats Bigelow Nolina

MAGNOLIOPSIDA (Dicots)

Salicaceae (Willow Family)

Salix gooddingii Ball var. *gooddingii* Goodding Willow

Fagaceae (Oak Family)

Quercus turbinella Greene Scrub Live Oak, Turbinella Oak
Quercus turbinella ssp. *ajoensis* (C.H. Muell) Felger & Lowe

Urticaceae (Nettle Family)

Parietaria hespera Hinton Pellitory

Viscaceae (Mistletoe Family)

Phoradendron californicum Nutt. Desert Mistletoe

Aristolochiaceae (Birthwort Family)

Aristolochia watsoni Woot. & Standl. Indian Root

Polygonaceae (Buckwheat Family)

Chorizanthe rigida (Torr.) Torre & Gray Rigid Spiny Herb
Chorizanthe brevicornu Torr. Brittle Spine Flower
Eriogonum deflexum Torr. var. *deflexum* Skeleton Weed
Eriogonum fasciculatum Benth. var. *polifolium* (Benth.) Torr. & Gray Flat-top, Buckwheat-bush
Eriogonum inflatum Torre & Frem. Desert Trumpet
Eriogonum insigne Wats. [= *E. deflexum* Torr. ssp. *insigne* (Wats.) Stokes]
Eriogonum maculatum Heller. Angle-stemmed Buckwheat
Eriogonum wrightii var. *pringlei* Coult & Fish Pringle Buckwheat
Eriogonum wrightii Torr. var. *wrightii* Wright Buckwheat
Eriogonum thomasi Torr. Thomas Eriogonum
Eriogonum trichopes Torr. Little Trumpet
Polygonum argyrocoleon Steud. Silversheath Knotweed
Rumex crispus L. Curly Dock

Chenopodiaceae (Goosefoot Family)

Atriplex canescens (Pursh) Nutt. Wingscale, Cenizo, Chamiso
Atriplex elegans (Moq.) D. Dietr. ssp. *elegans* Wheelscale Saltbush
Atriplex hymenelytra (Torr.) Wats. Desert Holly
Atriplex polycarpa (Torr.) Wats. All Scale, Cattle Spinach
Chenopodium murale L. Nettleleaf Goosefoot
Salsola iberica Sennen & Pau Russian Thistle

Amaranthaceae (Amaranth Family)

Amaranthus fimbriatus (Torr.) Benth. var. *fimbriatus* Fringed Amaranth, Pig Weed
Amaranthus graecizans L. Prostrate Pigweed, Cochino, Quelite Manchado

Amaranthus hybridus L. Spleen Amaranth, Quelite Morado
Amaranthus palmeri Wats., Palmer's Amaranth, Careless-weed, Bledo, Quelite
Tidestromia lanuginosa (Nutt.) Standl. Woolly Tidestromia
Tidestromia oblongifolia (Wats.) Lindl. Honey-sweet

Nyctaginaceae (Four O'Clock Family)

Acleisanthes longiflora Gray Yerba-de-la-Rabia, Angel Trumpet
Allionia incarnata L. Trailing Four-O'Clock, Windmills
Boerhaavia coccinea Mill. Red Spiderling
Boerhaavia coulteri (Hook.f.) Wats. Coulter Spiderling
Boerhaavia erecta L. var. *intermedia* (Jones) K. & P. Five-winged Ringstem

Boerhaavia intermedia Jones Five-winged Ringstem
Boerhaavia triquetra Wats. Spiderling
Boerhaavia wrightii Gray Large-bracted Boerhaavia
Commicarpus scandens L.
Mirabilis bigelovii Gray var. *bigelovii* Wishbone Bush
Mirabilis multiflora (Torr.) Gray Colorado Four-O'Clock

Aizoaceae (Carpet Weed Family)

Trianthema portulacastrum L. Verdolaga Blanca, Horse Purslane

Caryophyllaceae (Pink Family)

Silene antirrhina L. Sleepy Catchfly

Ranunculaceae (Crowfoot Family)

Anemone tuberosa Rydb. Desert Windflower
Clematis drummondii Torr. & Gray Texas Virgin Bower
Delphinium parishii Gray
Delphinium scaposum Greene Barestem Larkspur

Berberidaceae (Barberry Family)

Berberis haematocarpa Woot. Red Barberry
Berberis harrisoniana Kearney & Peebles Kofa Mountain Barberry

Papaveraceae (Poppy Family)

Argemone pleiacantha Greene ssp. *pleiacantha* [= *A. platyceras* Link & Otto] Prickly Poppy
Eschscholtzia californica Cham. ssp. *mexicana* (Greene) C. Clark Mexican Gold Poppy,
Amapola del Campo
Eschscholtzia minutiflora Wats. Little Gold Poppy

Brassicaceae (Mustard Family)

Arabis perennans Wat. Rock Cress
Brassica tournefortii Gouan. Mustard
Capsella bursa-pastoris (L.) Medic. Shepherds Purse, Paniquesillo
Caulanthus lasiophyllus (Hook & Arn.) Payson [= *Thelypodium lasiophyllum* (H. & A.) Greene]
Descurainia pinnata (Walt.) Britt. spp. *ochroleuca* (Woot.) Detling.
Descurainia pinnata (Walt.) Britton Yellow Tansy Mustard

Draba cuneifolia Nutt. ex Torr. & Gray var. *integrifolia* Whitlow Grass
Lepidium lasiocarpum Nutt. var. *lasiocarpum* C.L. Hitchc. Sand Peppergrass
Lepidium lasiocarpum Nutt. var. *wrightii* (Gray) C.L. Hitchc. Peppergrass, Pepperwort
Lesquerella gordonii (Gray) Watts Gordon Bladderpod
Sisymbrium altissimum L. Tumble Mustard
Sisymbrium irio L. London Rocket
Stanleya elata Jones Desert Plume
Stanleya pinnata (Pursh) Britt. Desert Plume
Streptanthella longirostris (Wats.) Rydb. Long-beaked Twist Flower
Thysanocarpus curvipes Hook. var. *elegans* (F&M) Robins Fringe Pod

Cleomaceae (Capper Family)

Wislizenia refracta Engelm. Jackass Clover

Resedaceae (Mignonette Family)

Oligomeris linifolia (Vahl) Macbr. Linear-leaved Cambess

Crossosomataceae (Crossosoma Family)

Crossosoma bigelovii Wats. Bigelow Ragged Rock Flower, Rhyolite Bush

Rosaceae (Rose Family)

Prunus fasciculata (Torr.) Gray Desert Range Almond

Fabaceae (Pea Family)

Mimosoideae (Mimosa Subfamily)

Acacia constricta Benth. Mescat Acacia, White Thorn
Acacia greggii Gray var. *arizonica* Isely [*A. greggii* Gray] Catclaw acacia, Devil's-claw
Calliandra eriophylla Benth. False Mesquite, Fairy Duster
Prosopis glandulosa Torrey var. *torreyana* (Benson) M.C. Johnst. Western Honey Mesquite
Prosopis velutina Woot. [*P. juliflora* (Swartz) DC. var. *velutina* (Woot) Sarg.]
Velvet Mesquite

Caesalpinioideae (Senna Subfamily)

Cercidium floridum Benth. Blue Palo-verde
Cercidium microphyllum (Torr.) Rose & Johnst. Foothill Palo-verde, Little-leaf
Palo-verde, Yellow Palo-verde
Senna covesii (Gray) Irwin & Barneby [= *Cassia covesii* Gray] Coues' Cassia, Desert Senna
Hoffmanseggia glauca (Ort.) Eifort [= *H. densiflora* Benth.] Hog Potato, Camote-de-Raton
Parkinsonia aculeata L. Jerusalem Thorn, Retama, Mexican Palo-verde

Papilionoideae (Bean Subfamily)

Astragalus coccineus Brandg. Scarlet Locoweed
Astragalus nuttallianus DC. var. *imperfectus* (Rydb.) Barneby Nuttall Locoweed
Coursetia microphylla Gray
Dalea mollis Benth. Silk Dalea
Dalea mollissima (Rydb.) Munz [= *D. neomexicana* (Gray) Cory ssp. *mollissima*
(Rydb.) Wiggins]
Dalea neomexicana (Gray) Cory

Lotus rigidus (Benth) Greene Desert Rock Pea
Lotus salsuginosus Greene var. *brevivexillus* Ottley Deer Vetch
Lotus strigosus (Nutt.) Greene var. *tomentellus* (Greene) Hairy Lotus
Lupinus arizonicus Wats. ssp. *arizonicus* var. *arizonicus* Arizona Lupine
Lupinus sparsiflorus Benth. Lupine
Lupinus sparsiflorus Benth. ssp. *mohavensis* Dziekanowski & Dunn Lupine
Marina parryi (T. & G.) Barn. Parry Dalea
Melilotus indicus (L.) All. Alfalfilla, Annual Yellow Sweet Clover
Olneya tesota A. Gray Desert Ironwood, Palofierro, Palo-de-Hierro
Phaseolus acutifolius Gray Bean
Phaseolus filiformis Benth. Bean

Phaseolus wrightii Gray Bean
Psoralea spinosa (Gray) Barneby [= *Dalea spinosa* Gray] Smoke-tree, Smoke-thorn

Krameriaceae (Ratany Family)

Krameria grayi Rose Y. Painter White Ratany
Krameria parvifolia Benth. var. *impartata* Macbr. Range Ratany, Little-leaved Ratany

Geraniaceae (Geranium Family)

Erodium cicutarium (L.) L' Her. Heron Bill, Filaree, Alfilaria, Afilerillo
Erodium texanum Gray Large-flowered Stork's Bill

Oxalidaceae (Wood Sorrel Family)

Oxalis albicans H.B.K. Wood Sorrel
Oxalis stricta L. Yellow Wood Sorrel, Chanchaquilla

Linaceae (Flax Family)

Linum lewisii Pursh. Blue Flax

Zygophyllaceae (Caltrop Family)

Fagonia laevis Standl. Fagonia
Kallstroemia californica (Wats.) Vail. California Caltrop
Kallstroemia grandiflora Torr. Arizona Poppy, Orange Caltrop, Summer poppy
Larrea divaricata Cav. ssp. *tridentata* Felger & Lowe Creosote Bush, Greasewood,
Hediondilla, Gobernadora

Rutaceae (Rue Family)

Thamnosma montana Torr. & Frem. Turpentine Broom

Simaroubaceae (Simarouba Family)

Castela emoryi (A. Gray) Moran & Felger [= *Holacantha emoryi* Gray] Crucifixion Thorn,
Corona-de-Cristo, Rosario

Malpighiaceae (Malpighia Family)

Janusia gracilis Gray Janusia, Propeller bush

Polygalaceae (Milk Wort Family)

Polygala macradenia Gray Milk wort

Euphorbiaceae (Spurge Family)

Argythamnia clariana Jepson
Argythamnia lanceolata (Benth.) Muel. Arg. Lance-leaved Ditaxis
Bernardia incana Morton [=*B. myricaefolia* (Scheele) Wats.] *Bernardia*
Euphorbia arizonica Engelm.
Euphorbia eriantha Benth. Desert Poinsettia
Euphorbia heterophylla L. var. *heterophylla* Painted Spurge, Catalina
Euphorbia polycarpa Benth. var. *hirtella* Boiss
Euphorbia polycarpa Benth. var. *polycarpa* Small-seeded Sand Mat
Euphorbia setiloba Engelm. Bristle-lobed Sand Mat
Tetracoccus fasciculatus (Wats.) Croizat var. *hallii* (T.S. Brand.) Dressler Purple Bush
Tragia nepetaefolia Cav. *Tragia*

Simmondsiaceae (Simmondsia Family)

Simmondsia chinensis (Link) Schneid Coffee Berry, Goat Nut, Deer-nut, Jojoba

Anacardiaceae (Cashew Family, Sumac Family)

Rhus trilobata Nutt. var. *anisophylla* (Greene) Jeps. Squaw Bush

Celastraceae (Bitter-sweet Family)

Canotia holacantha Torr.

Rhamnaceae (Buck Thorn Family)

Ceanothus greggii Gray Buck Brush, Deer Brier
Colubrina californica Johnst. California Snake Bush

Condalia globosa Johnst. var. *pubescens* Johnst. Bitter Condalia Desert Mahogany
Ziziphus obtusifolia (Hook. ex T. & G.) A. Gray var. *canescens* (A. Gray) M.C. Johnst.
Gray-leaved Abrojo, Gray Thorn

Malvaceae (Mallow Family)

Abutilon californicum Benth.
Abutilon incanum (Link.) Sweet ssp. *incanum* Indian Mallow, Pelotazo
Abutilon incanum (Link.) Sweet ssp. *pringlei* (Hochr.) Felger & Lowe
Abutilon parvulum Gray
Herissantia crispa (L.) Brizicky [= *Bogenhardia crispa* (L.) Kearney, *Gayoides crispum* (L.)
Small, *Abutilon crispum* Sweet]
Hibiscus coulteri Harv. Desert Rose Mallow
Hibiscus denudatus Benth. var. *denudatus* Rock Hibiscus
Horsfordia alata (Wats.) Gray Pink Felt Plant
Horsfordia newberryi (Wats.) Gray Yellow Felt Plant
Malva parviflora L. Little Mallow
Sphaeralcea ambigua Gray var. *ambigua* Desert Mallow, Apricot Mallow
Sphaeralcea ambigua (Gray) var. *rosacea* (Munz & Johnst.) Kearney Rose Mallow
Sphaeralcea coulteri (Wats.) Gray Coulter Globe Mallow
Sphaeralcea emoryi Torr. var. *emoryi* Emory Globe Mallow
Sphaeralcea emoryi Torr. var. *californica* (Parish) Shinnery

Sterculiaceae (Cacao Family)

Ayenia compacta L. [=*A. pusilla* L.]

Tamaricaceae (Tamarix Family)

Tamarix chinensis Loureiro [*T. pentandra* sensu K. & P.] Salt Cedar

Koeberliniaceae (Junco Family)

Koeberlinia spinosa Zucc. var. *spinosa* All Thorn

Koeberlinia spinosa Zucc. var. *tenuispina* K. & P. Crown-of-thorns, Crucifixion-thorn,
Corona-de-cristo

Loasaceae (Stick Leaf Family)

Eucnide urens Parry Sting Bush

Mentzelia albicaulis Dougl. Small-flowered Blazing Star

Mentzelia involucrata Wats. Sand Blazing Star

Mentzelia nitens Greene var. *jonesii* (Urban & Gilg) J. Darl.

Mentzelia nitens Greene var. *nitens* Venus Blazing Star

Petalonyx linearis Greene Long-leaved Sandpaper Plant

Cactaceae (Cactus Family)

Carnegiea gigantea (Engelm.) Britt. & Rose Saguaro

Echinocereus engelmannii (Parry) Lemaire Engelmann Hedgehog Cactus

Echinocereus engelmannii (Parry) Lemaire var. *acicularis* L. Benson Engelmann Hedgehog
Cactus, Strawberry Cactus

Ferocactus acanthodes (Lemaire) B. & R. var. *acanthodes*

Ferocactus acanthodes (Lemaire) Britt & Rose var. *lecontei* (Engelm.) Lindsay Compass
Barrel, Bisnaga

Mammillaria grahamii Engelm. var. *grahamii*

Mammillaria microcarpa Engelm. Fishhook Cactus, Pincushion Cactus

Mammillaria tetrancistra Engelm. Corky-seed Pincushion Cactus

Neolloydia johnsonii (Parry) L. Bensen Johnsons Pineapple Cactus

Opuntia acanthocarpa Engelm. & Bigel Buckhorn Cholla

Opuntia acanthocarpa Engelm. & Bigel var. *coloradensis* L. Benson Buckhorn Cholla

Opuntia basilaris Engelm. & Bigel. var. *basilaris* Beavertail Cactus

Opuntia bigelovii Engelm. Teddy Bear Cactus, Bigelow Cholla, Jumping Cholla

Opuntia chlorotica Engelm & Bigel Pancake Pear, Clock-face Prickly Pear, Silver-dollar Cactus

Opuntia echinocarpa Engelm. & Bigel var. *echinocarpa* Silver Cholla, Golden Cholla

Opuntia leptocaulis DC. Desert Christmas Cactus

Opuntia phaeacantha Engelm. var. *discata* (Griffiths) Benson & Walkington
[=*O. engelmannii* Salm-Dyck non sensu Benson] Englemann Prickly Pear

Opuntia ramosissima Engelm. Diamond Cholla

Opuntia stanlyi Engelm. var. *kunzei* (Rose) Benson Kunze Cholla, Devil Cholla

Opuntia stanlyi L. Benson var. *peeblesiana* Benson Devil Cholla

Opuntia wigginsii L. Benson

Peniocereus greggii (Engelm.) Britt. & Rose var. *transmontanus* Desert Night-blooming Cereus

Onagraceae (Evening Primrose Family)

Camissonia boothii (Dougl.) Raven Booth Primrose

Camissonia boothii (Dougl.) Raven ssp. *condensata* (Munz) Raven

Camissonia boothii (Dougl.) Raven ssp. *decorticans* (H. & A.) Raven Woody Bottle-washer
Camissonia brevipes (Gray) Raven. Yellow Cups
Camissonia cardiophylla (Torr.) Raven Heart-leaved Primrose
Camissonia chamaenerioides (Gray) Raven Long-capsuled Primrose
Camissonia clavaeformis (Torr. & Frem.) Raven
Camissonia refracta (S. Wats.) Raven Narrow-leaved Primrose
Oenothera primiveris Gray Large Yellow Desert Primrose

Apiaceae (Parsley Family)

Bowlesia incana Ruiz & Pavon Hairy Bowlesia
Daucus pusillus Michx. Rattlesnake Weed, American Carrot

Garryaceae (Silk Tassel Family)

Garrya flavescens Wats. Quinine Bush, Silk Tassel

Fouquieriaceae (Ocotillo Family)

Fouquieria splendens Engelm. ssp. *splendens* Ocotillo, Coach Whip

Oleaceae (Olive Family)

Forestiera sp. (verisim. *pubescens* Nutt.) Desert Olive, Tanglebush
Forestiera shrevei Standl.
Menodora scabra Gray
Menodora scabra Gray var. *ramosissima* Steyerm.
Menodora scoparia Engelm. Broom Twinberry

Gentianaceae (Gentian Family)

Centaurium calycosum (Buckl.) Fern. Canchalagua, Buckley's Centaury

Asclepiadaceae (Milkweed Family)

Asclepias albicans Wats. White-stemmed Milkweed
Asclepias nyctaginifolia Gray Four O'Clock Milkweed
Asclepias subulata Decne. Desert Milkweed, Ajamete
Matelea parvifolia (Torr.) Woodson Angle-pod
Sarcostemma cynanchoides Decne. ssp. *hartwegii* (Vail) Shinnery [= *Funastrum cynanchoides* (Decne.) Schlechter and *F. heterophyllum* (Engelm.) Standl.] Climbing Milkweed

Convolvulaceae (Morning Glory Family)

Cuscuta sp. Dodder
Ipomoea coccinea L. Star Glory, Scarlet Creeper, Scarlet Morning Glory

Polemoniaceae (Phlox Family)

Eriastrum diffusum (Gray) Mason ssp. *diffusum*
Eriastrum eremicum (Jepson) Mason Desert Phlox
Gilia flavocincta A. Nels Gilia
Gilia scopulorum Jones Rock Gilia
Gilia sinuata Dougl. Gilia
Gilia stellata Heller NCN

Langloisia setosissima (Torr. & Gray) Greene Bristly Longloisia
Linanthus bigelovii (Gray) Greene
Linanthus demissus (Gray) Greene

Hydrophyllaceae (Water Leaf Family)

Eucrypta chrysanthemifolia (Benth.) Greene var. *bipinnatifida* (Torr.) Constance Torrey
Eucrypta
Eucrypta micrantha (Torr.) Heller Small-flowered Eucrypta
Nama demissum Gray var. *demissum* Brand.
Nama demissum Gray var. *deserti* Brand. Purple Mat
Nama hispidum Gray var. *hispidum*
Nama hispidum Gray var. *spathulatum* (Torr.) C.L. Hitch Hispid Nama
Phacelia ambigua Jones var. *ambigua* Notch-leaved Phacelia, Scorpionweed
Phacelia ambigua Jones var. *minutiflora* (Voss) Atwood Notch-leaved Phacelia
Phacelia crenulata Torr. var. *crenulata* Scorpionweed
Phacelia cryptantha Greene. Small-flowered Phacelia
Phacelia distans Benth var. *australis* Brand. Wild Heliotrphe
Phacelia neglecta Jones
Phacelia pedicellata Gray
Phacelia rotundifolia Torr. Round-leaved Phacelia
Pholistoma auritum (Lindl.) Lilja var. *arizonicum* (Jones) Constance

Boraginaceae (Borage Family)

Amsinckia intermedia Fisch. & Meger Coast Fiddleneck
Amsinckia tessellata Gray Checker Fiddleneck
Cryptantha angustifolia (Torr.) Greene Nievitas, Narrow-leaved Cryptantha
Cryptantha barbigerata (Gray) Greene var. *barbigerata* Bearded Cryptantha
Cryptantha holoptera (Gray) Macbr. Rough-stemmed Cryptantha
Cryptantha maritima Greene var. *maritima* White-haired Forget-me-not
Cryptantha maritima Greene var. *pilosa* White-haired Cryptantha
Cryptantha pterocarya (Torr.) Greene Wing Nut Cryptantha
Cryptantha pterocarya (Torr.) Greene var. *cycloptera* (Greene) Macbr. Wing Nut Cryptantha
Cryptantha racemosa (Wats.) Greene Woody Cryptantha
Lappula redowskii (Hornem.) Greene var. *desertorum* (Greene) Stickseed
Pectocarya heterocarpa Johnst. Hairy-leaved Comb Bur
Pectocarya platycarpa Munz & Johnst. Broad-nutted Comb Bur
Pectocarya recurvata Johnst. Arch-nutted Comb Bur
Plagiobothrys jonesii Gray Jones Popcorn Flower
Tiquilia canescens (DC.) A. Richardson Shrubby Coldenia

Verbenaceae (Vervain Family)

Aloysia gratissima (Gill & Hook.) Troncoso var. *schulzae* (Standl.) Moldenke
Aloysia wrightii (Gray) Heller Oreganillo, Wright Lippa
Glandularia gooddingii (Brig.) Solbrig Goodding Verbena
Verbena bracteata Lag. & Rodr. Prostrate Vervain

Lamiaceae (Mint Family)

Hedeoma nanum (Torr.) Brig ssp. *californicum* Stewart [= *H. thymoides* Gray]
Mock-Pennyroyal

Hyptis emoryi Torr. Desert Lavender
Monardella arizonica Epling.
Salazaria mexicana Torr. Paper-bag Bush, Bladder-sage
Salvia columbariae Benth. Chia
Teucrium gladulosum Kellogg Germander

Solanaceae (Nightshade Family, Potato Family)

Chamaesaracha sordida (Dunal) Gray
Datura meteloides DC Sacred Datura, Tolguacha, Western Jimson
Lycium andersonii Gray var. *andersonii* Anderson Thornbush
Lycium andersonii Gray var. *deserticola* C.L. Hitchc ex Munz Narrow-leaved Thornbush,
Squawberry
Lycium berlandieri Dunal. Berlander Thornbush
Lycium exsertum Gray

Lycium fremontii Gray. Fremont Thornbush
Lycium torreyi Gray Squaw Thorn
Nicotiana trigonophylla Dunal var. *palmeri* (Gray) Jones Desert Tobacco, Tabaquillo
Nicotiana trigonophylla Dunal var. *trigonophylla* Desert Tobacco
Physalis crassifolia Benth. [incl. var. *cardiophylla* (Torr.) Gray] Thick-leaved Ground Cherry
Physalis lobata Torr. Purple Ground Cherry
Solanum douglasii Dunal. Nightshade

Scrophulariaceae (Figwort Family)

Antirrhinum filipes Gray Twining Snapdragon
Keckiella antirrhinoides (Benth.) Straw ssp. *microphylla* (Gray) Straw [= *Penstemon microphyllus* (Gray) Bush Penstemon
Maurandya antirrhiniflora H. & B. Blue Snapdragon Vine
Mimulus guttatus DC Common Monkey Flower, Seep-spring Monkey Flower
Mohavea confertiflora (Benth.) Heller Ghost Flower
Penstemon pseudospectabilis Jones ssp. *pseudospectabilis* Keck Mohave Beard Tongue
Penstemon parryi Gray
Penstemon subulatus Jones Scarlet Bugler
Veronica peregrina L. ssp. *xalapensis* (HBK.) Pennell. Neckweed, Necklace Weed

Bignoniaceae (Bignonia Family)

Chilopsis linearis (Cav.) Sweet Var. *arcuata* Desert Willow, Desert Catalpa, Mimbre

Martyniaceae (Unicorn Plant Family)

Proboscidea altheaefolia (Benth.) Decne. Desert Unicorn Plant, Elephant Tusks
Proboscidea arenaria (Engelm.) Decne. Unicorn Plant

Orobanchaceae (Broom-rape Family)

Orobanche cooperi (Gray) Heller. [= *O. ludoviciana* Nutt. var. *cooperi*] Burro Weed Strangler,
Broom Rape, Cancer-root

Acanthaceae (Acanthus Family)

Anisacanthus thurberi (Torr.) Gray Chuparosa, Desert Honeysuckle
Carlwrightia arizonica Gray
Justicia californica Benth. Chuparosa, Honeysuckle

Plantaginaceae (Plantain Family)

Plantago insularis Eastw. Woolly Plantain, Indian Wheat

Plantago purshii R. & S. Pursh Plantain

Rubiaceae (Madder Family)

Galium proliferum Gray Great Basin Bedstraw

Galium stellatum Kell. var. *eremicum* Hilend & Howell Desert Bedstraw

Cucurbitaceae (Gourd Family)

Brandegea bigelovii (Wats.) Cogn. Brandegea

Cucurbita digitata Gray Finger-leaved Gourd

Campanulaceae (Bellflower Family)

Nemacladus glanduliferus Jeps. var. *orientalis* McVaugh Thread Plant

Asteraceae (Sunflower Family)

Acourtia thurberi (Gray) Reveal & King

Acourtia wrightii (Gray) Reveal & King Brownfoot

Ambrosia ambrosioides (Cav.) Payne Canyon Ragweed

Ambrosia confertiflora DC Slimleaf Bursage

Ambrosia dumosa (A. Gray ex Torr.) Payne White Bursage

Ambrosia ilicifolia (Gray) Payne Holly-leaved Bursage

Artemisia ludoviciana Nutt. Wormwood

Baccharis sarothroides Gray Broom Baccharis, Desert Broom

Baileya multiradiata Harv. & Gray Wild Marigold, Desert Bailey

Baileya pleniradiata H & G Woolly Marigold

Bebbia juncea (Benth.) Greene Chuckwalla's Delight

Brickellia atractyloides Gray

Brickellia californica (Torr. & Gray) Gray Pachaba

Brickellia coulteri Gray

Brickellia desertorum Coville. Desert Brickellia

Brickellia frutescens Gray var. *frutescens* Shrubby Brickellia

Calycoseris wrightii Gray White Tack Stem

Centaurea melitensis L. Malta Star Thistle, Tocalote

Chaenactis carphoclinia Gray Pebble Pincushion

Chaenactis carphoclinia Gray var. *attenuata* (Gray) Jones Pebble Pincushion

Chaenactis stevioides Hook. & Arn. var. *brachypappa* (Gray) Hall Esteve Pincushion

Chaenactis stevioides H & A var. *steviodes* Esteve Pincushion

Cirsium neomexicanum Gray

Conyza coulteri Gray

Dyssodia pentachaeta (DC.) Robins var. *belenidium* (DC.) Strother Thurber Dyssodia

Dyssodia porophylloides Gray San Felipe Dyssodia, Fetid Dogweed

Encelia farinosa Gray ex Torr. var. *farinosa* Brittle Bush, Incienso

Encelia frutescens Gray var. *frutescens* Rayless Encelia

Ericameria cuneatus (Gray) McClatchie, var. *spathulata* (Gray) Hall Desert Rock Goldenbush

Ericameria laricifolia (Gray) Shinnery Turpentine Brush

Erigeron divergens Torr. & Gray Fleabane, Wild Fleabane

Erigeron lobatus A. Nels. Fleabane
Eriophyllum lanosum Gray Woolly Eriophyllum, Woolly Daisy
Geraea canescens Torr. & Gray Desert Sunflower, Hairy-headed Sunflower
Gnaphalium chilense Spreng. Small-flowered Cudweed, Cotton Batting
Gnaphalium palustre Nutt., Lowland Cudweed
Gutierrezia sarothrae (Pursh.) Britt. & Rusby Broom Snakeweed
Hymenoclea monogyra T. & G.
Hymenoclea salsola T. & G. var. *salsola*
Hymenoclea salsola Torr. & Gray var. *pentalepsis* (Rydb.) Benson Burro Brush, Cheesebush
Lactuca serriola L. Prickly Lettuce, Wild Lettuce
Machaeranthera pinnatifida (Hook) Shinnery ssp. *pinnatifida* var. *pinnatifida* [= *Haplopappus spinulosus* (Pursh) DC ssp. *spinulosus*] Spiny Goldenbush
Machaeranthera pinnatifida (Hook) Shinnery ssp. *gooddingii* (A. Nels) Turner & Hartman, var. *gooddingii* [= *H. spinulosus* ssp. *gooddingii*]
Malacothrix californica DC. var. *glabrata* Eaton Desert Dandelion
Malacothrix fendleri Gray Malacothrix
Malacothrix stebbinsii Davis & Raven
Microseris lindleyi (DC) A. Gray [= *M. linearifolia* (DC) Gray] Silver Puffs
Monoptilon bellioides (Gray) Hall Mohave Desert Star
Pectis papposa Harv. & Gray Chinchweed
Perityle emoryi Torr. Emory Rock Daisy
Peucephyllum schottii Gray Pigmy Cedar, Desert Fir
Pleurocoronis pluriseta (Gray) King & Robinson Arrow Leaf
Porophyllum gracile Benth. Odora
Psathyrotes ramosissima (Torr.) Gras Velvet Rosette
Psilostrophe cooperi (Gray) Greene Paper Flower
Rafinesquia californica Nutt. California Chicory
Rafinesquia neomexicana Gray Desert Chicory, Desert Dandelion
Senecio mohavensis Gray Mohave Groundsel
Senecio vulgaris L. Common Groundsel
Sonchus oleraceus L. Annual Sow Thistle
Stephanomeria exigua Nutt var. *exigua* [= *Lygodesmia exigua* Gray] Annual Mitra
Stephanomeria pauciflora (Torr.) A. Nels. Desert Straw
Stylocline micropoides Gray Desert Nest Straw
Tessaria sericea (Nutt) Shinnery [= *Pluchea sericea* (Nutt)] Arrowweed
Trichoptilium incisum Gray Yellow Head
Trixis californica Kellogg Trixis
Viguiera deltoidea Gray var. *parishii* (Greene) Vasey & Rose Parish Viguiera
Xanthium strumarium L. (*X. saccharatum*) Common Cocklebur
Xylorhiza tortifolia (Torr. & Gray) Greene [= *Machaeranthera tortifolia* (Gray) C & K]
 Mohave Aster, Desert Aster

Appendix F

Interdisciplinary Planning Team

Bureau of Land Management

Yuma Resource Area

Kent Biddulph	Supervisory Natural Resource Specialist
Dave Daniels*	Surface Protection Specialist
Debbie DeBock*	Realty Specialist
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Teryl McCalment	Staff Assistant
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Dave Smith*	Wildlife Biologist

Yuma District Office

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Dave Curtis	Environmental Planning Coordinator
Lynn Levitt	Fire Management Officer
Brenda Smith	Resource Advisor

Arizona State Office

Jeff Jarvis	National Wilderness Program Leader
Ken Mahoney*	Wilderness Specialist

Fish and Wildlife Service

Kofa National Wildlife Refuge

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Mike Hawkes*	Assistant Refuge Manager
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Dave Siegel	Archaeologist
Jill Simmons	Writer/Editor

Arizona Game and Fish Department

Region IV - Yuma

John Hervert	Wildlife Program Manager
John Kennedy*	Habitat Program Manager
Deanna Pflieger*	Wildlife Manager
Larry Phoenix	Wildlife Manager
Richard Remington	Wildlife Manager Supervisor 3
Jimmy Simmons	Wildlife Manager
Lowell Whitaker	Wildlife Manager

*Member of Core Interdisciplinary Planning Team

Appendix G

Public Involvement

During May 1993, the FWS and BLM decided to coordinate planning efforts to develop one management plan that would cover both Wildernesses. By October 1993, planning issues at the agency staff level in preparation for proposed public meetings were identified. These meetings provided opportunities for other governmental agencies, private organizations, and the general public to express their concerns about the area and to identify additional planning issues. The meetings allowed for the public to become involved at the beginning of the planning process and provided for a better assessment of data and personnel needed to develop a draft plan.

In February 1994, public meetings were held in Quartzsite, Yuma, and Phoenix.

Approximately 30 persons attended the Yuma meeting. The Quartzsite meeting was attended by 3 persons from the Arizona Game and Fish Department (AGFD). There were 2 persons from the AGFD, 1 person each from the Sierra Club and the Arizona Desert Bighorn Sheep Society, and 1 additional private individual at the Phoenix meeting. Concerns addressed at the public meetings were included in the issues section of this interagency management plan.

A draft plan was released for a 45-day public review and comment period on January 26, 1996. The comment period was then extended to May 8, 1996. Comments received on the draft plan were analyzed by the Interdisciplinary Team and appropriate revisions were made for inclusion in the final document. A compilation of the comments is available upon request.

Appendix H

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Environmental Assessment

I. Introduction

Background

The Kofa Game Range was established by Presidential Order in 1939 and was expanded and renamed the Kofa National Wildlife Refuge (Kofa) with Public Law 94-223 in 1976. Congress gave wilderness designation to portions of Kofa and the New Water Mountains with the Arizona Desert Wilderness Act of 1990. An interagency management plan was developed by the Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (Service) in a cooperative effort with the Arizona Game and Fish Department (AGFD) to provide management guidance for Kofa and the adjacent New Water Mountains Wilderness (New Waters). This environmental assessment analyzes the potential impacts of proposed actions and management alternatives that were considered for the plan.

Background information including location, access, and a management situation description is provided on pages 1 through 20 of the plan.

Purpose and Need for the Proposed Action

National BLM and Service wilderness policies stipulate that management plans be developed for designated wildernesses. The proposed action's purpose is to provide for the preservation and enhancement of the planning area's natural features, processes, and public opportunities within the constraints of applicable laws and regulations.

II. Description of the Proposed Action & Alternatives

Proposed Action

The proposed action is to adopt and implement the Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness - Interagency Management Plan. In general, the proposed action would provide for long-term protection and enhancement of wilderness values and wildlife habitat in the planning area. Actions to restore disturbances resulting from former vehicle trails and mining activities are addressed. The proposed plan also includes measures to protect cultural resource values and addresses monitoring and maintenance needs for existing wildlife waters.

Opportunities for solitude and primitive unconfined recreation would be maintained under the proposed action. Measures to prevent the introduction and establishment of exotic species are addressed. Strategies to minimize environmental impacts from mining activities are prescribed. Scenic qualities and values of naturalness would be enhanced. Proposed management actions that could have environmental effects are listed below.

1. Rockhounding would be allowed in the New Waters but would be limited to hand methods that do not cause surface disturbances. On Kofa NWR, rockhounding would be restricted to the Crystal Hill area, but eliminated from the remainder of the refuge. Information regarding not leaving surface disturbances would be incorporated into agency outreach materials by 1998.

2. Adequate signing and distribution of information concerning restrictions to unauthorized vehicular/mechanized transport within wilderness areas would be continued (Information Displays, Map 1). Practices that minimize surface disturbances would be emphasized.
3. Barriers would be installed at the wilderness boundaries where signing alone is not effective in controlling unauthorized vehicle entry. Boulders, berms, plants or other natural materials would be preferred for use as barriers. However, if these prove ineffective, post and cable barriers would be constructed.
4. The establishment of salt cedar (Tamarisk) or other exotic plant species at wildlife waters would be controlled and discovered plants would be removed by physical or authorized chemical means. An environmental assessment would be needed for identified sites.
5. Existing burro fences would be maintained and any nuisance burros that expand their range to include the planning area would be removed.
6. Education and outreach would include: working with the Arizona Game and Fish Department to include visitor use impacts information in the annual hunting regulations by 1998; developing a joint agency brochure/map by 1998; participating in annual Quartzsite pow wow public information booth.
7. Cleaning up debris at 6 abandoned unpatented mining sites within Kofa and 1 site within the New Waters (Map 3) would be accomplished by the year 2001.
8. Two former vehicle routes (3.5 miles) in the refuge and 4 former vehicle routes (4.5 miles - Map 3) in the New Waters would be reclaimed using hand tools and other non mechanized methods to minimize visual impacts and enhance wilderness values and opportunities.
9. The Service would coordinate with the military to remove military debris as warranted.
10. Options to establish 2 field positions by 1998 for the purpose of implementing resource protection, monitoring, and public outreach provisions of this management plan for the entire planning area would be pursued.
11. Reported fires would be monitored by air with minimum altitudes of 1000 feet above ground level, or by foot access. In the New Waters, fires that exceed or are expected to exceed a 5 chain per hour rate of spread would be suppressed. Kofa fires that threaten private property, have other than a low potential for spreading beyond the planning area, or present a significant threat to unique natural resources (i.e., native palms) or, health and safety for the public, would be suppressed. Non-motorized hand tools would be used for suppression activities within wilderness portions of the planning area. The rehabilitation of disturbances caused by fire suppression activities would be completed in accordance with BLM Manual 8560.35 and Refuge Manual 6 RM 8.8C, before suppression forces are released.
12. Bighorn sheep capture and transplant work in the planning area would be considered annually in consultations between the AGFD and Kofa/BLM staff.
13. Helicopter use would be allowed as the minimum tool necessary for bighorn sheep capture operations.
14. Routine inspections of all wildlife waters, with the exception of Charlie Died Tank, would be accomplished by non-mechanical means. Maintenance of wildlife waters in wilderness would also be conducted by non-mechanical means with the exception of those listed below:
 - At Kofa #1 and Kofa #2, Adam's Well, King Well, and Charlie Died Tank, maintenance, and water supplementation would be allowed by vehicle.
 - If needed during drought periods, water would be supplemented at

- Nugget Tank using motorized equipment or vehicles
- The access method for emergency situations at wildlife waters will be determined by the Field Manager and/or Refuge Manager on a case-by-case basis, and where applicable, in consultation with AGFD. Maintenance, modification, and/or repair by motorized/mechanical means may be considered on a case by case basis.
15. The Service, BLM, and AGFD would evaluate options to install buried water systems at Charlie Died Tank and Modesti Tank, and improve the visual characteristics and/or reliability of Kofa #1 and #2 by redeveloping or relocating the wildlife waters.
 16. Nugget Tank would be improved, redeveloped, or enhanced to minimize visual impacts and reduce the need for water supplementation by 1998. The use of mechanized equipment would be allowed.
 17. The following flight operations would be provided for. A 2 week advance notification of planned flights by AGFD to the appropriate agency is desirable.
 - One low level bighorn sheep survey, averaging 8 hours of flight time in the New Waters and 60 hours on the refuge during the period of October 1 through November 30.
 - One low-level javelina and mule deer survey, averaging 8 hours of flight time in the New Waters and 15 hours on the refuge during the period from January 1 through March 31.
 - In addition, flights for monitoring water levels, supplemental wildlife surveys, or in response to emergency situations would occur if necessary.
 - Helicopter landings would be allowed for the retrieval of telemetry equipment from a sick or dead animal. Advance approval by the Service or BLM is necessary for aircraft landings within designated wilderness that are not provided for in this plan. Emergency and safety reasons are the exception.
 18. Cooperative efforts to identify needs and collect baseline data would be continued. The Service would complete all phases of the already established aerial videography project by the year 1999.
 19. Appropriate agencies would coordinate to establish seasonal closures of sensitive habitat to protect wildlife and plant species when needed. Such areas would include drought period water sources, lambing sites (Map 4), abandoned mine shafts and other sensitive habitats.
 20. By 1998, inventory abandoned mine sites, the majority of which are outside the wilderness, and install gates in such a way as to allow for continued use of bats and other wildlife. If appropriate, the mine opening may be closed. For those mine openings that are found to be within wilderness and present a safety hazard to the public, the manager will install the appropriate wildlife amenable gates using the minimum tool. Mechanized/motorized equipment would be allowed for installing gates or closing mine sites.
 21. Private lands (Map 3) within the Kofa portion of the planning area would be purchased from willing sellers. There would be a purchase target of at least 1 property per year.
 22. The BLM would pursue options to acquire a public easement through or purchase the land parcel described by Mineral Entry Patent 546603, adjacent to the New Waters in the northeast portion of the planning area (Map 3) by 1999.
 23. Information and interpretive displays would be established and maintained at access points to the planning area as funding and staff levels permit.

24. As staffing and funding allow, monthly patrols of the planning area would be conducted.
25. Leave No Trace!" land use ethics would be promoted by making appropriate information available at information displays and administrative sites.
26. Visitor registers would be included at information displays (Map 1) to provide for public assessment and comment about the quality of their recreational and wildlife appreciation opportunities.
27. Existing authorized public access routes (Map 1) would be kept open to promote dispersed visitor use and maintain opportunities for solitude.
28. The Service will continue to work with AGFD to manage the Alternate hunt (mule deer) Program on the Kofa portion of the planning area (State Game Management Unit 45).
29. Technical rock climbing and repelling would be allowed in the planning area with the provision that permanent anchors are not used and that routes are not marked.
30. Horses, mules, llamas, and burros would be allowed as recreational livestock in the planning area under these conditions: The use of feeding containers would be required, water would be packed in for livestock, and surface disturbances at campsites are to be restored. Use of pelletized feed is recommended.
31. Campfires would be allowed in the New Waters using dead, down and detached wood. Information would be provided at wilderness access displays to minimize use of campfires. Visitors to the New Waters would be encouraged to bring their own firewood. The BLM would consider campfire restrictions as a last resort.
32. The gathering of dead, down, and detached wood in nonwilderness portions of Kofa will be allowed. The Service would require that visitors to designated

wilderness on Kofa bring their campfire wood or bring charcoal or propane stoves. No native wood would be allowed to be removed from the Refuge.

33. Non-government entities would be encouraged to purchase unpatented claims on the Kofa NWR and allow claims to lapse. At least 2 non-governmental entities would be contacted by end of 1998.
34. By 1999, the Service would develop Memorandum of Understanding with the BLM to perform mining claim validity examinations within designated wilderness on the Kofa NWR and make provisions for project funding.
35. Implementation of a 25 mile per hour speed limit on county maintained roads would be recommended to Yuma and La Paz County officials.

Alternative A - No Action

Under the no action alternative, management guidance would be provided by the Wilderness Act of 1964, the Wilderness Arizona Desert Wilderness Act of 1990, and national BLM and Service resource management policies. No specific actions would be proposed for rehabilitating existing disturbances, protecting natural and cultural resources, or maintaining existing wildlife waters. However, due to existing laws, agreements, and national wilderness management policies for the maintenance of wildlife waters and wildlife management activities, wildlife management provisions would be the same as the proposed action for this alternative.

Current conditions and values would be potentially maintained under this alternative. Under this alternative, wood gathering and the possession of ironwood would continue to be allowed throughout the Refuge for campfires. Rockhounding as a recreational activity would continue to be allowed throughout the Refuge.

Alternative B - Minimal Human Impacts

Actions that would provide the maximum protection for existing natural resource and cultural values were considered for this alternative. Campfires and rockhounding would not be permitted throughout the planning area. Camp cooking on the Refuge would be allowed using only charcoal in grills or propane burners and stoves. Technical rock climbing and repelling would not be permitted on portions of the planning area administered by the Service. A permit system for the use of recreational livestock (only horses, burros, and llamas would be allowed) would be instituted on all the planning area to monitor and limit potential impacts to natural values and wildlife.

Measures for the rehabilitation of surface disturbances and maintenance of existing developments as described in the proposed action would also apply for this alternative.

III. Affected Environment

A description of the affected environment can be found on pages 1 through 20 of the proposed Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness Interagency Management Plan.

IV. Environmental Consequences

The following critical elements have been analyzed and would not be affected by the proposed action and alternatives: areas of critical environmental concern; cultural resources; prime or unique farmlands; floodplains; Native American religious concerns; threatened or endangered species; solid or hazardous wastes; water quality; wetlands or riparian zones; and wild and scenic rivers.

Impacts of the Proposed Action

Wilderness values and wildlife habitat would be enhanced and preserved for the

foreseeable future under provisions of the proposed action.

Limitations on rockhounding as a recreational use on the Refuge would prevent potential cumulative impacts to the landscape (visual), wildlife habitat, and archeological resources. Recreational opportunities for rockhounding on Kofa would be displaced to some extent. Limiting rockhounding activities on the New Waters to those that do not result in surface disturbances would minimize potential impacts to wilderness values and wildlife habitat while continuing to provide for a wide spectrum of recreational opportunities.

Providing public information at access points concerning wilderness restrictions on the use of motorized or mechanized equipment and promoting practices that minimize surface disturbances should assist in allowing the natural rehabilitation of existing disturbances as would the construction of barriers when needed. Coordinating activities among the agencies involved in developing this plan should strengthen the effectiveness of public education and outreach efforts.

Barriers to prevent motorized vehicle violations and educational displays would be located outside the wilderness. Visual impacts from the barriers and displays would be mitigated by using plants, berms, or low profile materials with low visual contrasts. Promoting "Leave No Trace" and "Tread Lightly" land use ethics within the planning area would assist in preventing new visitor use impacts to natural values and would protect cultural resources. The barriers and promotion of a low impact land use ethic would provide for the enhancement of wilderness values and wildlife habitat by allowing weathering processes to reclaim minor surface disturbances. Minimal impacts to visual resources from the barriers and displays would be offset by the long-term benefits of enhancing and preserving wilderness values, opportunities for primitive recreation, and compatible wildlife dependent activities. The construction of berms as barriers would not significantly affect erosion potentials due to

the gravelly nature of planning area soils. There would also be no significant impacts to air quality.

The potential adverse impacts to air quality would be minimized by enforcing a 25 mi/hr speed limit on all refuge roads. The Service will recommend to the Yuma and La Paz County Boards of Supervisors that a 25 mi/hr speed limit be implemented and enforced on county maintained roads within Kofa. Preventing new or continued surface disturbances from vehicle activity would reduce the potential for increased soil erosion or impacts to air quality from dust. With respect to water quality, potable water is not provided to the public and it is not expected that public activities will degrade water sources for wildlife.

Coordination between the Service and military for the removal of military debris would assure public health and safety while providing for minimum environmental impacts from these activities. There would be short-term impacts to solitude from wilderness patrols and other monitoring activities that would be offset by the long-term benefits of enhancing and maintaining wilderness values and opportunities for primitive recreation.

Monitoring reported fires at minimum altitudes of 1000 feet above ground level and suppressing fires that threaten private property or pose more than a low possibility for spread beyond the planning area boundary would minimize the potential for adverse impacts from fire related activities. In the event that fire suppression activities are required, resulting disturbances would be rehabilitated.

Preventing the introduction and establishment of exotic species by removing discovered tamarisk and other exotic plant species would protect the ecological integrity of the planning area. The use of chemicals for tamarisk control would be in accordance with guidance in BLM Manual 8560.34 and 50 CFR 35.7.

Maintaining burro use at levels existing at the time of wilderness designation would also protect vegetation resources and prevent soil

disturbances that would be associated with the establishment of a burro herd. Impacts to wilderness values from the use of helicopters for burro management activities would be temporary.

The rehabilitation of former vehicle routes in wilderness and cleanup of mining debris would restore natural values of the affected areas. Minimizing visual impacts of existing developments and reducing maintenance needs requiring mechanized or motorized equipment and vehicles would enhance natural values and opportunities for solitude. Due to gravelly soil textures, there would be no increased potential for soil erosion or significant effects on air quality. Precluding the continued use of these former vehicle routes would minimize the potential for increased erosion or possible affects on air quality from dust.

Temporary adverse impacts to wilderness values from proposed rehabilitation efforts would be limited to the vicinity of existing disturbances for the duration of each project and would ultimately result in the long-term enhancement of natural values. Opportunities for unconfined primitive recreation would continue and improve as the rehabilitation of existing surface disturbances occurs.

Allowing the use of motorized or mechanized equipment and vehicles for maintenance, improvement, reconstruction, relocation, or emergency water supplementation at existing wildlife waters would temporarily impact wilderness visitors (loss of solitude) and wildlife (stress) but would provide for maintaining species diversity for the long-term. Over the long-term, temporary adverse impacts from water source maintenance, improvement, reconstruction, or relocation activities would be offset by actions designed to reduce visual impacts from any developments and minimize maintenance needs. There are short-term wildlife impacts (stress) from sheep captures that are justified by the continued successful efforts to preserve sheep populations. The administrative use of helicopters for wildlife surveys, and sheep captures would also result in short-term distur-

bances to wildlife and wilderness visitors. These short-term impacts would be offset by the long-term benefits of providing information to allow for informed wildlife management decisions and further efforts to preserve bighorn sheep populations. Seasonal closures to protect sensitive wildlife habitat during critical periods would temporarily affect recreational opportunities for the duration of the closures but would ultimately benefit wildlife.

Cooperative efforts to identify needs and collect baseline data would improve our knowledge of natural resource management and assist in the timely identification of resource protection issues. An inventory of abandoned mine sites and the identification and implementation of appropriate actions would result in the protection of wildlife habitat and improve public safety. The use of visitor registers to provide for public assessment of existing recreational opportunities or resource conditions would assist the BLM and Service in making resource management decisions that would be more acceptable for the public.

Keeping existing public access routes open would assist in dispersing visitor use and maintaining opportunities for solitude. Acquiring legal public access to the Hidden Tank area through patented land (or acquisition of the land) in the northeast of the planning area would allow for continued public enjoyment of the area and/or the protection of important sheep lambing grounds. The potential for adverse impacts to natural values, recreational opportunities, and wildlife habitat would be minimized.

Continuing the Alternative Hunt Program (mule deer) on Kofa would improve the quality of recreational opportunities. Allowing technical rock climbing and rappelling with the provision that permanent anchors not be used and trail marking not be practiced would preserve natural values. Restricting wood gathering and the possession of ironwood on Kofa to nonwilderness corridors and other non-wilderness areas, and requiring visitors to bring their own campfire wood for wilderness

area camping would protect wildlife habitat and natural values. Being that visitor use in the New Waters is substantially lower than Kofa, dead, down, and detached wood use would continue to be permitted in the New Waters unless there was an increase in potential for adverse impacts to wildlife habitat.

The acquisition of mining claims and patented lands in the planning area (on a willing seller basis), would minimize the potential for adverse impacts to wildlife habitat and natural values (and all environmental factors analyzed in this assessment) in addition to providing increased recreational opportunities. The development of a Memorandum of Understanding between the Service and BLM to conduct mining claim validity examinations on Kofa would minimize the potential for adverse impacts from nonviable mining operations.

Impacts of Alternative A - No Action

Current conditions and opportunities would be maintained under Alternative A. With this alternative, existing laws, regulations, and policies would be followed without an integrated management strategy. Impacts from wildlife management activities would be the same as the proposed action. There would be an continued potential for the introduction of exotic species.

There would be no temporary adverse impacts from rehabilitation efforts or barrier construction at wilderness boundaries. In the long-term, there would be a lower quality of naturalness due to the continuing presence of existing human disturbances. Over a course that may take several centuries, weathering processes would eventually restore the natural appearance of surface disturbances. The lack of site displays to promote "Leave No Trace" and "Tread Lightly" would lessen the opportunity for providing visitor information that would assist in enhancing and maintaining existing natural values. Efforts to control unauthorized vehicle use in wilderness would be substantially more difficult.

As rockhounding would continue throughout the refuge in this alternative, there would be a continued potential threat to the archeological resources of the Refuge, which could be purposefully or inadvertently taken in violation of the Archeological Resources Protection Act and Refuge regulations. In addition, less control over illegal vehicle use in the area creates the possibility of undesirable intrusions into various bighorn sheep lambing grounds in the northern portion of the Refuge during critical periods. There would be a continued potential for cumulative adverse impacts to the natural landscape.

In this alternative, continuing to allow the collection of dead and downed native ironwood throughout the refuge would eventually result in the complete depletion of this slowly disappearing resource.

This alternative would not prohibit the placement of permanent anchors or bolts in support of technical rock climbing and repelling. There would be noted impacts to rock faces if this activity would occur.

Impacts of Alternative B - Minimal Human Impacts

While Alternative B would provide the most protection for natural resources and wilderness values from potential adverse impacts, there would be restrictions on the full range of compatible uses in the planning area. Under this alternative campfires and overnight camping would be restricted. Only day-use would be permitted. This could result in decreased visitor use and therefore provide outstanding opportunities for solitude. On the Refuge, wood burning for campfires would be completely eliminated. Camp cooking would be allowed using charcoal grills or propane burners and stoves. These restrictions would eliminate damage caused in the collection of dead and downed wood and would minimize potential visual impacts from campfire rings.

In this alternative, the elimination of technical rock climbing and repelling would prevent the possibility of damage to rock faces

and surfaces by the use of temporary and permanent bolts and anchors.

Provisions for the rehabilitation of surface disturbances and maintenance of existing developments as described in the proposed action would also apply for this alternative. Therefore, potential impacts described in these categories for the proposed action would also apply here.

Cumulative Impacts

Cumulative impacts include impacts on the environment which result from incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Implementing the proposed action would eliminate the potential for cumulative impacts to wildlife habitat, naturalness, visual resources, and wilderness values from rockhounding activities on Kofa. Different policies are being proposed by the BLM and Service for rockhounding because of the difference in mandates and the significant difference in magnitude of visitor use occurring in each jurisdiction.

The same case applies for different firewood gathering policies between the agencies. Prohibiting firewood gathering on Kofa wilderness also addresses the substantial potential for cumulative adverse impacts to wildlife habitat from this activity because of the magnitude of visitor use. It should be noted that the casual observer or visitor who returns to Kofa each year would not likely notice the adverse impacts of firewood gathering because the impacts are cumulative and gradual, occurring over the long-term.

In general, the proposed action provides for the protection, enhancement, and maintenance of wilderness values, wildlife habitat, and visual and cultural resources within the planning area. The potential occurrence of adverse cumulative impacts is also minimized.

V. Consultation and Coordination

Information about consultation, coordination, and public involvement can be found in Appendix F and Appendix G of the proposed Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness - Interagency Management Plan.

Environmental Justice

Consideration was given to local minority and low income groups which may be adversely affected by the proposed action or alternative. The interdisciplinary planning team determined that none of the proposed actions or alternatives would adversely affect these groups.

Finding of No Significant Impact/Decision Record

**Kofa National Wildlife Refuge & Wilderness
and
New Water Mountains Wilderness
Interagency Management Plan**

Environmental Assessment Number: EA-AZ-055-95-105

Finding of No Significant Impact: Based on the analysis of potential environmental impacts contained in the attached Environmental Assessment, I have determined that impacts are not expected to be significant, therefore an Environmental Impact Statement is not required.

Decision: It is my decision to approve provisions of the Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness - Interagency Management Plan within the jurisdiction of my agency.

Rationale for Decision: Long-term direction is provided for the planning area to: enhance and preserve wilderness values; manage wildlife and habitat and preserve biological diversity; maintain high quality recreational opportunities compatible with special land designations; and minimize environmental impacts from mining. The plan allows for changes to management direction based on monitoring and periodic evaluations.

Plan provisions for lands administered by the Bureau of Land Management (BLM) conform with agency legal mandates.

Plan provisions for lands administered by the U.S. Fish and Wildlife Service (USFWS) conform with agency legal mandates.

Other Alternatives: No Action and Minimal Impact alternatives were also considered.

Stipulations: The proposed action incorporates all mitigation.

Recommended by: Gail Ccheson Jan 17, 1997
Field Manager, Yuma Field Office Date

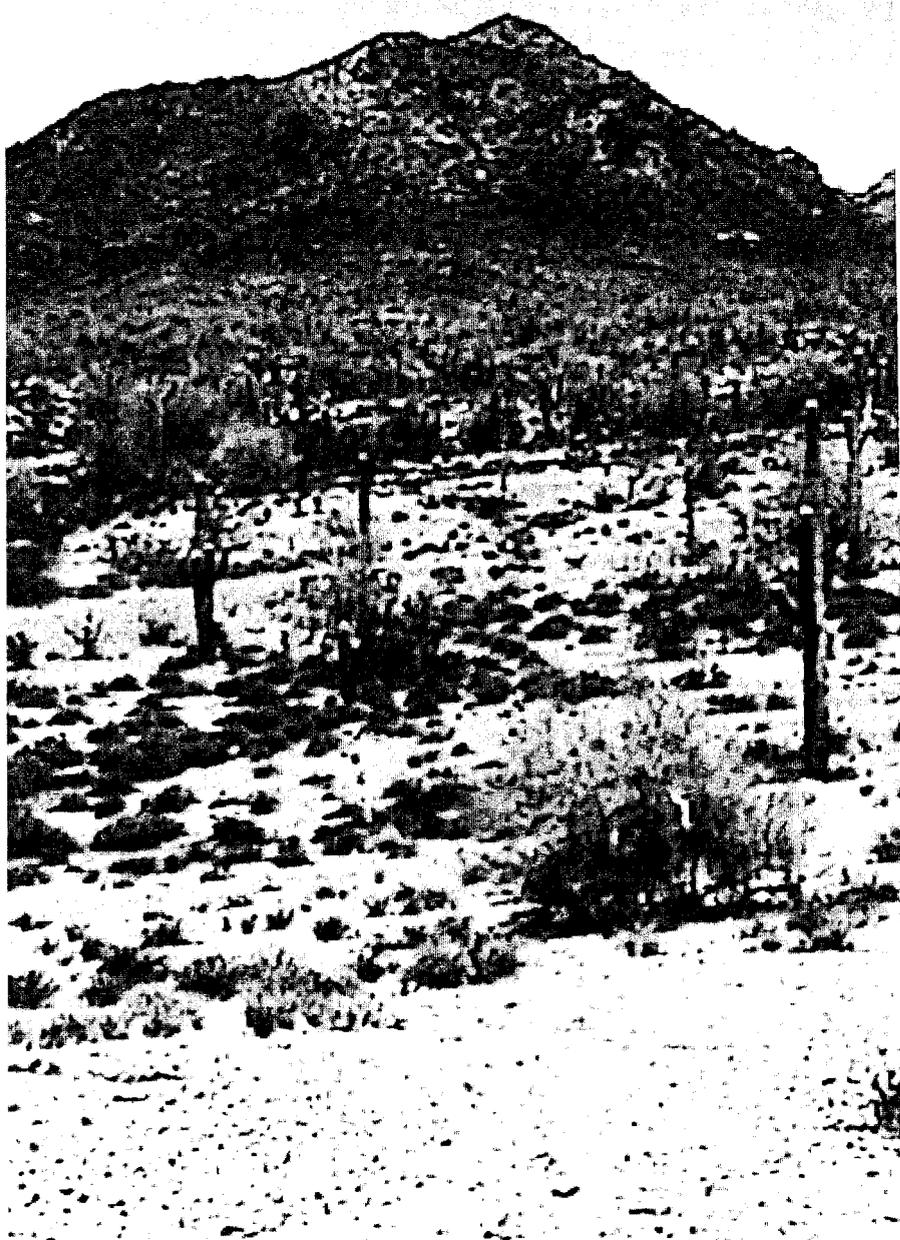
Recommended by: Carol Demberg - Acting Jan 17, 1997
Kofa National Wildlife Refuge Manager Date

Approved by: Nancy D. F. Berber Jan 21, 1997
BLM State Director, Arizona Date

USFWS Concurrence by: Jeff Fontaine III, Acting Jan 22, 1997
Geographic Manager Gila/Salt/Verde Ecosystem Date

Approved by: Nancy M. Kaufman 1/29/97
USFWS Regional Director, Region 2 Date

EXHIBIT
A-8
Admitted



Case No.: 130

Docket No.:

L-0000A-06-0295-00130

**SUPPLEMENTAL
PACKET #2**

AUGUST 2006

**APPLICATION FOR
A CERTIFICATE OF
ENVIRONMENTAL
COMPATIBILITY**

**DEVERS-PALO
VERDE NO.2
TRANSMISSION
LINE PROJECT**

Prepared for:

**Arizona Power Plant
and Transmission Line
Siting Committee**

Submitted by:

**Southern California
Edison Company**

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- 3 BLM Right-of-Way Amendment Application
- 4 50 CFR 29.21
- 5 Comprehensive Management Plan, Kofa NWR & Wilderness

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**Testimony of
Johannes P. Pfeifengerger**

**before the
Arizona Power Plant and
Transmission Line Siting
Committee**

August 2006

Witness Background

- **Education**
 - ▶ M.S. (Dipl. Ingenieur) in Power Engineering and Energy Economics, University of Technology, Vienna, Austria, 1989
 - ▶ M.A. in Economics and Finance, Brandeis University, 1991
- **Professional**
 - ▶ Principal and Director of The Brattle Group, an economic consulting firm with offices in Cambridge, MA; Washington D.C.; San Francisco; London; and Brussels
 - ▶ Over 15 years of experience in energy economics, regulation, and policy
 - ▶ Co-manages The Brattle Group's utility practice area

Witness Background

- Experience
 - ▶ Assisting American Transmission Company in evaluation of transmission projects
 - ▶ Investigated 2000-01 Western power crisis and Enron gaming activities
 - ▶ Worked with independent transmission system operators (ISOs), including the California ISO (CAISO)
 - ▶ Testimony on transmission policy, utility rates, procurement planning, power contracts, and utility mergers before arbitration panel, FERC, and state regulatory commissions in CA, CO, IL, ME, and NY
 - ▶ Articles, reports, and presentations on transmission access, utility industry challenges, energy market modeling, ratemaking and incentive regulation, industry restructuring, and market power

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Overview of Testimony

- Regional perspective to provide context for DPV2
- Arizona results in SCE Report to CAISO
- Economic benefits of DPV2 on Arizona
- Impact on Arizona generation
- Impact on Arizona natural gas

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Summary of DPV2 Economic Impacts on Arizona

- DPV2 is important in regional transmission planning and reliability
- DPV2 provides a number of important economic benefits to Arizona
 - ▶ Reliability benefits
 - ▶ Construction and tax benefits
 - ▶ Liquidity, investment climate, and resource utilization benefits
 - ▶ Improved resource diversity and Arizona transmission access to low-cost coal and renewable resources
- The estimated value of these benefits to Arizona exceeds the estimate of Arizona costs found in SCE's report to CAISO

Summary of DPV2 Economic Impacts on Arizona

- DPV2 impact on Arizona generation is minimal because exports to California occur mostly during off-peak hours and off-peak seasons
 - ▶ Increases Arizona generation used for exports during peak load periods by only about 50 MW
- DPV2 impact on Arizona natural gas demand is minimal

Context for DPV2: Regional Perspective

The Need for New Transmission in the West

"Western Governors find that a strong and resilient transmission and distribution grid is critical to electricity affordability and reliability"

"Development of new electric transmission lines is important to allow the region to diversify its generating resources and protect the region from price and supply shortage shocks."

"Both inter- and intra-state transmission is needed to support [renewable] resources and should be fast tracked for permitting and environmental reviews ... Transmission is a critical limiting factor"

(Western Governors' Association Policy Resolution 06-10, "Clean and Diversified Energy for the West", p. 3; WGA 2006 Annual Report, p. 9; and Report of the Clean and Diversified Energy Advisory Committee (CDEAC) to the Western Governors, June 2006, p. 14) <http://www.westgov.org/wga/policy/06/clean-energy.pdf>; <http://www.westgov.org/wga/publicat/annrpt06.pdf>; <http://www.westgov.org/wga/initiatives/cdeac/CDEAC06.pdf>

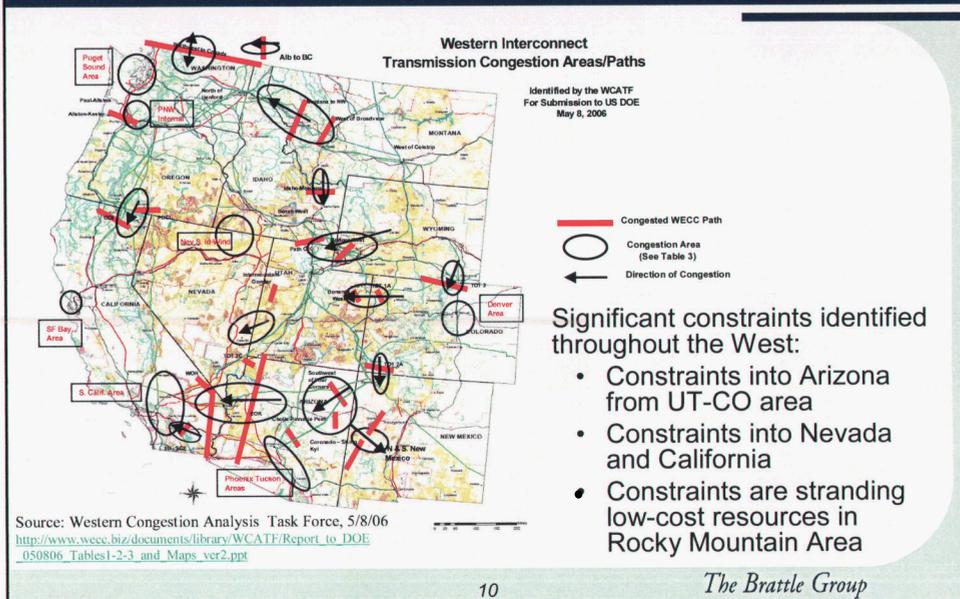
Regional Trade of Electricity and Other Energy

- Electric transmission facilitates regional trade of electricity, similar to trade in other products and services
- Trade across state lines is very common, including in energy products. For example:
 - ▶ Arizona does not have any oil refineries but imports its gasoline (approx. 3 billion gallons a year) from refineries in California (63%) and Texas (37%)
 - ▶ Baja LNG facility will supply both California and Arizona markets starting in 2008
 - ▶ Arizona utilities import power from plants in Colorado and New Mexico
 - ▶ Transmission projects (e.g., Frontier, TransWest Express) planned to bring low-cost coal and renewable resources in Rocky Mountain area to AZ, CA, NV and OR markets

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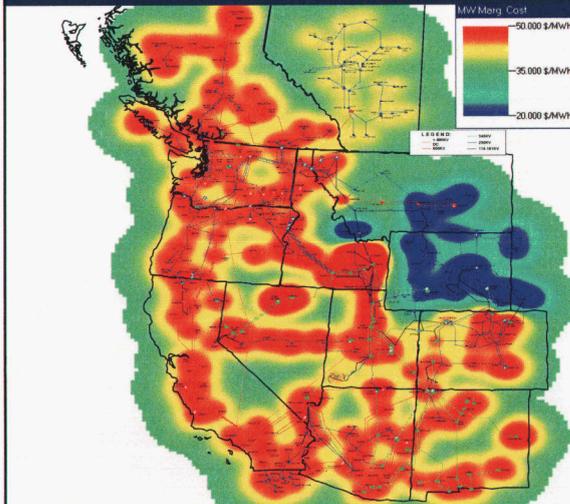
Significant Constraints Exist Throughout the West



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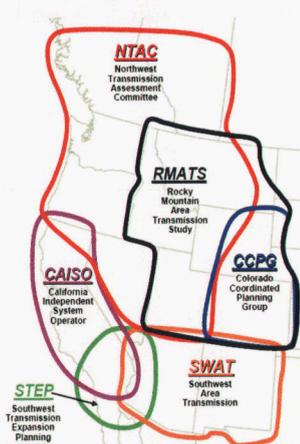
Constraints are Stranding Low-cost Resources



Rocky Mountain Area Transmission Study (as reported in Western Congestion Assessment Study, May 8, 2006)
http://www.wecc.biz/documents/library/WCATF/Report_to_DOE_050806_Templates_Report_ver3.doc

- RMATS congestion analysis shows low cost resources in WY and MT are trapped due to insufficient transmission capacity
- Stated RMATS objective: "construct new transmission to export an additional 3900 MW out of the RMATS region to meet needs in the West, particularly California"

Transmission Options are Evaluated by a Number of Regional and Sub-regional Planning Efforts



- Regional and sub-regional transmission planning groups
 - ▶ Groups include utilities, regulators, transmission providers, generators and other interested parties
 - ▶ WECC/SSG-WI studies region-wide needs and help coordinate sub-regional planning effort
- Committee on Regional Electric Power Coordination (CREPC)
 - ▶ Joint committee of the Western Interstate Energy Board (technical arm of WGA) and the Western Conference of Public Service Commissioners
 - ▶ Joined with WECC/SSG-WI to identify congested paths and facilitate planning
- Private initiatives
 - ▶ Frontier, TransWest Express, Northern Lights

RMATS - <http://pac.state.wy.us/tdoca/subregional/home.htm>

CAISO - <http://www.caiso.com/transportation/index.html>

NTAC - <http://www.nwip.org/ntac>

SWAT - <http://www.strover.com/swat>

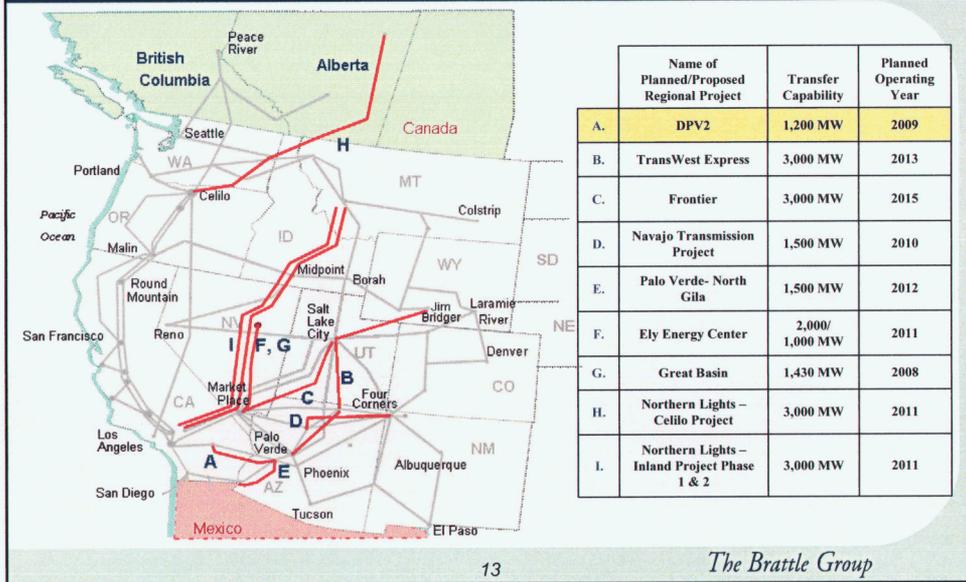
STEP - <http://www.caiso.com/docs/2002/11/04/200211041749022131.html>

CCGP - <http://ccgp.hawaii-electric.com>

CREPC 4-0-06 - SWAT Status of Transmission Expansion -

http://www.westgov.org/wieib/meetings/crepcsprg2006/briefing/present/06Apr06/r_kondziolka.pdf

DPV2 is Part of Regional Transmission Expansion



Arizona Results in SCE's Report to CAISO

Arizona Results of SCE's Report to CAISO

To understand the results in SCE's Report to the California ISO, it is important to understand:

- Background on California markets
- The meaning of terms and results shown in SCE's report to the CAISO
- DPV2 economic benefits not reflected in SCE's report

Arizona Results of SCE's Report to CAISO

- **Background on California markets**

Overview of California Market Structure

- Restructuring of California utility industry in the late 1990s
 - ▀ California utilities (including SCE) were required to divest most of their generation assets to independent power producers and prevented to enter into long-term contracts
 - ▀ Formed CAISO to operate transmission system and spot market for power
- Changes since 2000-01 Western power crises
 - ▀ Instituted long-term resource planning under which utilities procure power through long-term contracts or plant ownership
 - ▀ Substantial new generation has been built in California and more is under construction or planned
 - ▀ New transmission has been and is being built to increase efficiency and insure against future market power abuses

DPV2 in Context of California Market Structure

- CAISO operates the transmission facilities for all its participants, which includes the regulated utilities (SCE, PG&E, SDG&E) and a number of small municipal utilities
 - ▀ SCE will own DPV2, but CAISO will operate and schedule it
 - ▀ No priority to SCE: all market participants have equal access to the additional transmission capacity, including Arizona utilities and independent generators
- All CAISO-operated transmission facilities are paid for by all users of the CAISO grid
 - ▀ DPV2 constructed and owned by SCE
 - ▀ DPV2 cost recovered from all users of the CAISO grid

Arizona Results of SCE's Report to CAISO

- **Meaning of terms and results shown in SCE's report**

Arizona Results in SCE DPV2 Report

Arizona Benefits (Real \$2004 in millions)

	2009	2010	2011	2012	2013	2014
Consumer Surplus	(\$25)	(\$37)	(\$39)	(\$40)	(\$45)	(\$45)
URG Producer Surplus	\$18	\$27	\$29	\$29	\$31	\$30
Transmission Congestion Revenue	(\$1)	(\$2)	(\$2)	(\$2)	(\$2)	(\$2)
Net Benefits	(\$7)	(\$11)	(\$11)	(\$12)	(\$16)	(\$17)

Source: Figure 13, Appendix G, SCE Report to CAISO, March 17, 2005 update

Note:

- Only the "Net Benefits" are meaningful; shows a small (~0.2%) potential increase in variable costs to Arizona utilities before considering offsetting benefits
- "Consumer Surplus", "URG Producer Surplus", and "Transmission Congestion Revenues" are based on a calculation that assumes a fully restructured market in which power is sold and bought at spot market prices

Meaning of Terms Used in SCE Report

- SCE Report showing Arizona impact is based on CAISO TEAM framework and terminology for restructured markets:
 - ▶ “Consumer Surplus” assumes that Arizona utilities hypothetically supply all load at spot market prices
 - ▶ “URG Producer Surplus” are the hypothetical profits that Arizona’s utilities would realize (and pass on to ratepayers) if all their generation was sold at spot market prices
 - ▶ “URG” means “utility-retained generation,” e.g., generation owned by APS, SRP, TEP, not merchant generation
 - ▶ “Transmission Congestion Revenues” would be revenues collected by the Arizona utilities and passed on to customers if the utilities operated in a market with congestion pricing
- Only the sum, “Net Benefits” are a meaningful representation of Arizona costs (before considering offsetting benefits)

Features of SCE’s Model Used for CAISO Report

- SCE studied DPV2 based on the CAISO’s Transmission Economic Assessment Methodology (“TEAM”)
- Used standard industry simulation model:
 - ▶ Estimates production costs and market clearing prices
 - ▶ Model inputs include existing and new generation and transmission facilities
 - ▶ Scenarios to capture uncertainties in load forecasts, natural gas prices, and hydro generation
- Like other models, also employs simplifying assumptions:
 - ▶ Perfect competition
 - ▶ No long-term contracts (all purchases at spot market prices)
 - ▶ No reliability dispatch of high-cost units
 - ▶ None of future Arizona generation is owned by utilities

Summary of Arizona Results in SCE Report to CAISO

- Only the sum, “Net Benefits,” measures estimated change in “costs” to Arizona utilities (before considering other benefits)
- Shows a small (~0.2%) potential increase in variable supply costs to Arizona utilities
- Even these “Net Benefits” overstate impact on Arizona:
 - ▶ Modeling assumptions overstate impact on quantified Arizona costs (e.g., assumes all new Arizona generation built by merchant generators)
 - ▶ The model does not address other offsetting benefits

Arizona Results of SCE’s Report to CAISO

- **DPV2 economic benefits not reflected in SCE’s report**

“Net Benefits” Do Not Include Important Arizona Benefits

- The model used to quantify “Net Benefits” only focuses on variable operating costs and estimated market prices; it does not measure any other Arizona benefits
- Limited scope of this type of model is widely recognized

“The real societal benefit from adding transmission capacity come in the form of enhanced reliability, reduced market power, decreases in system capital and variable operating costs and changes in total demand. The benefits associated with reliability, capital costs, market power and demand are not included in this [type of] analysis.”

(SSGWI Transmission Report, Oct 2003; emphasis added)

DPV2 Benefits Not Reflected in SCE’s Report to CAISO

The DPV2 Project provides a number of important benefits to Arizona and the region as a whole:

- Increased reliability
- Benefits from construction and taxes
- Greater liquidity
- Greater fuel and load diversity
- Improved generation investment climate
- Improved resource utilization
- Complements and supports TransWest Express project
- Improved access to renewable resources

The estimated value of these benefits to Arizona exceeds the estimate of Arizona costs found in SCE’s report to CAISO

**Discussion of
Arizona Economic Benefits
Provided by DPV2**

Economic Benefits of the DPV2 Project

- **Increased reliability**

Examples of Major Transmission Outages

Event	Impact	Estimated Cost
12/82 Northwestern transmission outages	12,350 MW curtailed; 5.2 million customers in CA, NV and AZ	~\$60 million per hour
2/84 Pacific-AC- Intertie outage	7,900 MW curtailed; 3 million customers in southern WECC for up to two hours	~\$40 million per hour
7/96 WECC-wide outage	11,800 MW curtailed 2 million customers for several hours; CA and AZ part of "island" separated from rest of WECC	~\$60 million per hour
8/96 WECC-wide outage	28,000 MW curtailed; 7.5 million customers for up to 9 hours; Southern CA and AZ part of "island" separated from rest of WECC	~\$140 million per hour
7/04 Fire at Westwing substation	APS lost 25% of import capability into Phoenix area; narrowly escaped rolling blackouts	
1965, 1967, 1977, 1998, 2003	Large Eastern outages; cost of 2003 outage alone estimated to range from \$6 billion to \$29 billion	

Frequency of Transmission Outages

While large-scale outages of over 10,000 MW are relatively rare, there are many events with curtailments in the 100 MW to 10,000 MW range:

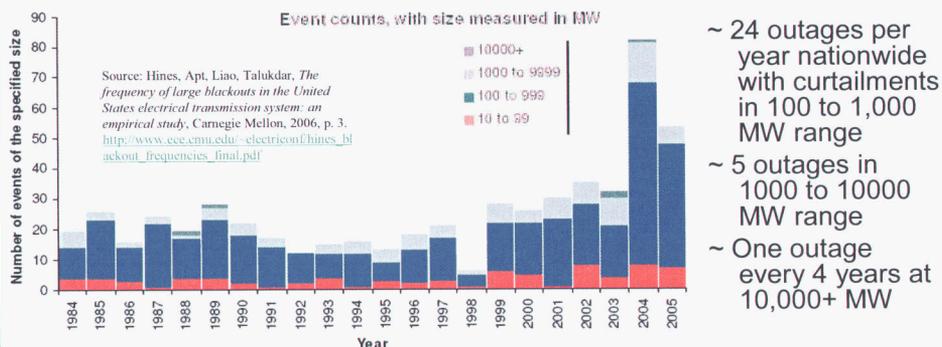


Figure 2.2 — Blackout frequencies for the years 1984 to 2005. Size here is measured in the number of MW interrupted. 2004 and 2005 data come from the EIA (2005 data is for Jan-Sept only), all other data is from the NERC DAWG records.

Reliability Benefit of DPV2

- Economic importance of reliability
 - ▶ Major Western outages in 1980s and 1990s curtailed up to 28,000 MW, costing hundreds of millions of dollars each
 - ▶ Several smaller, more localized outages each year
- Importance of Palo Verde to region-wide reliability
 - ▶ Palo Verde system elements affects even the Northwest
 - ▶ ACC staff found extreme events at Palo Verde would require curtailment of several thousand megawatts of load
- SCE studied reliability benefit of DPV2 during extreme contingencies at Palo Verde:
 - ▶ Contingencies studied based on ACC's PV Hub Risk Assessment
 - ▶ Shows that DPV2 would reduce "load drop" requirements of studied contingencies by up to 2,300 MW

Illustration of DPV2 Reliability Benefit

- Possible magnitude of DPV2 reliability benefit:
 - ▶ 5 contingencies over life of line (~1 event every 10 years)
 - ▶ DPV2 to avoid curtailment of 2,000 MW per event, 50% or 1,000 MW of it in Arizona
 - ▶ Duration of 2 to 6 hours per event
 - ▶ Consumer cost ("value of lost load") at least \$5,000/MWh on average
- Value of avoiding potential curtailment-related costs to Arizona consumers over life of DPV2 line:
 - ▶ \$50 million (2 hours x 1,000 MWh x \$5,000/MWh x 5 events); to
 - ▶ \$150 million (6 hours x 1,000 MWh x \$5,000/MWh x 5 events)
 - ▶ Possibly much more

Economic Benefits of the DPV2 Project

- **Benefits from construction and taxes**

Benefits from Construction and Taxes

Construction benefits*	\$86 million over 2 years (incl. \$7.2 million fiscal)
Property tax benefits*	\$17 million over 10 years
Merchant excise tax benefit	\$36 million over 10 years
Merchant corporate tax benefit	\$3.2 million over 10 years

*Source: Pollack Study, Exhibit J, p. 3

Economic Benefits of the DPV2 Project

- **Greater liquidity**

Importance of Liquidity at Palo Verde

- Liquidity is defined as the ease with which power can be bought or sold at the prevailing price
- The current lack of liquidity in power markets is very costly to market participants
- Significant ongoing efforts by industry and policy makers nationwide to improve liquidity
- Additional transmission is needed at the Palo Verde Hub to increase liquidity

Benefits of Increased Liquidity

- Lower transactions costs on all purchases and sales
- Lower risk premium built into market prices
- Lower risk of market manipulation
- Improved risk management
- Reduced risk of overpaying by Arizona utilities
- Improved long-term planning, contracting, and investment decisions
- Facilitates regulatory oversight through increased transparency

How DPV2 Improves Liquidity

- Allows more buyers and sellers to reach the Palo Verde hub
- Improves interconnection with more liquid Southern California hub
- Provides transmission to and from hub at more predictable costs and subject to less curtailment risk
- Reduces economic deliverability risk and hub price volatility caused by outages of individual generation or transmission assets in the region

Illustration of Transactions Cost Benefit

- Improving liquidity reduces the bid-ask spreads, a commonly-used measure of transactions costs
- Bid-ask spreads at less liquid hubs can be 50 cents to \$1.50 per MWh higher than at more liquid hubs
- With approx. 60 million MWh in annual purchases and sales by Arizona utilities, 10 to 25 cents in reduced transaction costs saves \$6 million to \$15 million per year in the long-term
- This is only one of the discussed liquidity-related benefits

Economic Benefits of the DPV2 Project

- **Greater fuel and load diversity**

Benefits of Greater Fuel and Load Diversity

Additional transmission capability between California, Arizona, and surrounding regions means:

- Greater fuel diversity for generation (coal, hydro, renewables, nuclear)
- Increased diversity in fuel transportation options (e.g., pipelines, LNG)
- Diversification benefits due to different times of peak loads

Result: less volatile market prices

lower region-wide cost

Increased reliability of supply

Economic Benefits of the DPV2 Project

- **Improved generation investment climate**

DPV2 Improves Generation Investment Climate

- Independent power producers as “manufacturers” will locate where costs are low and products can reach markets
- Transmission into Palo Verde has lagged behind generation development; underutilized IPP generation and depressed market prices will make additional generation investment less attractive
- If DPV2 not approved
 - ▶ Palo Verde generation would be stranded more permanently, undermining off-system sales opportunities and financial health of generation owners
 - ▶ Would signal regulatory risks and poor investment climate to future generation developers

Improved Investment Climate Benefits Arizona

- Stranding generation at Palo Verde would come at significant long-term costs
 - ▶ With 500 to 600 MW of annual load growth, Arizona needs to add substantial new supplies as early as 2011 irrespective of DPV2
 - ▶ Poor investment climate would increase the required return on investment for all new generation plants needed to supply Arizona
- Illustration of potential benefits
 - ▶ Total capital costs will gradually increase as new generation investment needs to be added
 - ▶ If the required return on investment increases by just 0.1 percent (e.g., from 10% to 10.1%), total capital costs of the cumulative new generation investment increase by \$60 million per year over the life of DPV2

Economic Benefits of the DPV2 Project

- **Improved resource utilization**

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DPV2 Lowers Costs by Improving Resource Utilization

- DPV2 increases utilization of significantly underutilized generation capacity at Palo Verde, particularly during off-peak hours and off-peak seasons
- Increased off-system sales opportunities reduces costs to Arizona utilities and their ratepayers

"From our perspective, that line has the potential to expand our wholesale power markets, and the California market offers some important business opportunities ... Greater access into those markets helps us to reduce our own customers' costs. APS views it positively. Anything that continues to improve and strengthen the Western grid can only be seen as positive"

California Energy Markets, July 28, 2006, p. 18 (quoting Alan Bunnell, an APS spokesman)

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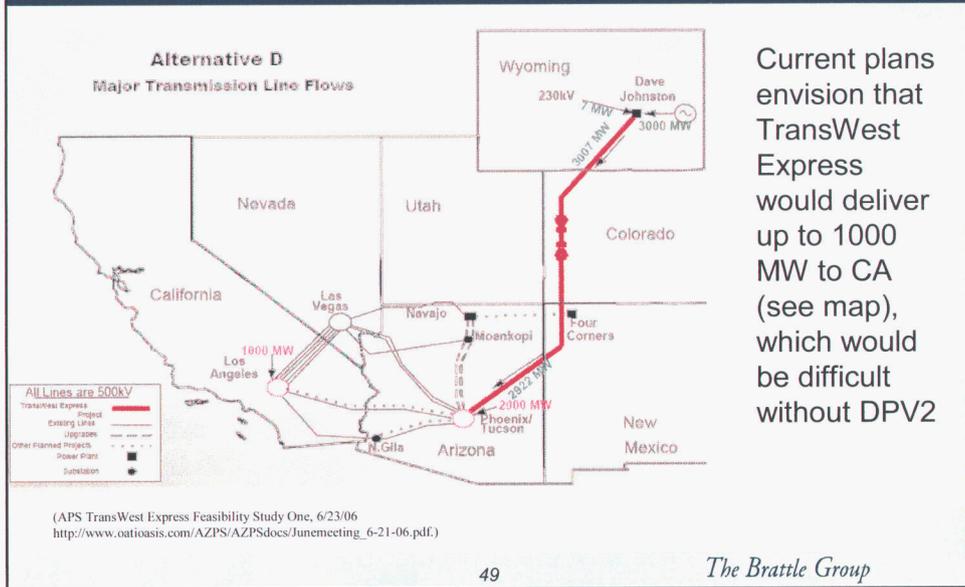
Economic Benefits of the DPV2 Project

- **Complements and supports TransWest Express**

DPV2 Complements TransWest Express Project

- TransWest Express would bring up to 3,000 MW of efficient, low-cost coal and wind generation in Rockies to Western markets around 2013:
 - ▶ 1,500 to 2,000 MW to Arizona
 - ▶ 500 to 1,000 MW to California
 - ▶ up to 1,000 MW to Utah and Nevada
- Feasibility in part dependent on integration with DPV2 and other transmission projects (e.g., Frontier, Northern Lights)
- Without DPV2, Rocky Mountain partners likely will find TransWest Express to be a less attractive option to reach desired markets compared to alternatives lines

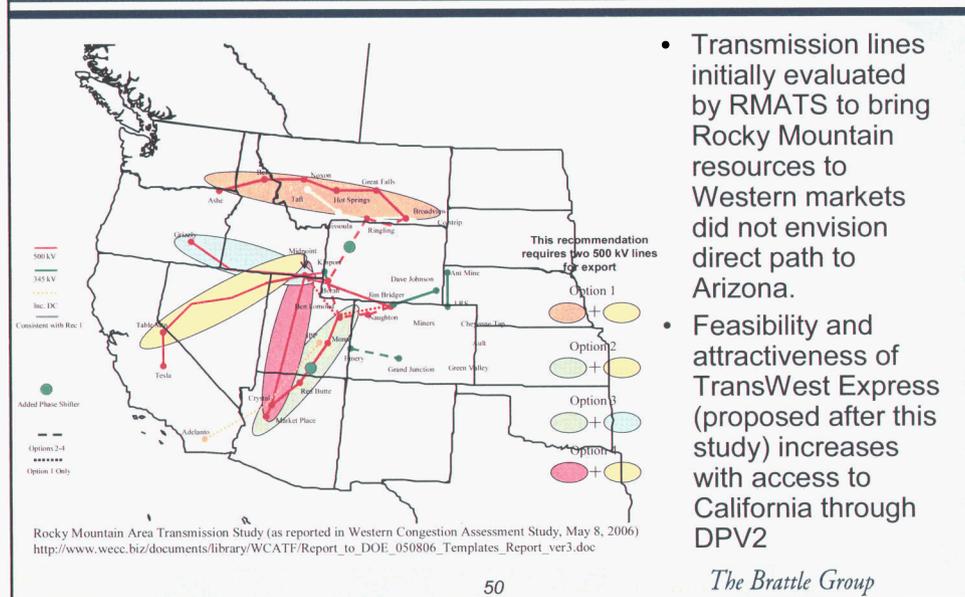
TransWest Express Project Requires AZ-CA Path



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Alternative Transmission Paths Explored by RMATS



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Illustration of TransWest Express-Related Benefits

- Even modest delays of TransWest Express would likely be very costly to Arizona
 - Lost value of low-cost imports
 - Increased project costs
- Illustration of annual cost advantage of power imported from low-cost resources in Wyoming area:
 - Approx. \$20/MWh resource cost differential between Arizona and Wyoming
 - Envisioned deliveries of TransWest Express to Arizona: 1,500 to 2,000 MW
 - At approx. 80% capacity utilization, Arizona would import 10 to 15 million MWh a year.
 - Value: \$200 million to \$300 million for each year of delay

Economic Benefits of the DPV2 Project

- **Improved access to renewable resources**

Improved Access to Renewable Resources

- “Both inter- and intra-state transmission is needed to support [renewable] resources and should be fast tracked for permitting and environmental reviews ... Transmission is a critical limiting factor”

(Report of the Clean and Diversified Energy Advisory Committee (CDEAC) to the Western Governors, June 2006)

- DPV2 offers or facilitates improved transmission access to significant amounts of renewable generation
 - ▶ Improves access to substantial renewable resources in southern California (11,000 MW of wind, biomass, geothermal)
 - ▶ Facilitates Arizona access to 6,000 MW of wind resources in Rocky Mountain Area by facilitating TransWest Express
 - ▶ Facilitates transmission access to 6,000 MW of wind resources in New Mexico by facilitating project Zia

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Improved Access to Renewable Resources

CDEAC High Renewable Scenario

State Development Renewable Generation (GW) (2005-2015)

Source: Western Governors' Clean and Diversified Energy Initiative (CDEAC) Scenarios, presented at 4/6/06 CREPC Meeting (2015 estimates); http://www.westgov.org/wiebi/meetings/crepcsprg2006/briefin/present/06Apr06/1_carr.pdf



California:

- 11,000 MW of wind, biomass, geothermal
- Directly accessible through DPV2

New Mexico:

- 6,000 MW of wind
- DPV2 facilitates access through project Zia

Wyoming:

- 6,000 MW of wind
- DPV2 facilitates access through TransWest Express

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Proposed New Arizona Renewable Resource Standards

- Increasing to 5% in 2015 and 15% in 2025, 70% of which could be imported
- Arizona utilities would need to add approx. 200 MW per year of renewable resources in 2013-15 period
- “Arizona has abundant solar energy, but is somewhat limited in availability of other major renewable energy resources. ... Arizona utilities will need to have access to low-cost renewable energy resources both from inside as well as from outside of Arizona.”

(ACC Staff Report, “Proposed Amendments to the Environmental Portfolio Standard Rules, Docket No. RE-00000C-05-0030, February 2006, p. 12)

Benefit of Access to Renewable Resources

- Transmission is needed to provide access to low-cost renewables
- For example, if project Zia were to be delayed by one year, building more solar instead of lower-cost wind power in New Mexico would increase costs by \$130 million
 - In 2015, approximately 150 MW of renewable resources could be imported by Arizona utilities to satisfy the renewable resource standard
 - The cost of solar power will exceed that of wind power plants by \$800 to \$1000 per kW of installed capacity

Economic Benefits of the DPV2 Project

Conclusion: Benefits to Arizona expected to exceed costs

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Overall Impact: Arizona Benefits Exceed Costs

	Description and Order of Magnitude	2006 Present Value (\$millions)	
		2009-2015	2009-2055
Costs			
1. Increases in Arizona "costs" (SCE report)	\$11-17 million per year	(\$52)	(\$148)
Benefits			
2. Construction benefits	\$86 million in 2008-09	\$64	\$64
3. Annual tax benefits			
Property taxes	\$17 million over 10 years	\$5	\$9
Exise taxes on natural gas	\$36 million over 10 years	\$9	\$27
IPP corporate income taxes	<u>\$3.2 million over 10 years</u>	<u>\$0.8</u>	<u>\$2</u>
Subtotal	\$56 million over 10 years	\$15	\$39
4. Reliability benefits	\$50-150 million over life of line	\$11	\$20
5. Liquidity benefits	\$6-15 million per year	\$20	\$54
6. Diversification benefits	reduced risk	n/a	n/a
7. Improved investment climate	increasing to \$60 million per year	\$3	\$47
8. Improved resource utilization	lower Arizona costs	n/a	n/a
9. Synergies with TransWest Exp.	\$200+ million, more diversity	\$90	\$90
10. Renewable resource access	\$130+ million, more diversity	\$48	\$48
Total benefits		\$251	\$361
Net benefits		\$199	\$214

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DPV2 Impact on Arizona Generation

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Minimal Impact on Availability of Arizona Generation

- SCE study shows DPV2 increases Arizona generation output mostly during off-peak seasons and hours:
 - ▶ Only approx. 30-50 MW during July/August peak hours
 - ▶ Approx. 100 MW during June-Sept peak hours
 - ▶ Approx. 230 MW on average over the course of the entire year
- 50 MW of additional on-peak generation means:
 - ▶ DPV2 on-peak impact is only 0.25% of AZ generating capacity
 - ▶ At 500-600 MW annual load growth, it will move up Arizona's need for new generating capacity by 1 month some time after 2011
- Increases utilization of Arizona resource with only minimal effects on generation capacity available to serve Arizona peak loads

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Why is DPV2's Impact on AZ Generation so Small?

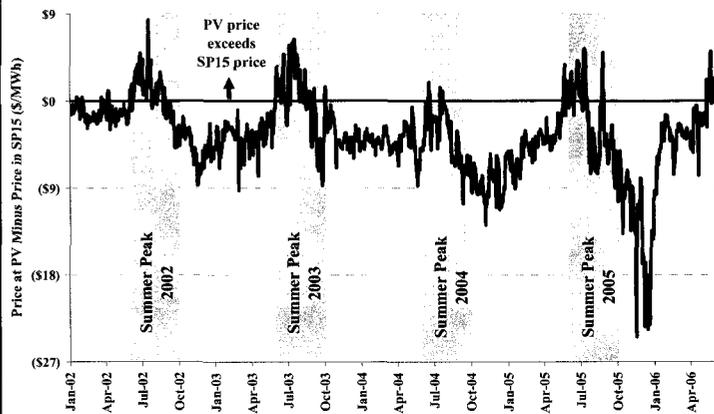
- SCE's study shows average flows on 1,200 MW DPV2 line are 910 MW:
 - Average generation in Arizona increases by approx. 230 MW
 - Remainder (approx. 680 MW) comes from reduced flow on other transmission lines and reduced Arizona exports to other, less profitable markets
- Imports into California economic only when Arizona spot prices are low when Arizona generation is not needed to serve Arizona load
- During summer peak, high spot market prices in Arizona tend to make exports into California uneconomic

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Why is DPV2's Impact on AZ Generation so Small?

PV-SP Price Differentials for DA Peak Energy (Jan 1, 2002-Jun 15, 2006)



Source: DA volume-weighted average prices from ICE, available at <https://www.theice.com/marketdata/naPower/naPowerHistory.jsp>.

Price at Palo Verde (PV) exceeds price in Southern California (SP) during summer peak periods

Makes uneconomic most imports from PV during summer peak hours

DPV2 will not change these fundamentals

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DPV2 Impact on Arizona Natural Gas Supply

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Impact of DPV2 on Natural Gas Use by Generators

- DPV2 only slightly increases natural gas used for power generation in Arizona
 - ▶ Average natural gas use by Arizona generators increases by 3.5-3.8% in 2010-2015
- But leaves natural gas used by generators in region virtually unchanged
 - ▶ Natural gas use up only 0.05% in regional market area (California, Arizona, southern Nevada, and northern Mexico)
 - ▶ Natural gas use slightly down in entire West (WECC)
 - ▶ Increased utilization of Arizona generation reduces natural gas use of other (less efficient) power plants, particularly in California

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Planned Pipeline and Storage Expansions

- DPV2 increase of Arizona Winter peak gas demand is minimal (38-75 MMcf/d) compared to already-planned new supplies:
 - ▶ Phoenix Lateral (Transwestern) 500 MMcf/d
 - ▶ Arizona Natural Gas Storage (El Paso) 350 MMcf/d
 - ▶ North Baja Expansion (TransCanada/Sempra) 572 MMcf/d
 - ▶ SoCalGas Turnback of El Paso Capacity 557 MMcf/d
- Two in-state expansions will ease local gas transmission constraints in the Phoenix area
 - ▶ El Paso's FERC-approved East Valley Lateral project
 - ▶ Transwestern's planned Phoenix Lateral

Summary of DPV2 Economic Impacts in Arizona

Summary of DPV2 Economic Impacts on Arizona

- DPV2 is important in regional transmission planning and reliability
- DPV2 provides a number of important economic benefits to Arizona
 - ▶ Reliability benefits
 - ▶ Construction and tax benefits
 - ▶ Liquidity, investment climate, and resource utilization benefits
 - ▶ Improved resource diversity and Arizona transmission access to low-cost coal and renewable resources
- The estimated value of these benefits to Arizona exceeds the estimate of Arizona costs found in SCE's report to CAISO

Summary of DPV2 Economic Impacts on Arizona

- DPV2 impact on Arizona generation is minimal because exports to California occur mostly during off-peak hours and off-peak seasons
 - ▶ Increases Arizona generation used for exports during peak load periods by only about 50 MW
- DPV2 impact on Arizona natural gas demand is minimal

Qualifications of Johannes P. Pfeifenberger

Johannes Pfeifenberger is a Principal and Director of *The Brattle Group* where he co-manages the firm's utility practice area. He received a M.A. in Economics and Finance from Brandeis University and holds a M.S. ("*Diplom Ingenieur*") in Electrical Engineering, with a specialization in Power Engineering and Energy Economics from the University of Technology in Vienna, Austria. Before joining *The Brattle Group* in 1991, Mr. Pfeifenberger was a consultant with Cambridge Energy Research Associates of Cambridge, Massachusetts, and a research assistant at the Institute of Energy Economics in Vienna, Austria.

TESTIMONY AND REGULATORY FILINGS

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2

Randall D. Palmer
Environmental Planning Group (EPG)
Coordinator - Visual Resource Studies



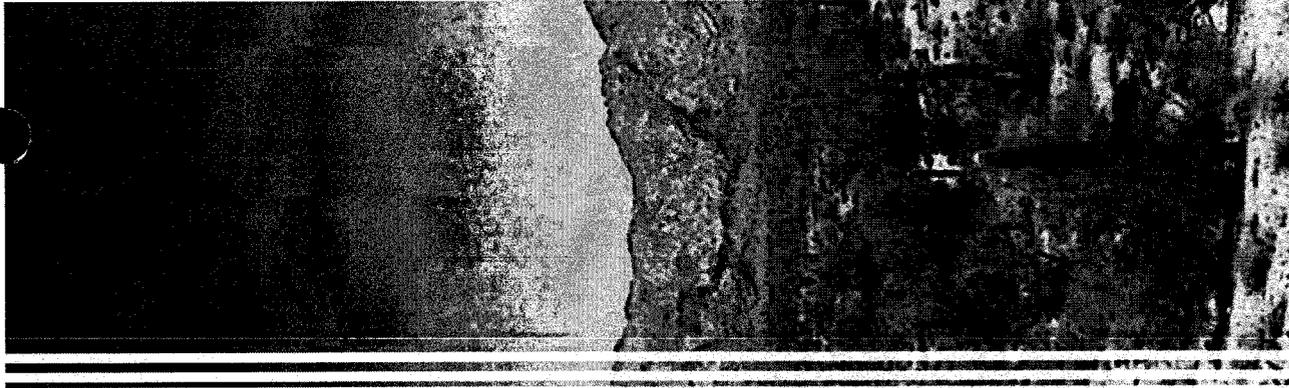
Witness Background

- **Education**
 - MLA, Landscape Architecture, Harvard University, 1984
 - BS, Outdoor Recreation – Landscape Architecture, Colorado State University, 1980
- **Experience**
 - MJP Associates, Fort Collins, Colorado 1977-1980
 - Teaching and Research Assistant, Harvard University 1983-1984
 - Instructor of Landscape Architecture, Colorado State University, University of Colorado 1984-1985
 - Dames & Moore, 1984-1999
 - Visual (including simulations), Recreation, and Land Use Specialist
 - Project Manager
 - Environmental Planning Group (EPG) Phoenix, Arizona 1999-2006
 - Partner, Principal, and Project Manager
 - Visual, Recreational, and Land Use Specialist



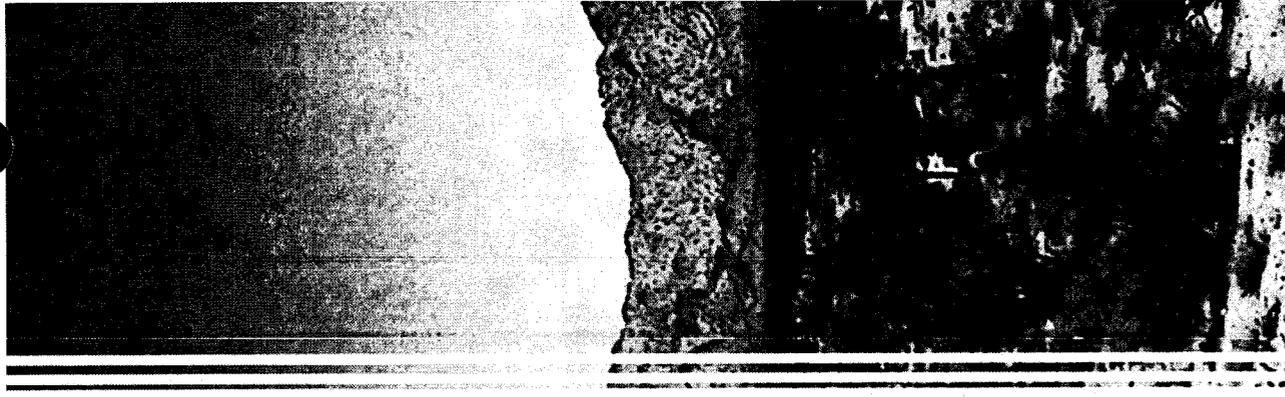
Related Project Experience

- Managed/coordinated over 20 energy related studies including EISs, EAs, ERs, CUPs, PEAs, DNAs for low-high voltage transmission lines, substations, and power plants
- Served as visual resource/land use specialist on an additional 15 energy related projects
- Seven 500kV transmission lines
- Experience in Arizona, California, many other western states, and Canada
- Testified before the State Siting Committee on 4 previous occasions
- Federal lands including BLM, USFWS (refuges), USFS, NPS, BIA, BOR
- Experience and Familiarity with BLM (VRM), USFS (VQO), visual methods and systems
- Experience with transmission lines in context with environmentally (visually) sensitive settings



Role in DPV2 Project

- Developed visual resource assessment methodology
- Principal investigator for visual resource studies for the PEA and CEC application
- Supervised visual resource study team



Scope of Testimony

- **Visual studies approach**
 - Reasoning for approach
 - Visual study components
- **Analysis on the Kofa NWR**
 - Visual inventory
 - Overview of conditions on the Kofa
 - Visual impacts and recreational uses
- **Comparison with other studies**
- **Summary**



Visual Study Approach

The approach was based on Bureau of Land Management (BLM) Visual Resource Management (VRM) concepts (Handbooks BLM 8410-1 and 8431-1) given that:

1. The BLM manages a large portion of the lands within the project area in Arizona (BLM lead and presence of a designated utility corridor on public lands)
2. The predominance of landscape settings crossed by the 500kV transmission line (especially in Arizona) are natural, and the need for consistency in the characterization of inventory elements and impacts (e.g., methods should not change at jurisdictional boundaries if the landscape setting remains similar as in the case of the Kofa NWR
3. The need to maintain consistency with past visual resource study methods used for 500kV transmission lines as approved by the Arizona Power Plant and Transmission Line Siting Committee



Visual Study Components

- **Visual Inventory**
 - Scenic Quality
 - Sensitive Viewers
- **Visual Impact Assessment**
 - The contrast introduced by the new transmission line as it affects scenic quality and sensitive viewers



Visual Inventory



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EDISON
AN EDISON INTERNATIONAL Company

Scenic Quality

- Scenic Quality is a measure of the visual appeal of an area of land. As defined by the BLM, the premise of this evaluation is that all public lands have scenic value, but areas with the most variety have the greatest scenic value.
- Lands were rated based on their aesthetic appeal (scenic quality) using seven factors:
 - Landform
 - Vegetation
 - Water
 - Color
 - Adjacent scenery
 - Scarcity
 - Cultural modifications
- Ratings:
 - Class A Scenery – Distinctive Quality/ Maximum Variety
 - Class B Scenery – Moderate Variety
 - Class C Scenery – Common/Minimal Variety



Summary of Scenic Quality

- While portions of the Kofa are more scenic than others, the terrain and associated vegetation crossed by the proposed transmission line are Class B and Class C scenery
- The landscape has been modified by the presence of the existing DPV1 500kV transmission line, natural gas pipeline, road, ancillary facilities and signs



Visual Sensitivity

- Visual sensitivity reflects the degree of concern for scenic quality and change in views from sensitive viewer locations within the project area (e.g., recreation views)
- Factors used in the identification of sensitive viewers included:
 - type of users
 - amount of use
 - public interest
 - adjacent land use
 - special areas
- Factors used in the identification of the effects to these viewers included the distance to the proposed project and special viewing conditions



Viewer Sensitivity

- **Viewer sensitivity:**
 - was determined to be high, based on the designation as a National Wildlife Refuge, in conjunction with the adjacent Wilderness Area(s)
- **Sensitive viewer locations:**
 - were primarily associated with the pipeline road, or from dispersed recreation use areas (wilderness and backcountry views), with limited formally designated recreation sites



Distance Zones

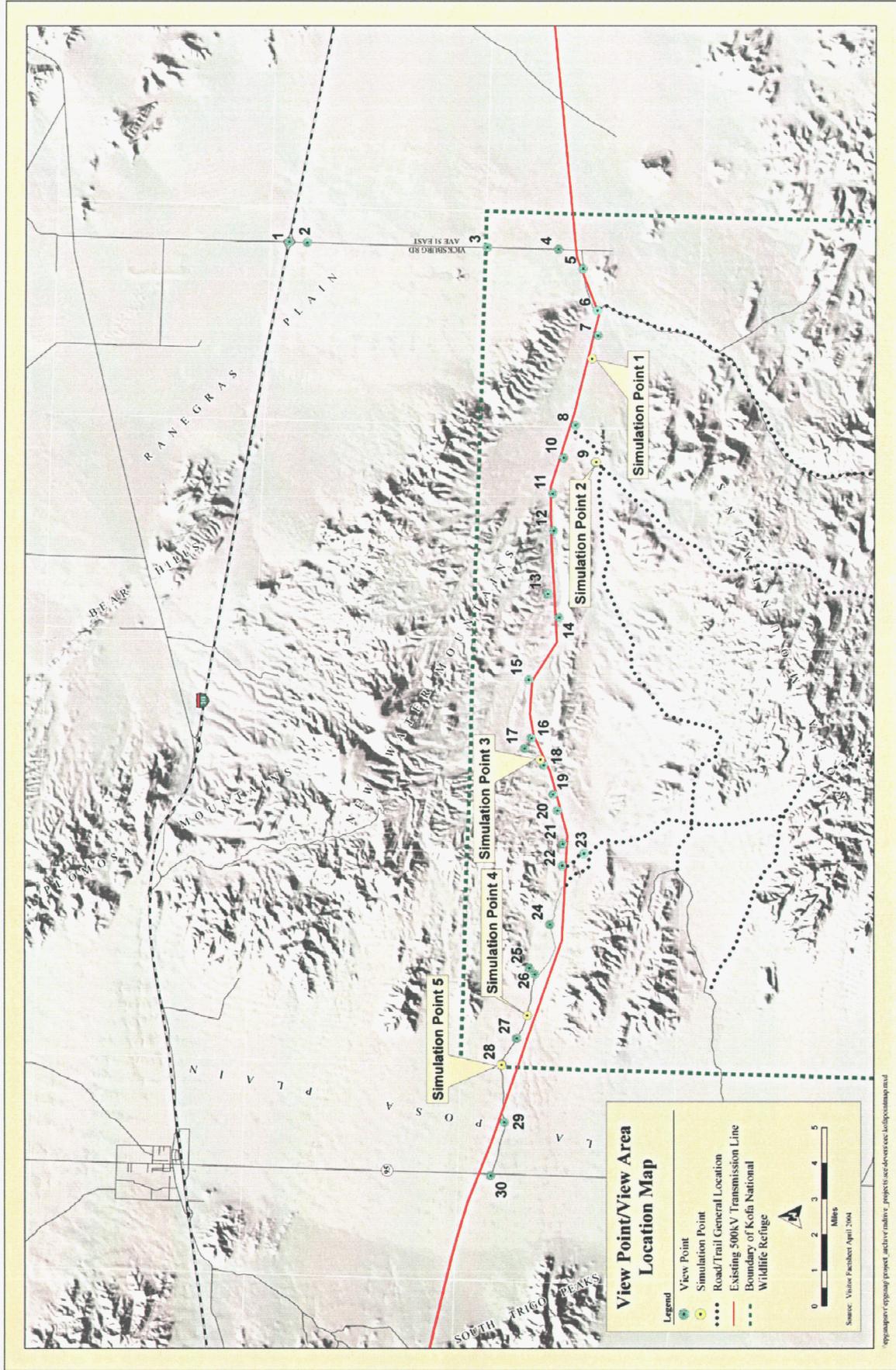
- Having identified sensitive viewers, the next step in the inventory was the identification of the distance from which new facilities would be viewed, and the general condition of these views.
 - Foreground Views - Typically, individual objects are seen in greater detail in the foreground (0 to 0.5 mile).
 - Middleground Views - The middleground (0.5 to 3 miles) is an area where objects are typically viewed in relationship to patterns rather than individual features.
 - Background Views - In the background (3 to 15 miles) landscapes are viewed as horizon lines and tones where atmospheric conditions often dominate.
- Viewing conditions range from open, to partially/fully screened, and backdropped to skylined



Overview of Project Area



View Location Map



Visual Impacts

- The measure of potential adverse impacts on visual resources is based on visual contrast and the effects of this contrast on the project setting (scenic quality) and to sensitive viewers.
- Visual contrast is a measure of the degree of perceived change that would occur in the landscape due to the construction and operation of the proposed Devers-Harquahala transmission line.
- Consistent with BLM procedures, contrast was evaluated based on landform, vegetation and structure contrast.



Visual Contrast

- **Landform Contrast** - associated with the construction of roads and tower pad sites
- **Vegetation Contrast** - removal of vegetation (vegetation manipulation) associated with road construction, tower pad sites, and conductor clearance
- **Structure Contrast** - introduction of new structures and potential contrast with other structures in the landscape (e.g., existing 500kV transmission line, gas pipeline, etc.)



Contrast Levels

- **None** - The element contrast is not visible or perceived.
- **Weak** - The element contrast can be seen but does not attract attention.
- **Moderate** - The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- **Strong** - The element contrast demands attention, will not be overlooked, and is dominant in the landscape.



Mitigation

- Matching existing tower types
- Matching spans and tower heights to the extent feasible
- Selective tower placement
- Use of dulled steel structures and non-specular conductors
- Use of existing access roads



Landform Contrast

- No major additional new access would be required for the construction of towers and the stringing of conductors (use of existing pipeline road, and existing spur roads, to the extent feasible)
- Grading and modifications to landforms in the area are anticipated to be limited and associated primarily with access to, and leveling of, tower pad sites
- Overall landform contrast for the project on the Kofa NWR would be moderate/weak



Vegetation Contrast

- Given the existing access, vegetation clearing (primarily desert scrub and creosote) would be primarily limited to spur road construction and leveling of tower pad sites
- Overall vegetation contrast for the project on the Kofa NWR would be moderate/weak



Structure Contrast

- The proposed DPV2 500kV transmission line would parallel the existing DPV1 line
- New structures (similar in form, line, color, and texture) would match existing DPV1 structures
- Spans and tower heights would match the existing DPV1 facilities to the extent feasible
- Overall structure contrast for the project on the Kofa NWR would be weak



Overall Project Contrast

- Overall Project Contrast would be moderate/weak to weak (the element contrast can be seen but does not attract attention to the project or dominate the view). The proposed 500kV line will be designed similar to the existing line, match existing tower spans, and is anticipated to require limited grading and vegetation removal.



Impacts to Scenic Quality

- The contrast levels were evaluated in context with the scenic quality in order to determine overall impacts to scenic quality.

PROJECT CONTRAST	SCENIC QUALITY RATING		
	A	B	C
Strong	high	high-mod	mod-high
Moderate/Strong	high-mod	mod-high	moderate
Moderate	mod-high	moderate	mod-low
Moderate/Weak	moderate	mod-low	low-mod
Weak	mod-low	low-mod	low

Impacts to Scenic Quality

- As illustrated in the previous table, impacts to scenic quality on the Kofa NWR are expected to be generally low to moderate-low
- While portions of the Kofa are more scenic than others, the terrain and vegetation crossed by the proposed project are class C and B, and the setting has been modified by the presence of the existing natural gas pipeline, pipeline road, associated pipeline facilities and signs, and the existing DPV1 500kV transmission line
- Introduction of the new 500kV line adjacent to the existing line, and in a modified corridor, would result in less than significant impacts to the overall scenic quality of this area of the Kofa NWR



Impacts to Sensitive Viewers

- The recreational users in the Kofa NWR, Kofa Wilderness Area and New Water Mountains Wilderness Area were determined to be of high sensitivity.
- The *Kofa National Wildlife Refuge and Wilderness and New Water Mountains Wilderness Interagency Management Plan and Environmental Assessment (1996)*, estimated approximately 50,000 users per year on the Kofa NWR and 500 users per year for the New Water Mountains Wilderness Area.
- Annual visitor estimates, based on vehicle counts, are approximately 6,000 on the eastern end of the corridor and 7,000 at the western end of the corridor (2005).
- Field reviews indicated that a total of 18 individuals had visited the Kofa Cabin in April, 2006 and a total of 7 individuals in May, 2006 (sign-in sheet).



Impacts to Sensitive Viewers

- Project contrast levels were evaluated in context with the distance from which the transmission line would be viewed from sensitive viewpoints.

PROJECT CONTRAST	DISTANCE ZONES				
	0 to 1/2 mile	1/2 to 1 mile	1 to 2 miles	2 to 3 miles	3 + miles
Strong	high	high-mod	mod-high	moderate	mod-low
Moderate/Strong	high-mod	mod-high	moderate	mod-low	low-mod
Moderate	Mod-high	moderate	mod-low	low-mod	low
Weak/Moderate	moderate	mod-low	low-mod	low	low
Weak	mod-low	low-mod	low	low	low

Impacts to Sensitive Viewers

- The proposed project will be seen from the Kofa NWR and wilderness areas from locations ranging from the immediate foreground along the existing pipeline/transmission line access road (0 - 1/2 mile) to the middleground and beyond (dispersed recreation use).
- These views are within the context of the existing transmission line where the landscape has been previously disturbed (modified) and contrast levels are weak to weak/moderate.
- Based on this assessment, impacts to sensitive viewers on the Kofa NWR are expected to be generally low to moderate.



Comparison with Other Studies

- Previous and Current Visual Studies for the Devers-Palo Verde #2 Project:
 - SEIS (1987, WESCO/BLM)
 - PEA (2005, EPG/SCE)
 - CEC Application (2006, EPG/SCE)
 - DEIR/EIS (2006, Aspen/BLM)



Summary

- The proposed route across the Kofa NWR parallels an existing 500kV transmission line in a modified setting for the entire length
- This location of facilities combined with project design and mitigation effectively reduces impacts to visual resources on the Kofa NWR





Viewpoint 1 - Looking South



Viewpoint 2 - Looking South



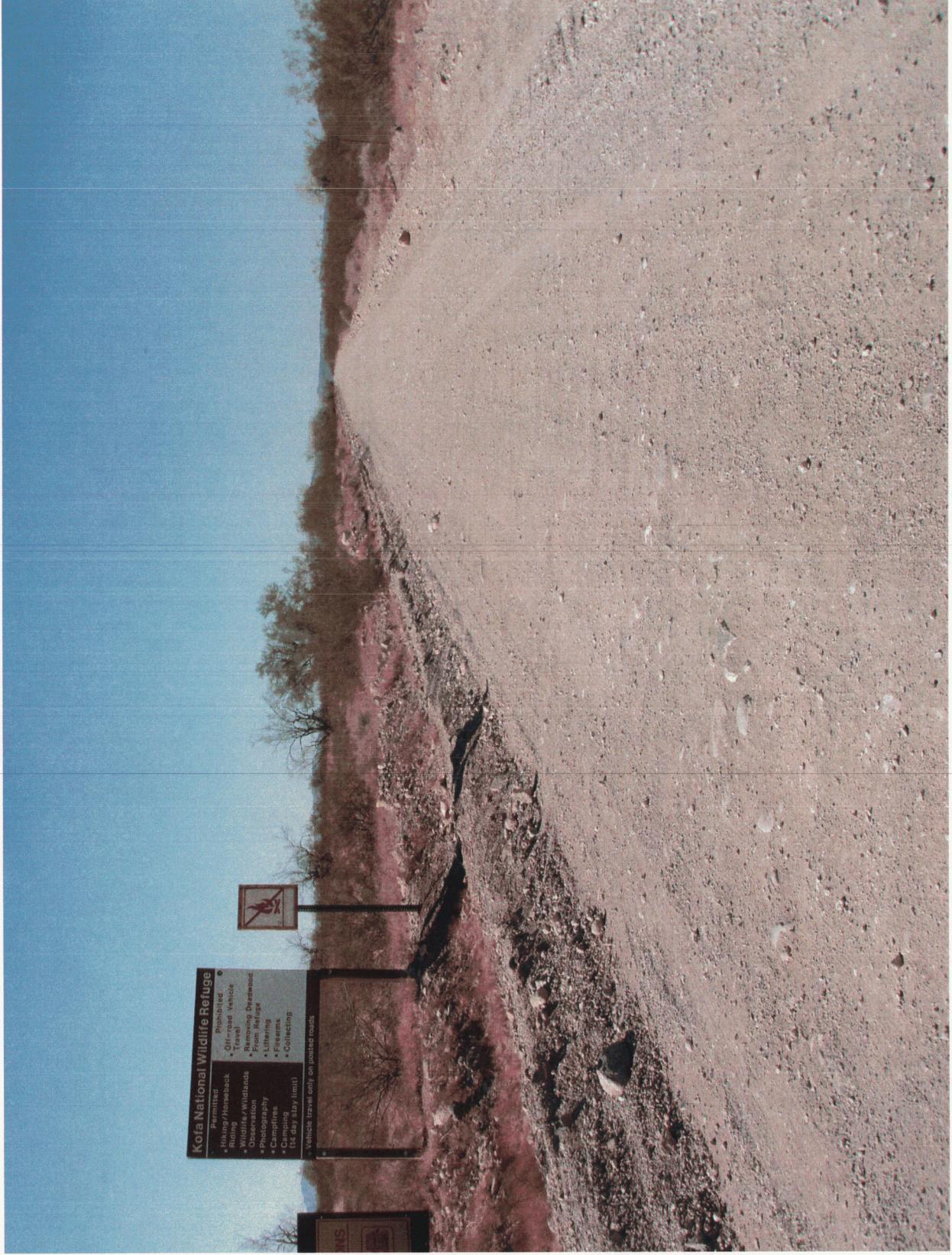
Viewpoint 3 - Looking South



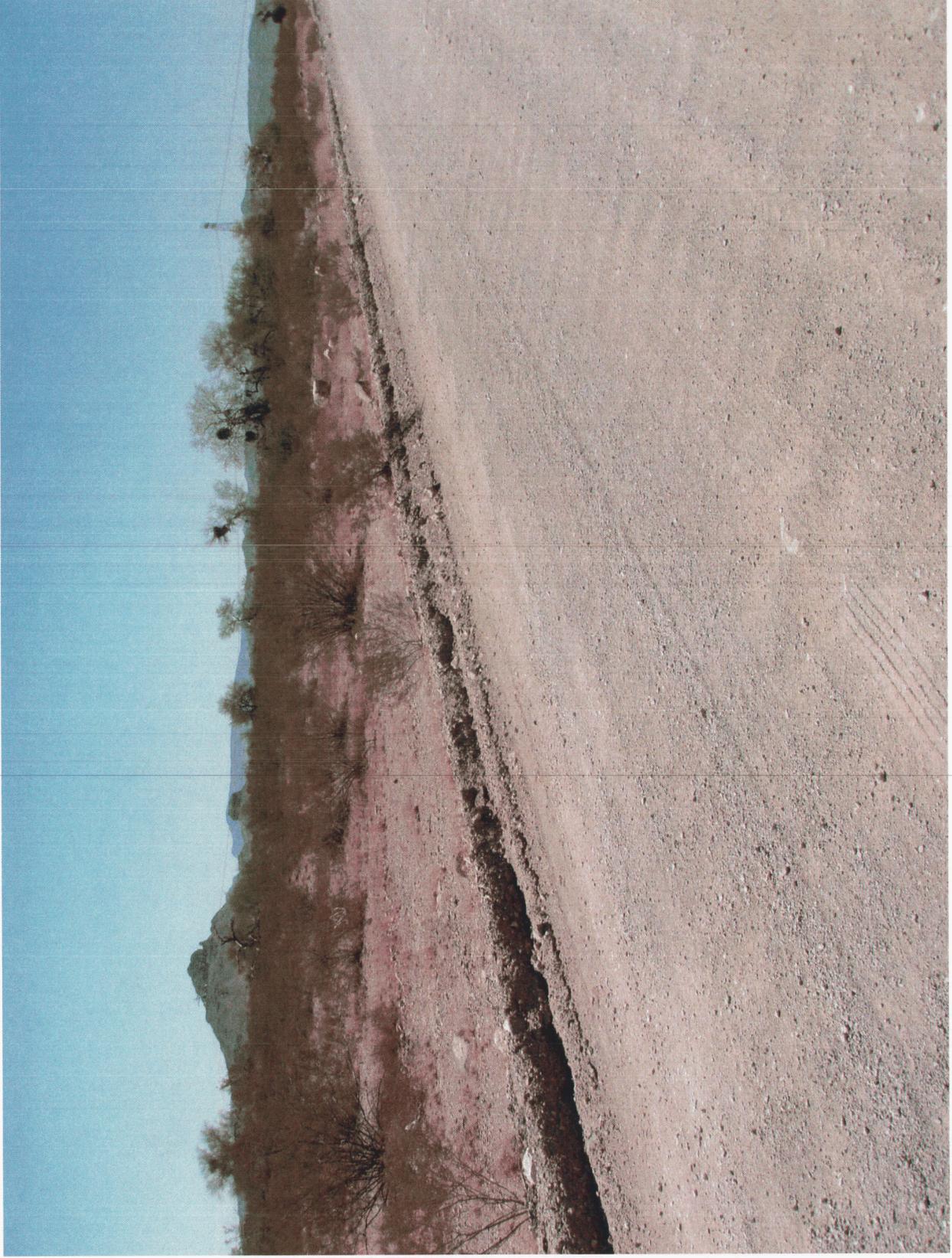
Viewpoint 3 - Entry to the Kofa NWR Looking South



Viewpoint 3 - Ramada at Entry



Viewpoint 3 – Entry Looking South



Viewpoint 4 - Looking South



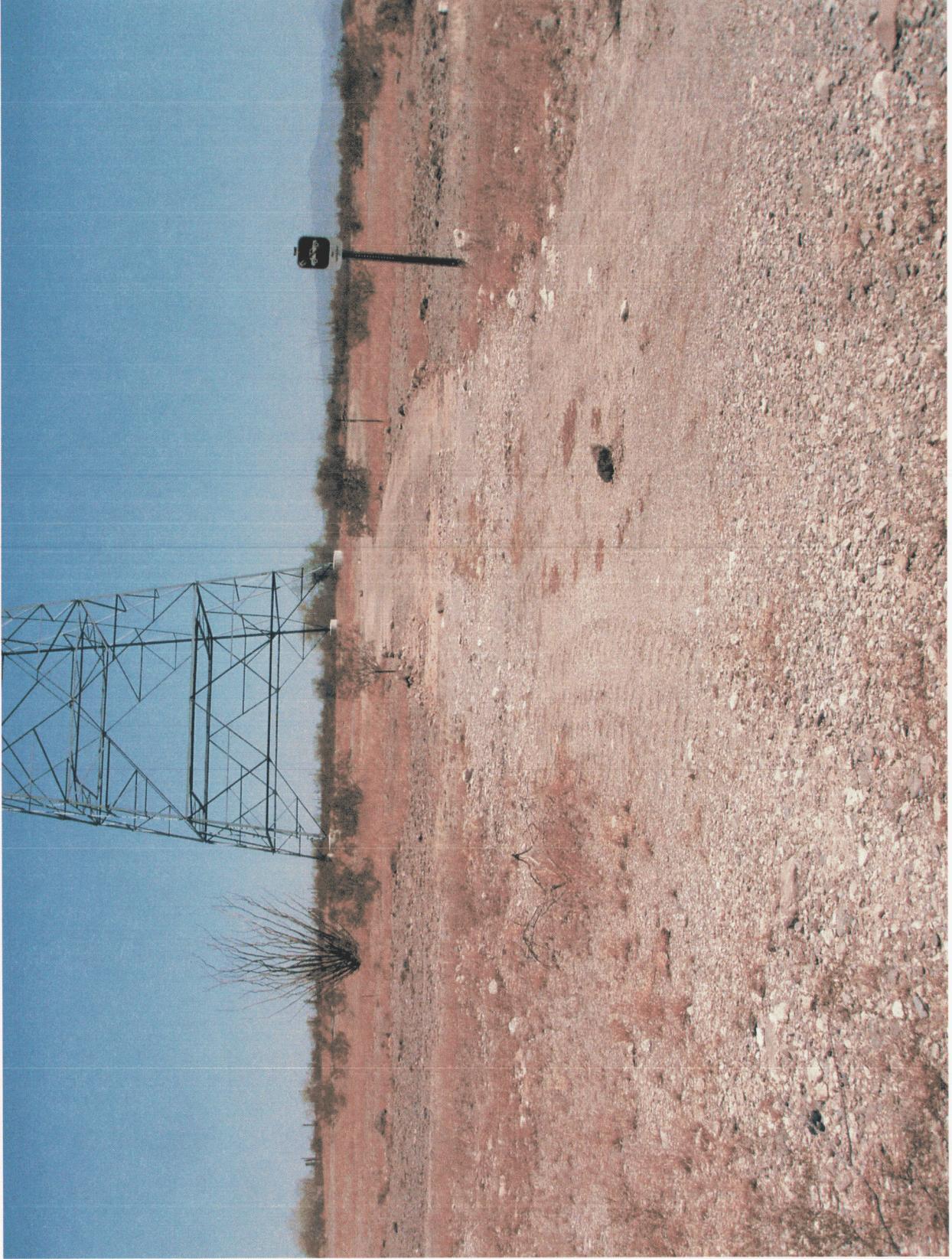
Viewpoint 4 - Zoom to Transmission Structure



Viewpoint 4 - Looking South



Viewpoint 5 – Pipeline Road Looking West



Spur Road



Spur Road and Tower Pad Area



View From Beneath Tower, West Along the Right-of-Way



Viewpoint 6 – Looking West



Viewpoint 7 - Looking West



Pipeline Facilities



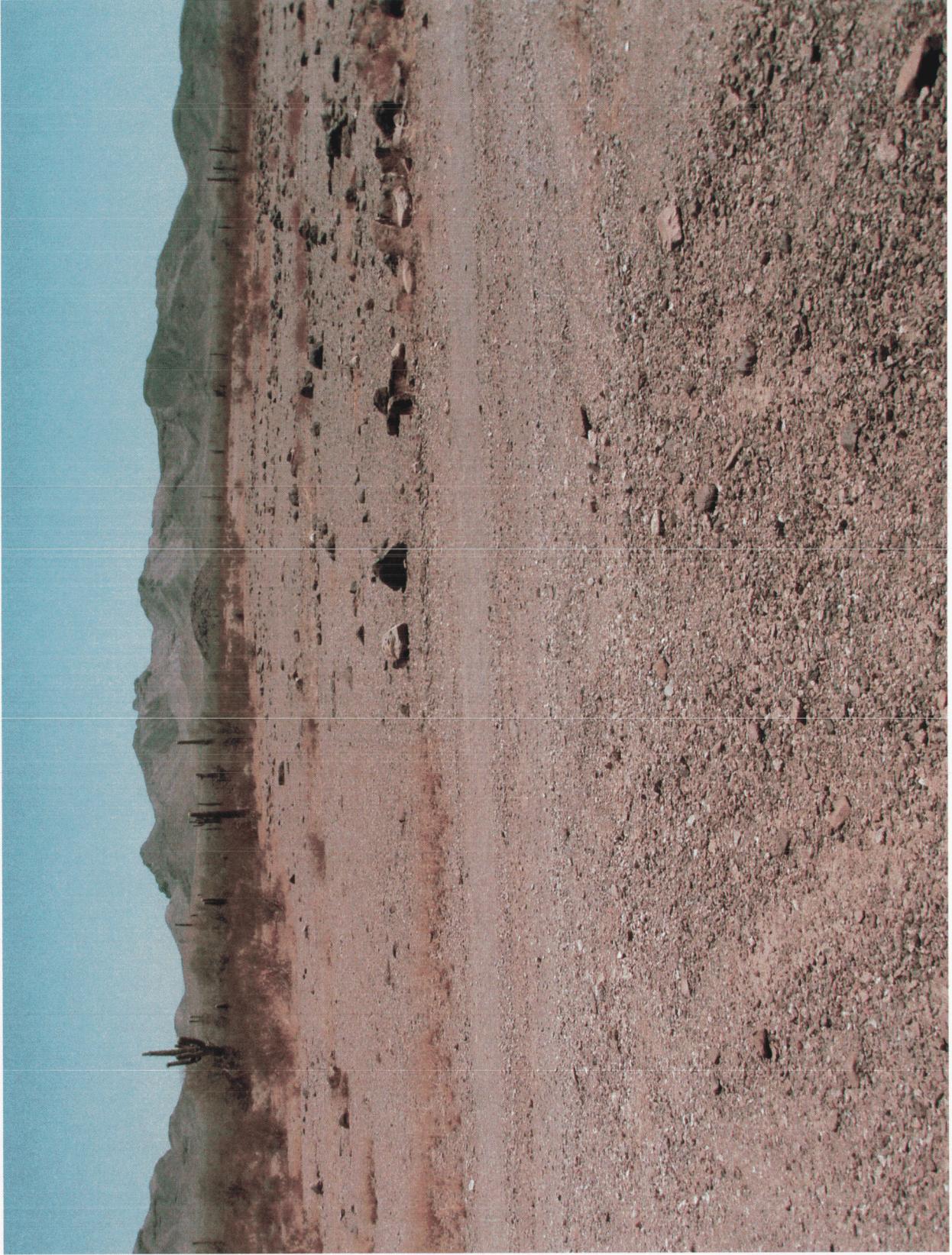
Viewpoint 8 - Looking West



Viewpoint 8 - Looking East



Viewpoint 9 - Kofa Cabin



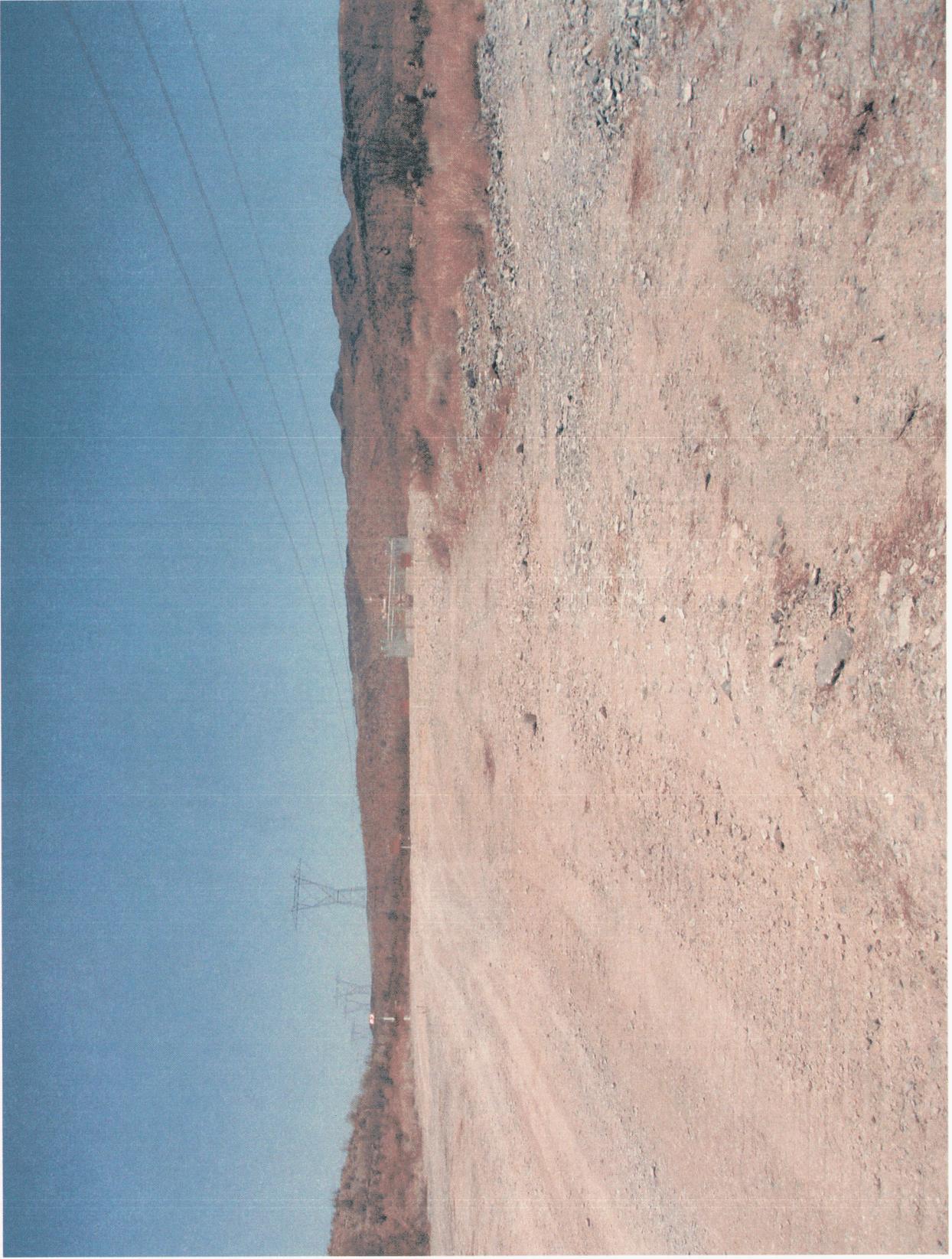
Viewpoint 9 - Looking North from Kofa Cabin Entry Road



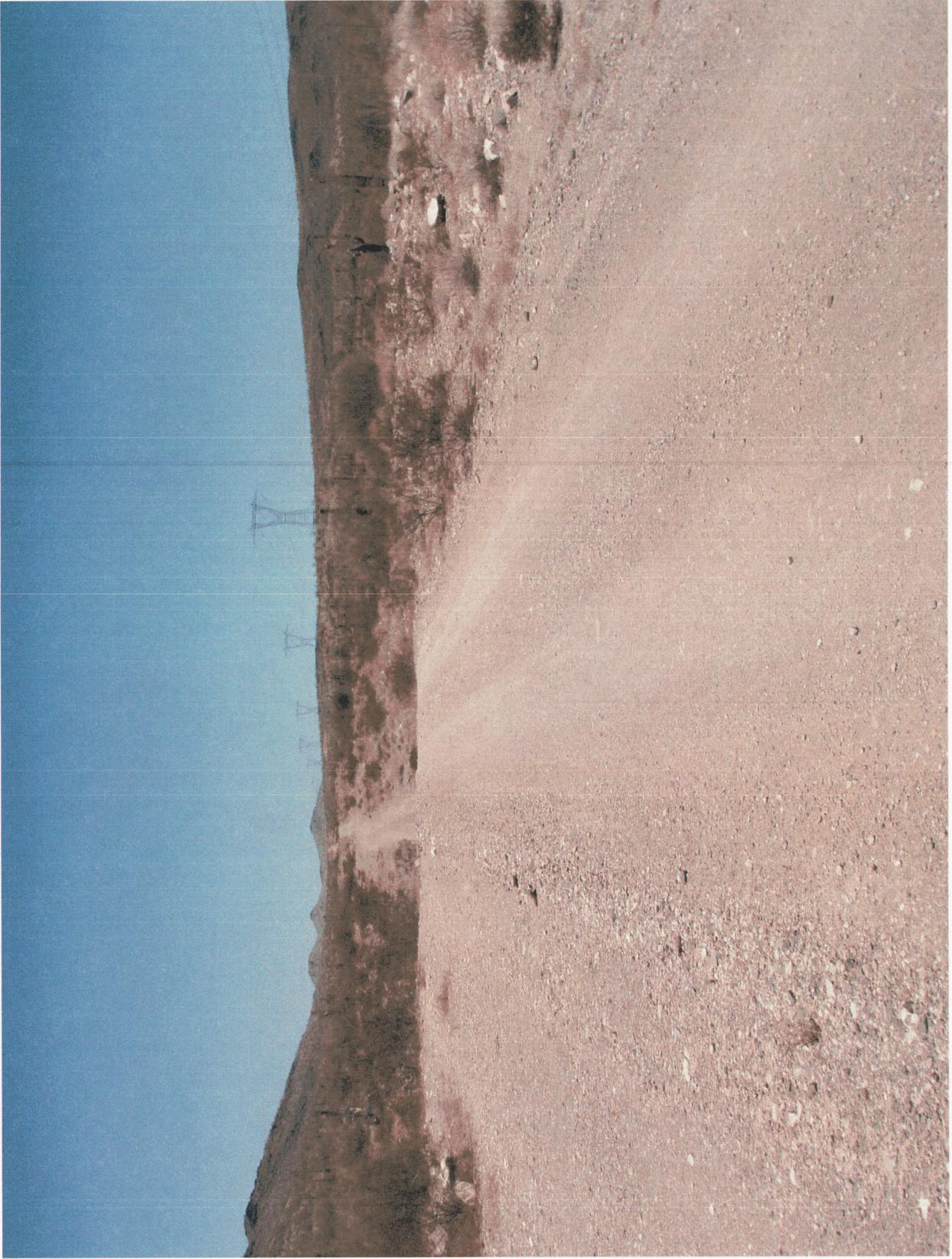
Viewpoint 10 - Looking West



Rehabilitation Activities



Viewpoint 11 - Looking Northwest



Viewpoint 12 - Looking West



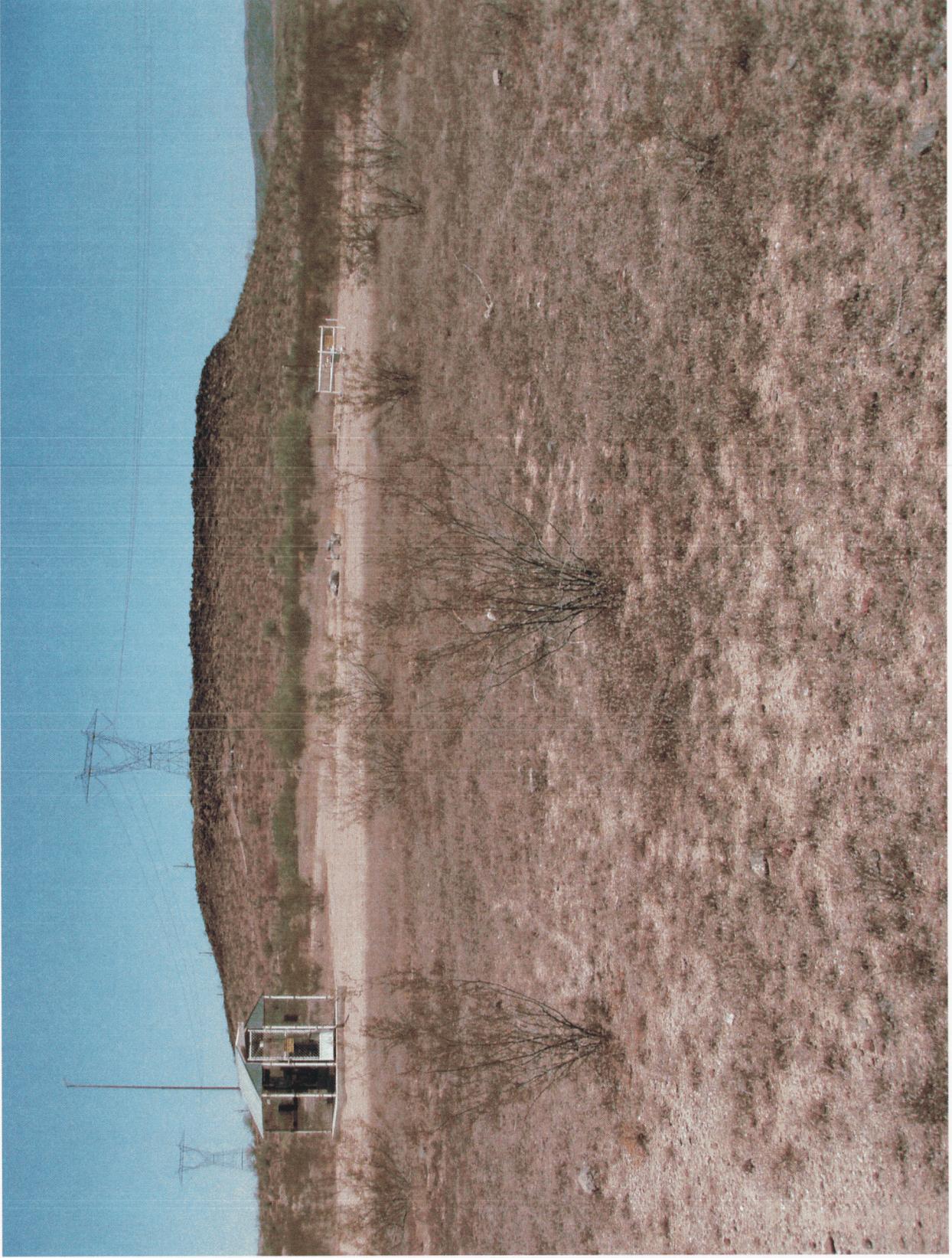
Viewpoint 13 - Looking Southeast From The New Water Mountains Wilderness Area



Viewpoint 13 - Looking South From the New Water Mountains Wilderness Area



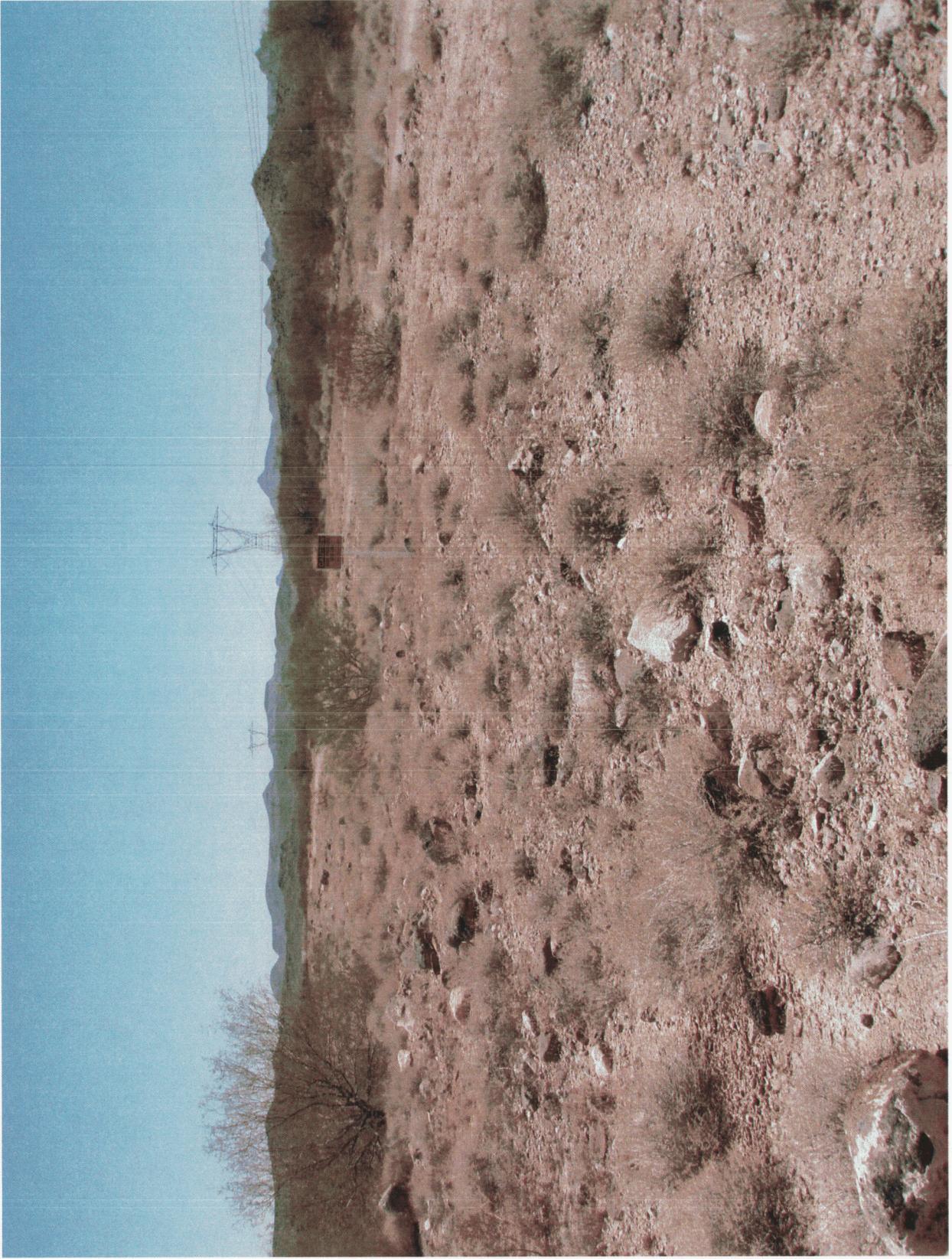
Viewpoint 13 - Looking Southwest From The New Water Mountains Wilderness Area



Viewpoint 14 - Looking Northwest



Viewpoint 15 - Looking West



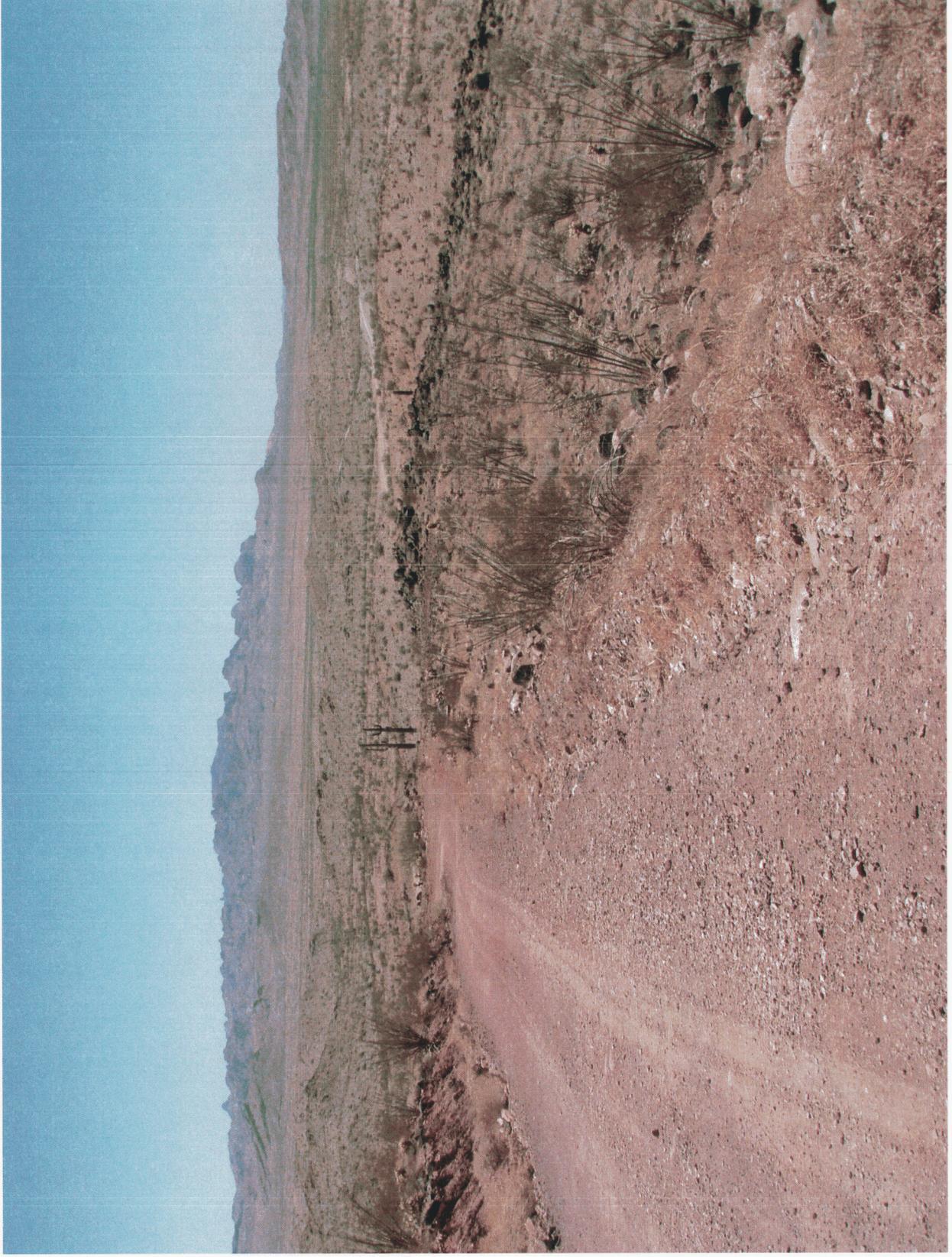
Viewpoint 15 - Looking Southeast



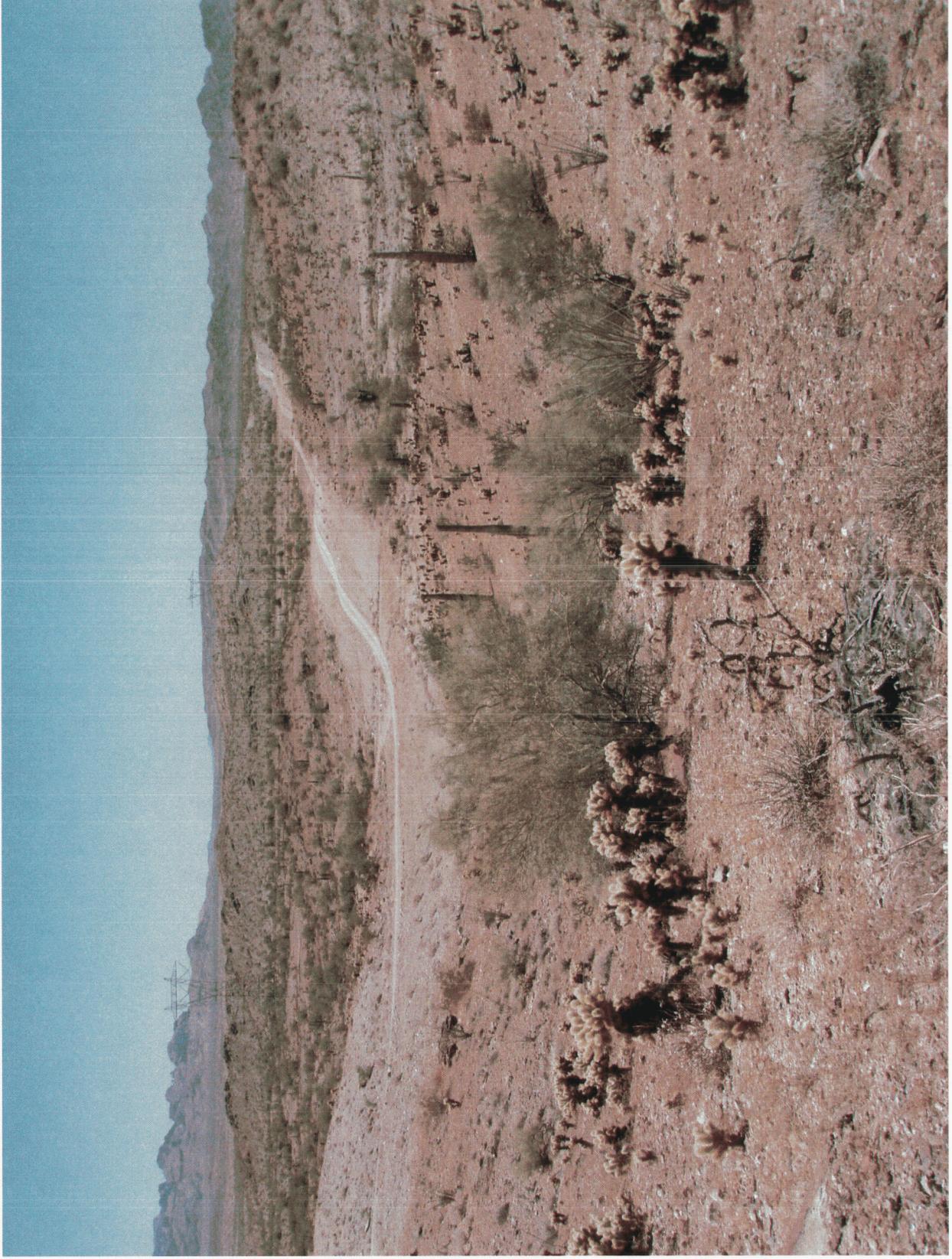
Viewpoint 16 - Looking West



Viewpoint 16 - Zoom



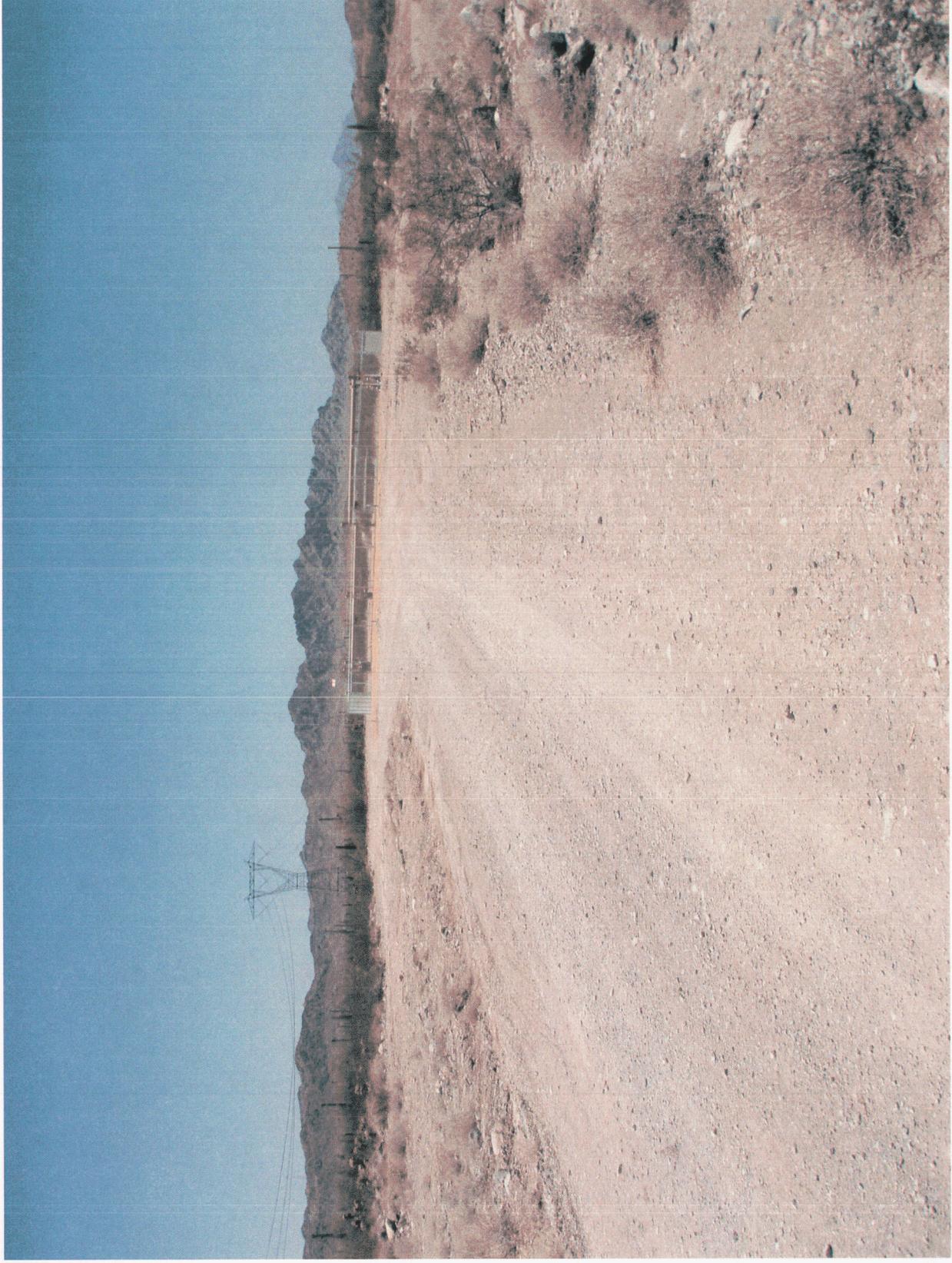
Viewpoint 17 - Looking Southwest



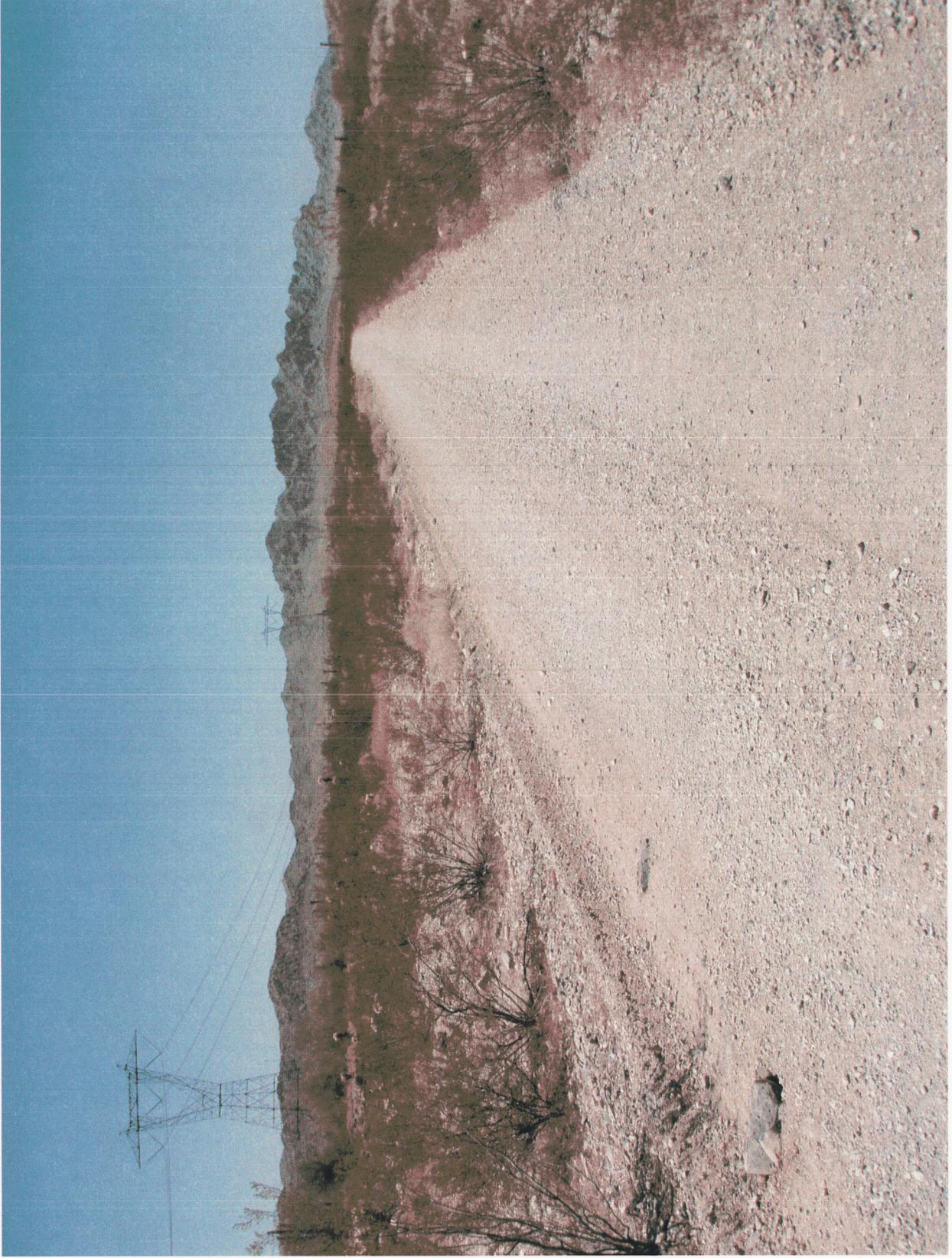
Downhill from Viewpoint 17 - Looking Southwest



Viewpoint 18 - Looking East



Viewpoint 19 - Looking West



Viewpoint 20 - Looking West



Viewpoint 21 – Looking South



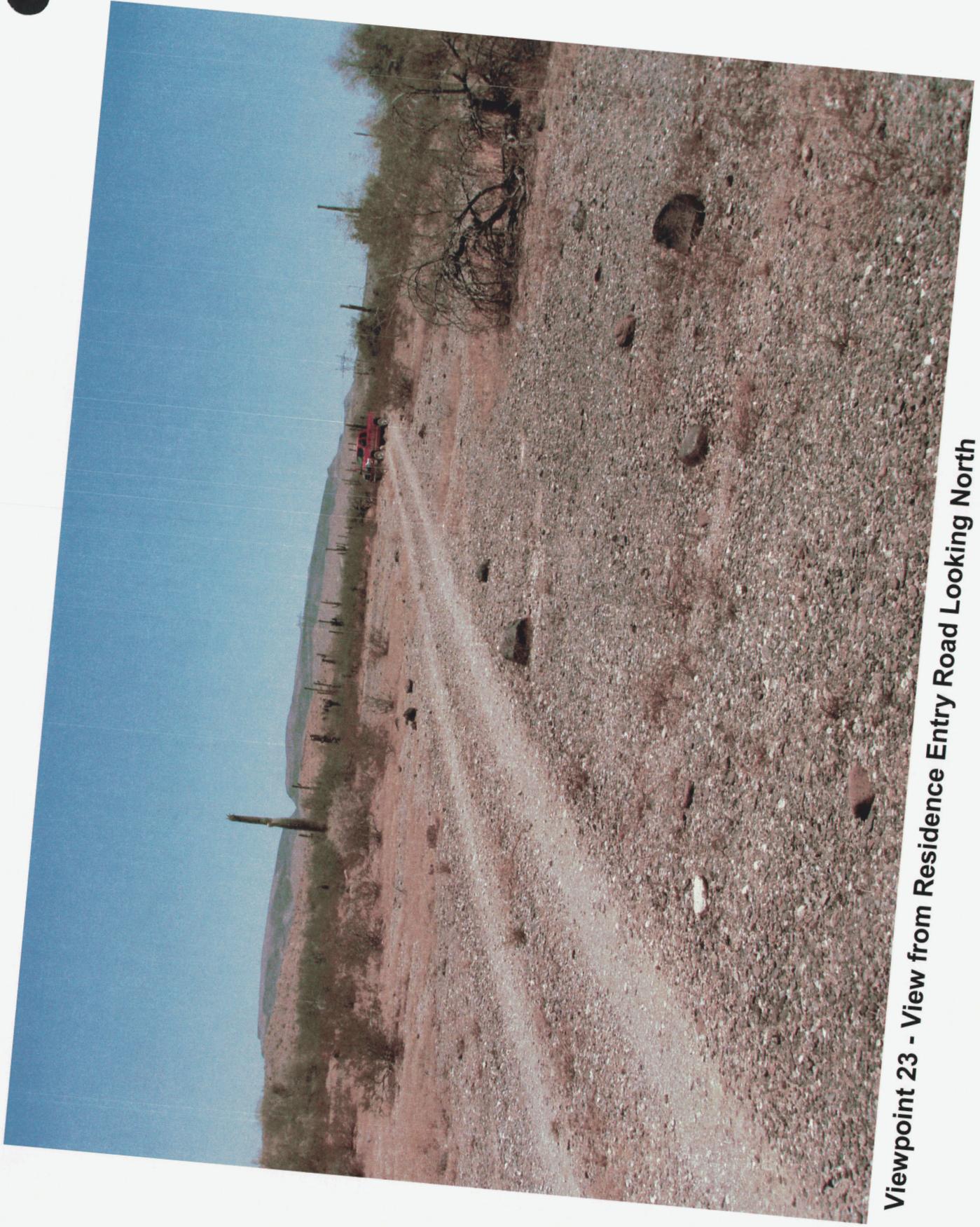
Viewpoint 21 – Looking Southwest



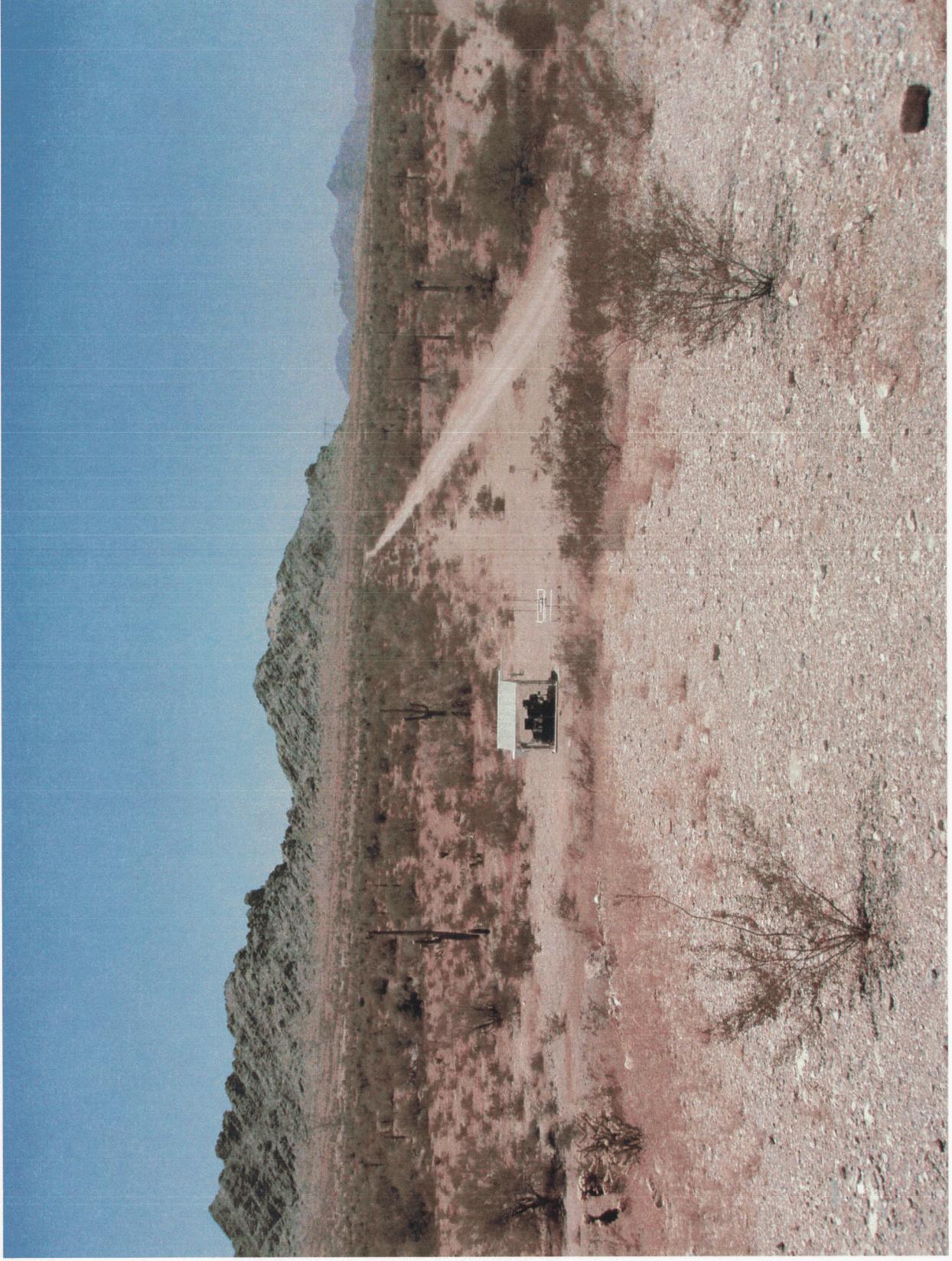
Viewpoint 22 – Looking East



Viewpoint 23 - View of Residence



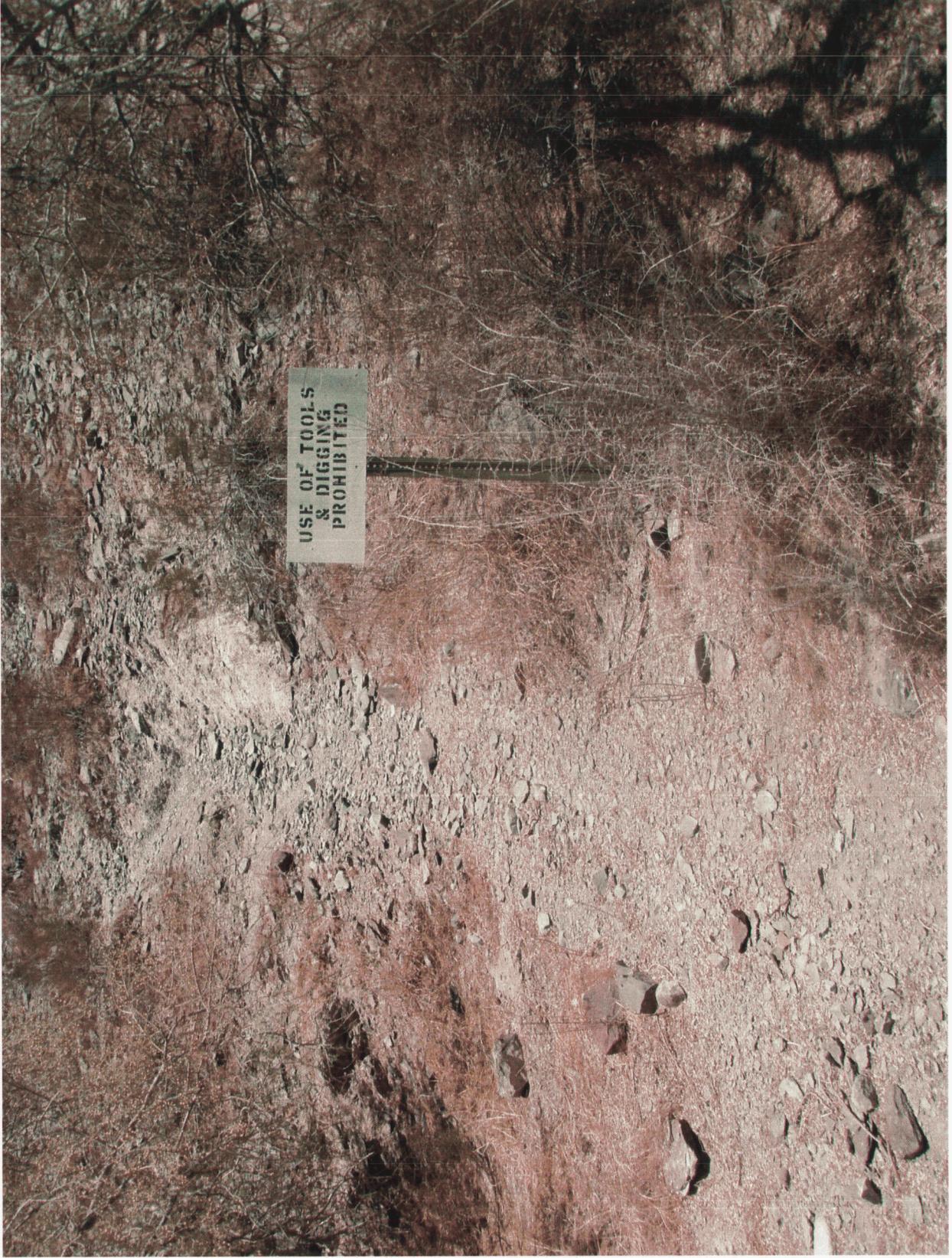
Viewpoint 23 - View from Residence Entry Road Looking North



Viewpoint 24 - Looking Southwest



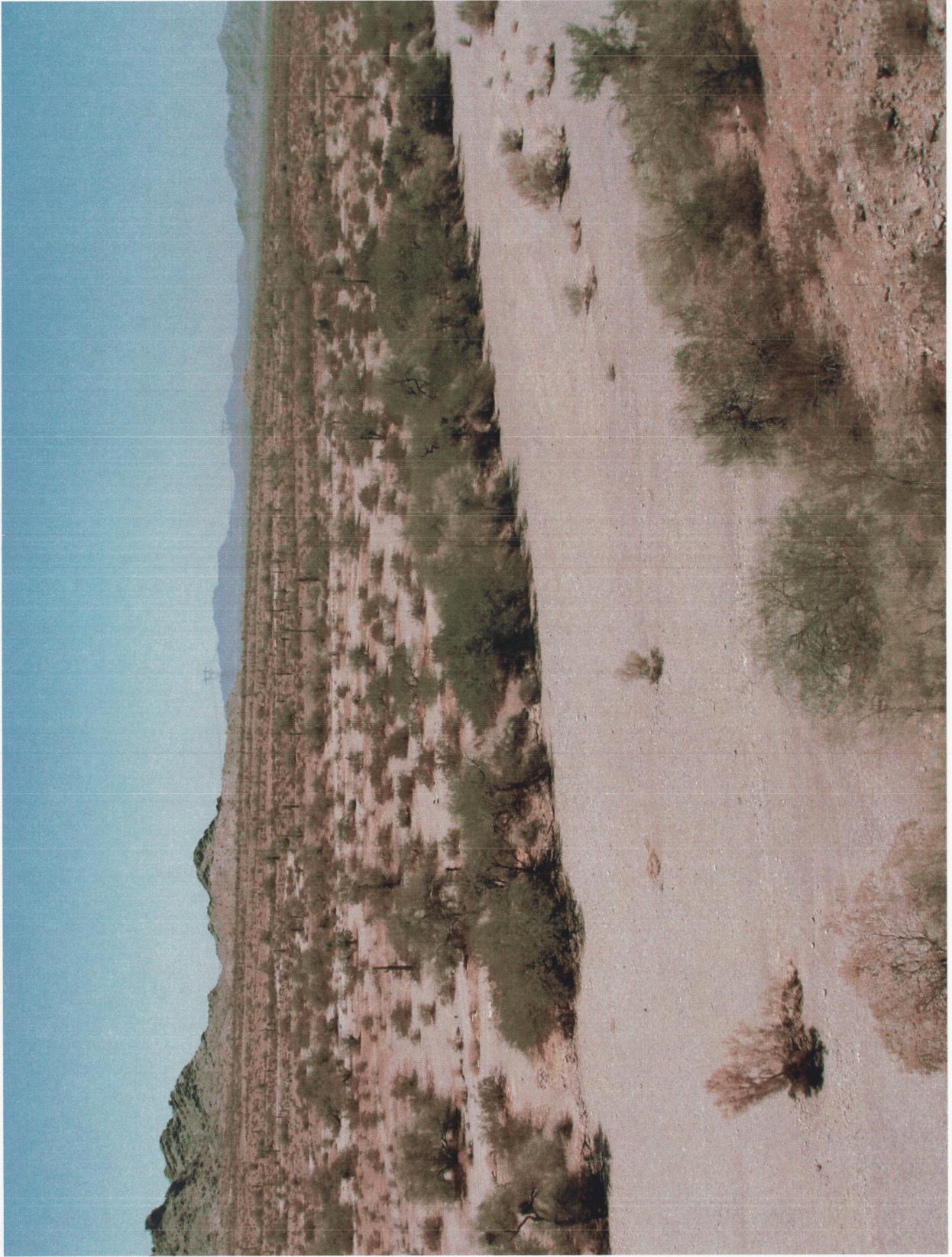
Viewpoint 24 - Looking South



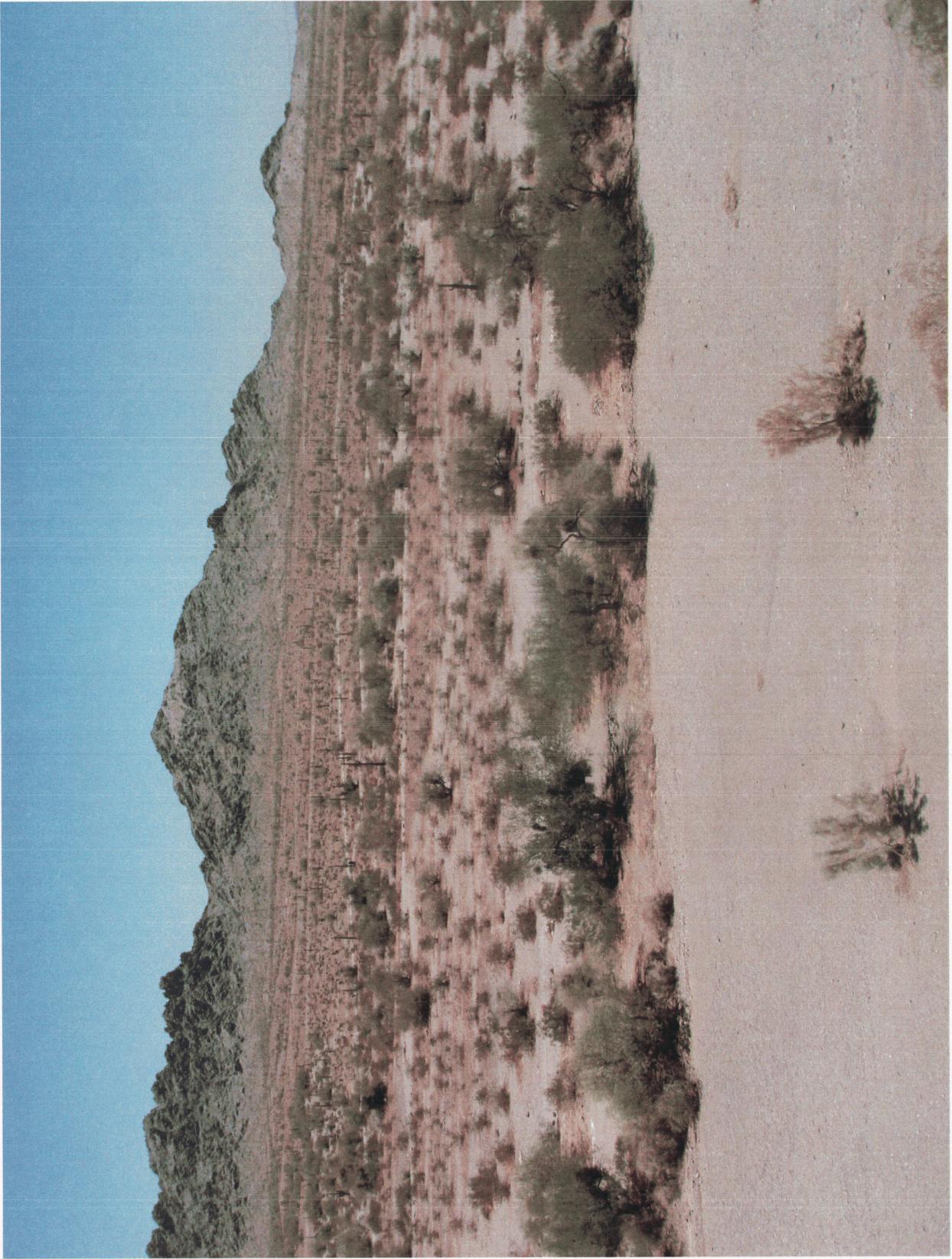
Viewpoint 25 – Crystal Hill Area Hiking Trail



Viewpoint 25 - View from Trail Looking Southwest



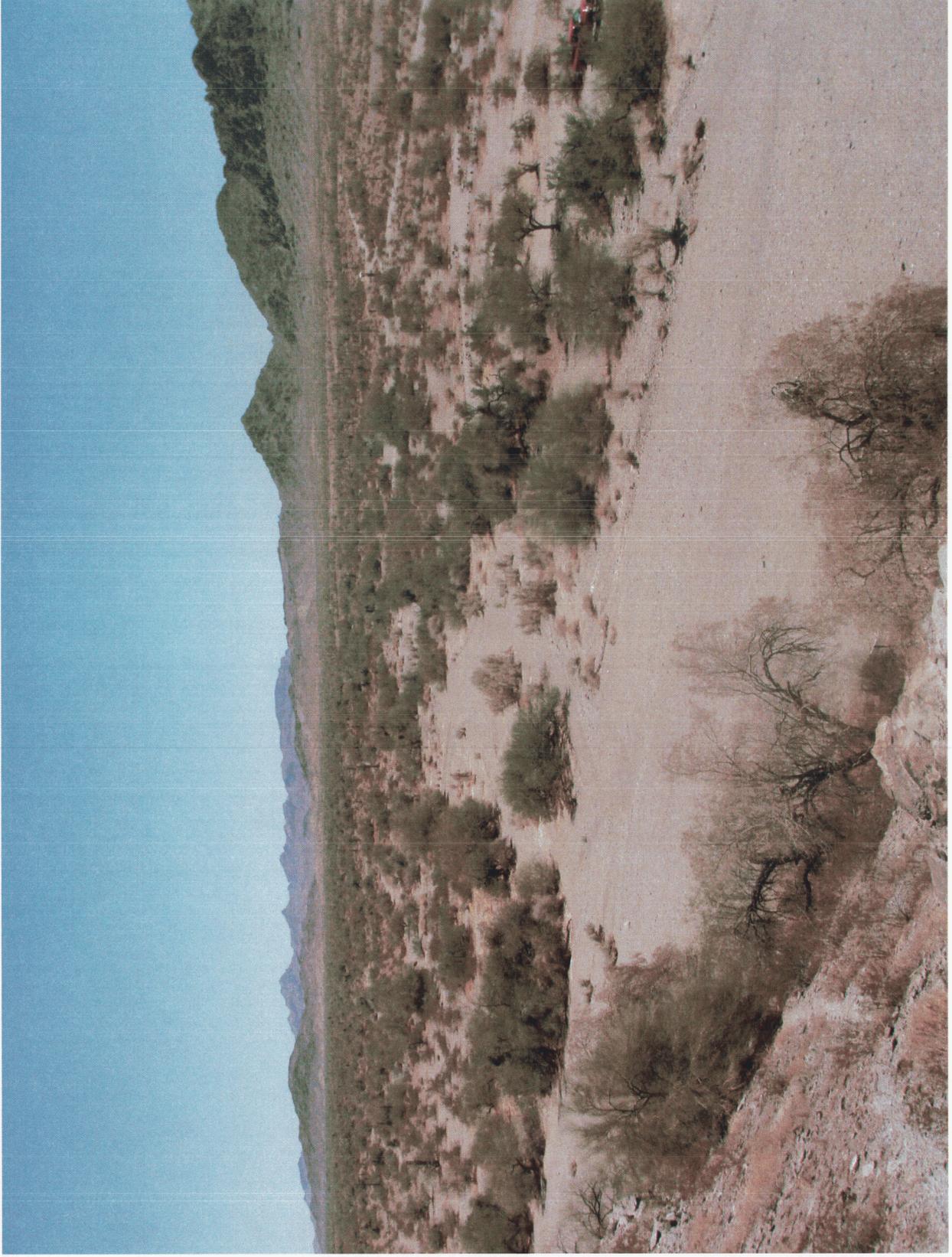
Viewpoint 25 - View from Trail Looking Southwest



Viewpoint 25 - Looking South



Viewpoint 25 - Looking South



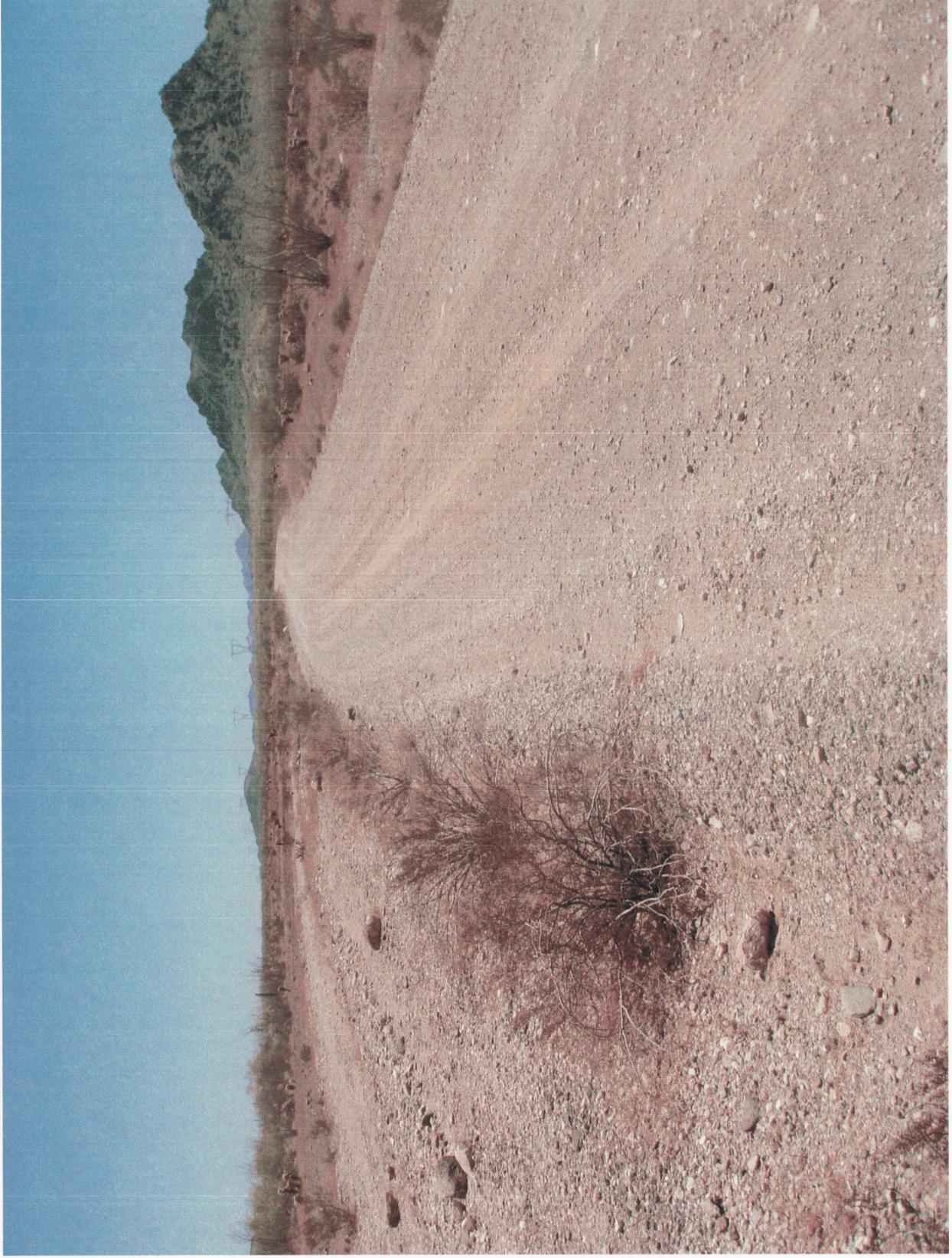
Viewpoint 25 - Looking Southeast



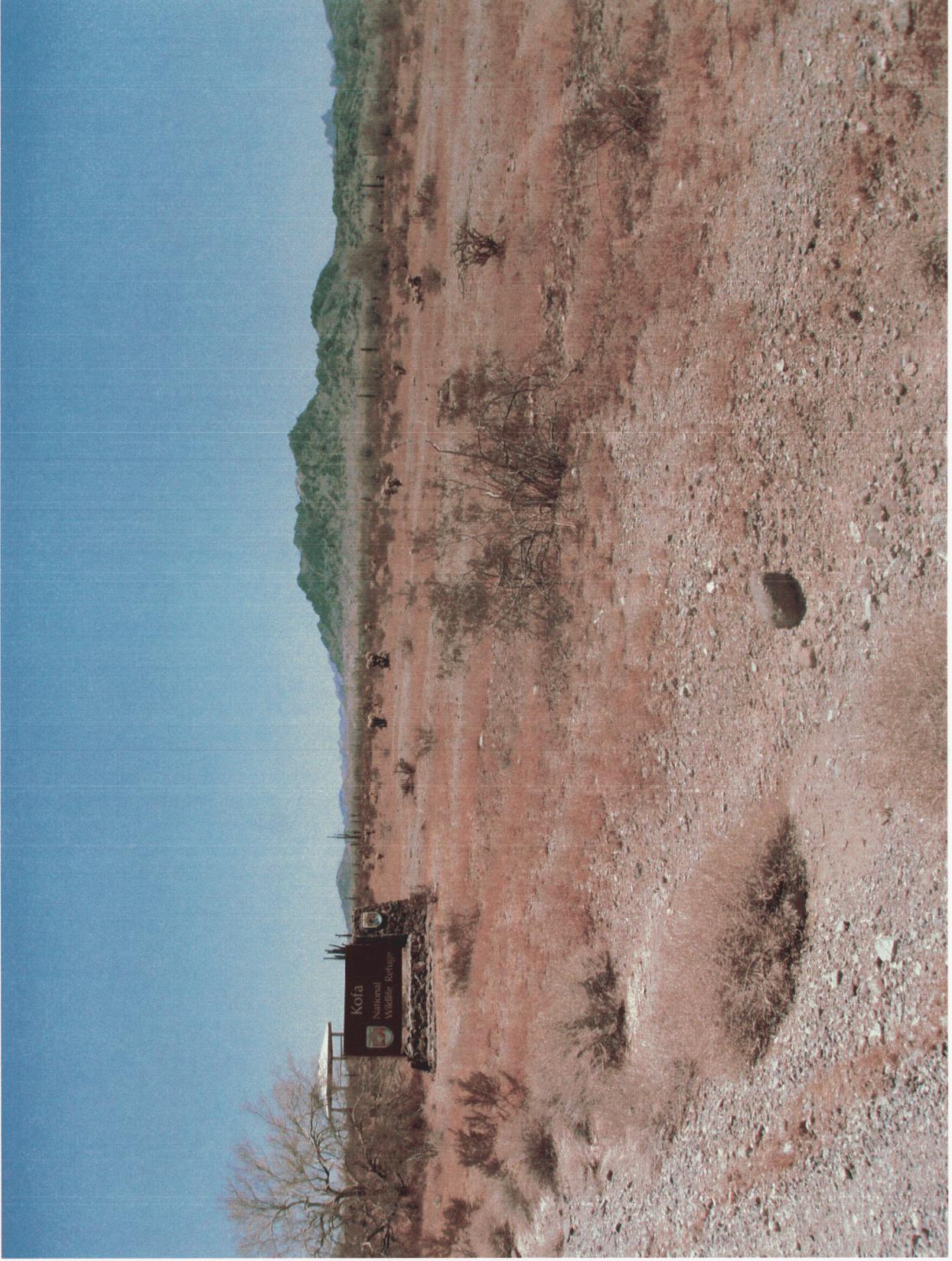
Viewpoint 26 - View from Crystal Hill Dispersed Camping Area Looking South



Viewpoint 26 - View from Crystal Hill Dispersed Camping Area Looking South



Viewpoint 27 - Looking East



Viewpoint 28 - Entry to Kofa NWR Looking Southeast



Viewpoint 28 - Looking South



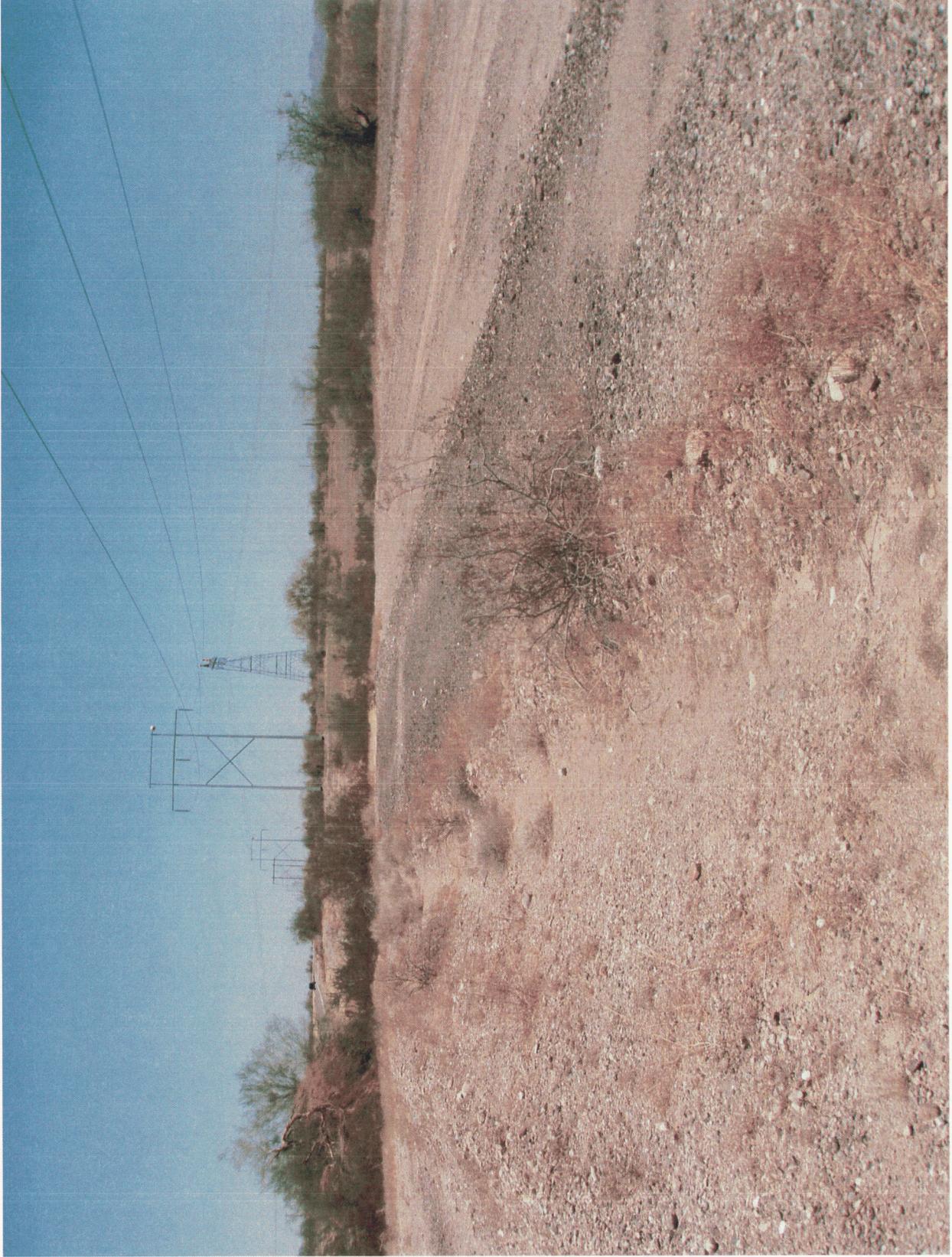
Viewpoint 28 - Looking South



Viewpoint 29 - Looking East



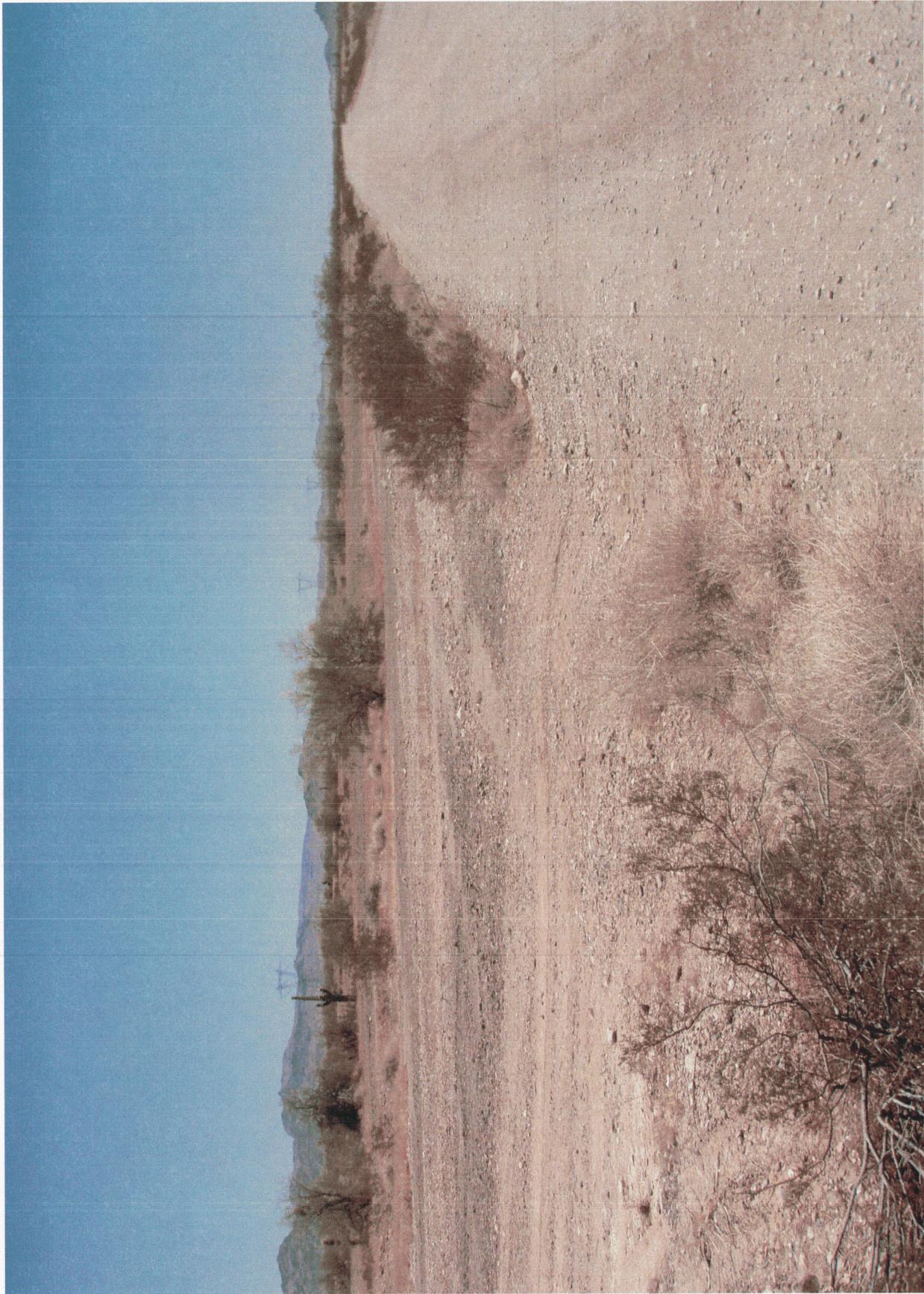
Viewpoint 30 - Looking North At US 95



Viewpoint 30 - Looking North



Viewpoint 30 - Looking Northeast



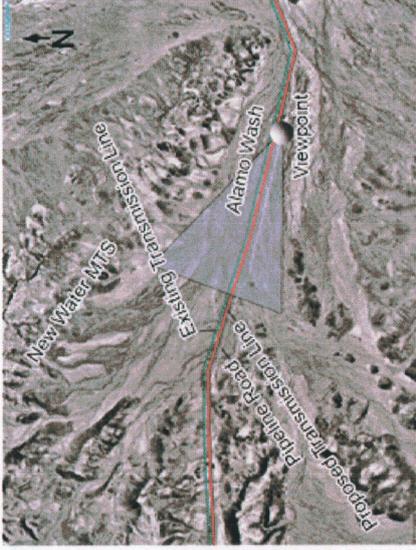
Viewpoint 30 - Looking East



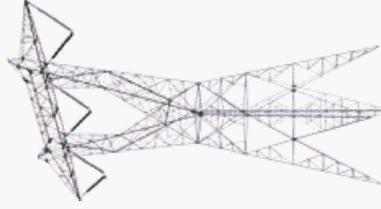
Existing Condition - View looking west along the pipeline road through the KOFA National Wildlife Refuge and existing pipeline and 500kV transmission line corridor. Photograph taken 7-12-06 at 2:11 p.m. using a 50mm focal length.



Simulation - Proposed 500kV transmission line on the south side of the existing 500kV Transmission Line.



Viewpoint is located on the pipeline road west of the eastern entrance to the KOFA National Wildlife Refuge approximately 492 feet from the existing transmission line.



Typical 500kV single-circuit lattice steel tower. Proposed towers are simulated to match existing tower heights and spans.

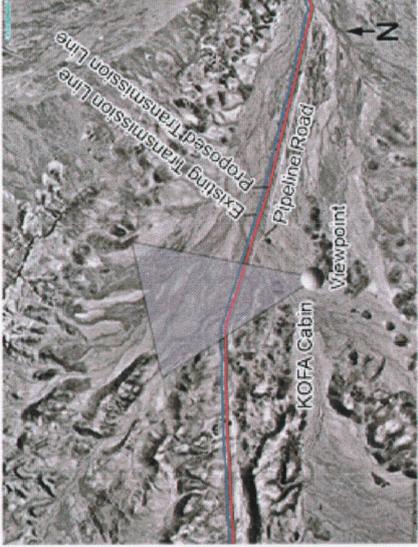
Simulation 1



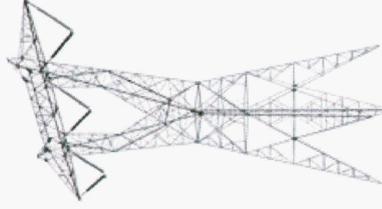
Existing Condition - View looking north-northwest towards the existing 500kV transmission line with the New Water Mountains in the background. Photograph taken 7-12-06 at 2:23 p.m. using a 50mm focal length.



Simulation - Proposed 500kV transmission line on the south side of the existing 500kV transmission line.



Viewpoint is located at the KOFA cabin approximately 5,249 feet from the existing 500kV transmission line.



Typical 500kV single-circuit lattice steel tower. Proposed towers are simulated to match existing tower heights and spans.

Simulation 2



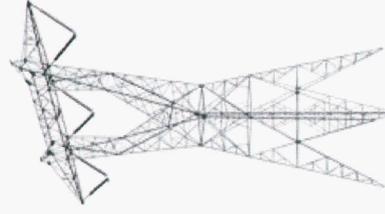
Existing Condition - View looking west along the pipeline road towards an existing 500kV transmission line, pipeline, and pipeline ancillary facilities. Photograph taken 7-12-06 at 3:06 p.m. using a 50mm focal length.



Simulation - Proposed 500kV transmission line on the south side of the existing 500kV transmission line.

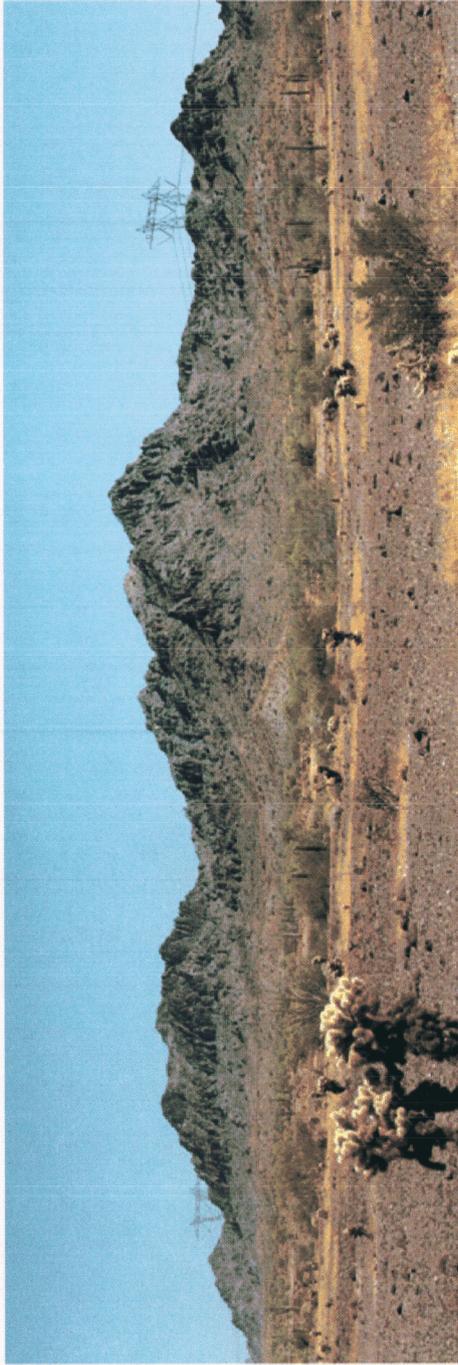


Viewpoint is located on the pipeline road approximately 557 feet to the north of the existing 500kV transmission line.

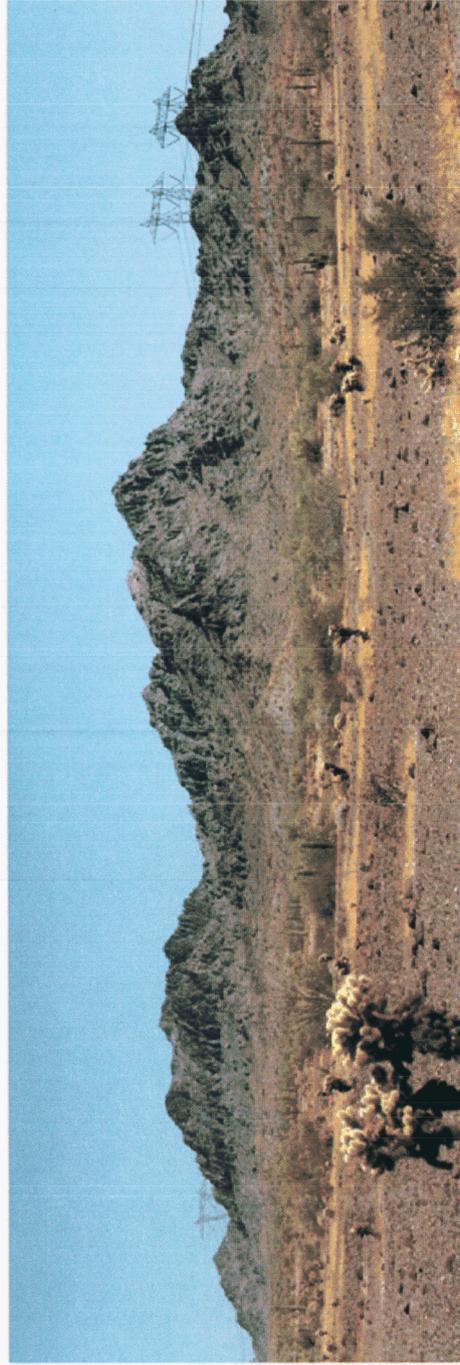


Typical 500kV single-circuit lattice steel tower. Proposed towers are simulated to match existing tower heights and spans.

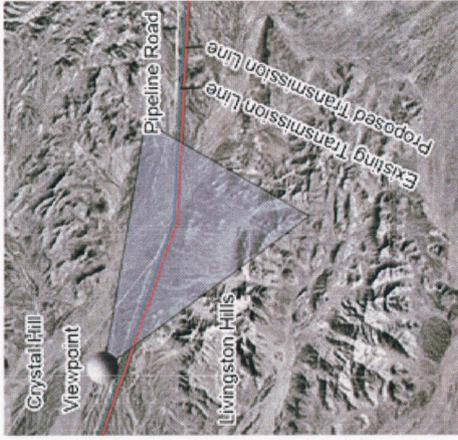
Simulation 3



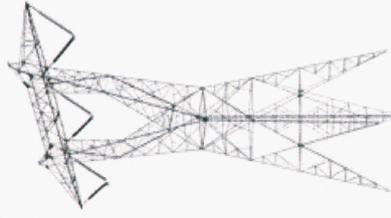
Existing Conditions - Looking southeast toward the Livingston Hills approximately 4.8 miles east of US 95, in the Kofa National Wildlife Refuge. Photograph taken 5/10/06 at 4:35pm using a 50mm focal length.



Simulation - Proposed 500kV transmission line on the south side of the existing 500kV transmission line.



Viewpoint looking southeast from Crystal Hill Road toward the Livingston Hills, approximately 1/8 mile north of DPV1 approximately 1,115 feet from existing 500kV transmission line.



Typical 500kV single-circuit steel lattice tower used in simulations. Tower/structure design has been provided by SCE engineering and is conceptual.

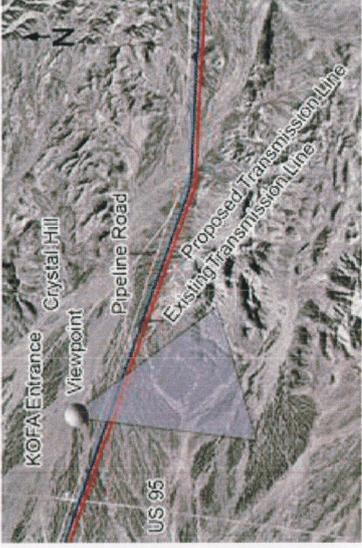
Simulation 4



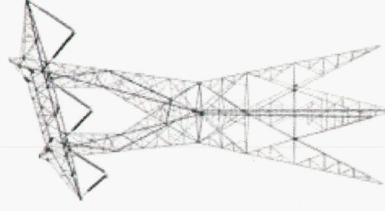
Existing Condition - View looking southeast towards the KOFA National Wildlife Refuge and KOFA Mountains.
 Photograph taken 7-12-06 at 3:56 p.m. using a 50mm focal length.



Simulation - Proposed 500kV transmission line on the south side of the existing 500kV transmission line.



Viewpoint is located at the western entrance to the KOFA approximately 2,362 feet from the existing 500kV transmission line.



Typical 500kV single-circuit lattice steel tower. Proposed towers are simulated to match existing tower heights and spans.

Simulation 5

3



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EDISON[®]

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United States Department of the Interior
Bureau of Land Management
690 W. Garnet Ave.
P. O. Box 581260
N. Palm Springs, Ca. 92258-1260

May 20, 2005

Attn.: John Kalish

Subject: Devers-Palo Verde #2
Application for Amendment
CA 17905 & AZ 23805

Southern California Edison (SCE) is the holder of Right of Way Grant (Grant) CA 17905 & AZ 23805 (one document) issued by the Bureau of Land Management (Bureau) for the Devers-Palo Verde #2 (DPV2) 500 kilovolt (kV) transmission line. This Grant is currently 130' wide. Based upon electrical needs in California,

SCE is requesting that the Bureau amend the existing Right-of-Grant for DPV2 as summarized below and described in more detail in the attached Application to Amend the Grant.

- 1) construction of a new series capacitor site in Arizona (an additional 75 ft X 321 ft = .55 acres);
- 2) construction of a new series capacitor site in California (an additional 75 ft X 321 ft = .55 acres);
- 3) construction of a 500 kV switchyard called the Midpoint Substation (Midpoint) west of Blythe, California. The preferred location and one alternate site (Wiley Well) are located on BLM land. The other alternate site (Mesa Verde) is located on private land. Midpoint would be constructed if SCE and Desert Southwest Power, LLC, agree to share a single 500 kV transmission line between Blythe and Devers (Total necessary is 1,000 ft X 1,900 ft = 43.62 acres);
- 4) addition of a land parcel upon which SCE would construct the 500 kV transmission line in Arizona as the line proceeds to a new termination point at the Harquahala Generating Station Switchyard, located approximately 16 miles northwest of PVNGS. SCE prefers to terminate the proposed 500kV transmission line at the Harquahala

Generating Station Switchyard; however, SCE must retain the existing right-of-way to the PVNGS to preserve the ability to implement the Palo Verde sub-alternate route described in the response to Question 13a.iii) in this application and authorized in the existing DPV2 Right of Way grant (add'l r/w necessary 100 ft X 5280 ft = 12.12 acres).

5) Revision to Exhibit B-6, Visual Mitigation Measure 2 to allow DPV2 tower heights and spacing to be different than the existing DPV1 line towers and spacing in certain circumstances, as discussed in Section 17.b) of this application.

These five revisions to the existing DPV2 Right of Way grant are considered the "Project". The Project areas on BLM land not previously identified in the existing Right of Way grant are as follows:

Facility	Section	Township	Range	Distance	PEA Map
Arizona Series Capacitor	18	2N	14W	75 ft X 321 ft	3-2a
California Series Capacitor	6	6S	14E	75 ft X 321 ft	3-2b
Midpoint Substation					
Preferred Site	26	2N	21E	1,000 ft x 1,900 ft	3-2a
Wiley Well Alternate Site	5	3N	20E	1,000 ft x 1,900 ft	3-2a
500kV Transmission Line	34	2N	8W	100 ft X 5,280 ft	*

* Project area location shown on Attachments A and B.

SCE filed an Application for a Certificate of Public Convenience and Necessity (CPCN) with the California Public Utilities Commission (CPUC) for DPV2 on April 11, 2005. SCE understands that the BLM must evaluate the potential environmental impacts associated with the amendments to the DPV2 Right of Way Grant pursuant to the National Environmental Policy Act. To assist the BLM in its evaluation, April 13, 2005 SCE delivered copies of the Proponent's Environmental Assessment (PEA) that was included in the CPUC filing. The PEA describes the entire DPV2 project because the CPUC has not previously approved the construction of this project. Although the BLM only needs to review the amendments to the existing, previously approved Right of Way Grant, the PEA may be used for that more limited NEPA review by focusing on the changes described in this amendment application.

Enclosed are one original and four (4) copies of an Application to Amend the Grant to allow the additional right of way for the series capacitors, the additional parcel, Midpoint Substation and the revision to Exhibit B-6.

If you have any questions or need additional information, please call me at
(714) 870-3176.

Sincerely,



Laura L. (Solorio) Verdugo
Right of Way Agent

Llv
Enclosure

APPLICATION FOR TRANSPORTATION AND
UTILITY SYSTEMS AND FACILITIES
ON FEDERAL LANDS

FORM APPROVED
OMB NO. 1004-0189
Expires: October 31, 2005

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

FOR AGENCY USE ONLY

Application Number

Date filed

1. Name and address of applicant (include zip code) So. Calif. Edison Company 1851 W. Valencia, Bldg F Fullerton, Ca. 92833		2. Name, title, and address of authorized agent if different from Item 1 (include zip code) Laura Solorio Right of Way Agent		3. TELEPHONE (area code) Applicant (714) 870-3176 Authorized Agent Same as above	
4. As applicant are you? (check one) a. <input type="checkbox"/> Individual b. <input checked="" type="checkbox"/> Corporation* c. <input type="checkbox"/> Partnership/Association* d. <input type="checkbox"/> State Government/State Agency e. <input type="checkbox"/> Local Government f. <input type="checkbox"/> Federal Agency * If checked, complete supplemental page		5. Specify what application is for: (check one) a. <input type="checkbox"/> New authorization b. <input type="checkbox"/> Renewing existing authorization No. c. <input checked="" type="checkbox"/> Amend existing authorization No. CA 17905 + AZ 23805 (one document) d. <input type="checkbox"/> Assign existing authorization No. e. <input type="checkbox"/> Existing use for which no authorization has been received* f. <input type="checkbox"/> Other* * If checked, provide details under Item 7			
6. If an individual, or partnership are you a citizen(s) of the United States? <input type="checkbox"/> Yes <input type="checkbox"/> No N/A					
7. Project description (describe in detail): (a) Type of system or facility, (e.g., canal, pipeline, road); (b) related structures and facilities; (c) physical specifications (length, width, grading, etc.); (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction (Attach additional sheets, if additional space is needed.) See attachment.					

8. Attach a map covering area and show location of project proposal	Maps attached
9. State or local government approval: <input type="checkbox"/> Attached <input type="checkbox"/> Applied for <input type="checkbox"/> Not required	
10. Nonreturnable application fee: <input type="checkbox"/> Attached <input type="checkbox"/> Not required	To be determined by BLM.
11. Does project cross international boundary or affect international waterways? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If "yes," indicate on map)	
12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.	

Southern California Edison is technically and financially capable of constructing, operating, and maintaining the system described in this application.

13a. Describe other reasonable alternative routes and modes considered.

See attachment

b. Why were these alternatives not selected?

See attachment

c. Give explanation as to why it is necessary to cross Federal Lands.

See attachment

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. (Specify number, date, code, or name)

See attachment

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

See attachment

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

See attachment

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

See attachment

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

See attachment

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

See attachment

20. Name all the Department(s)/Agency(ies) where this application is being filed.

USDI - Bureau of Land Management
690 W. Avenue
P.O. BOX 581260 Palm Springs, Ca. 92258-1260

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant *[Signature]*

Date 5/13/05

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS
AND FACILITIES ON FEDERAL LANDS

GENERAL INFORMATION
ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved rights-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application **must** be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture
Regional Forester, Forest Service (USFS)
Federal Office Building, P.O. Box 21628
Juneau, Alaska 99802-1628
Telephone: (907) 586-7847 (or a local Forest Service Office)

Department of the Interior
Bureau of Indian Affairs (BIA)
Juneau Area Office
9109 Mendenhall Mall Road, Suite 5, Federal Building Annex
Juneau, Alaska 99802
Telephone: (907) 586-7177

Bureau of Land Management (BLM)
222 West 7th Ave., Box 13
Anchorage, Alaska 99513-7599
Telephone: (907) 271-5477 (or a local BLM Office)

National Park Service (NPS)
Alaska Regional Office, 2525 Gambell St., Rm. 107
Anchorage, Alaska 99503-2892
Telephone: (907) 257-2585

U.S. Fish & Wildlife Service (FWS)
Office of the Regional Director
1011 East Tudor Road
Anchorage, Alaska 99503
Telephone: (907) 786-3440

Note-Filings with any Interior agency may be filed with any office noted above or with the: Office of the Secretary of the Interior, Regional Environmental Officer, Box 120, 1675 C Street, Anchorage, Alaska 99513.

(For supplemental, see page 4)

Department of Transportation
Federal Aviation Administration
Alaska Region AAL-4, 222 West 7th Ave., Box 14
Anchorage, Alaska 99513-7587
Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual departments/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Item

- 7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.
- 8 Generally, the map **must** show the section(s), township(s), and range(s) within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.
- 9, 10, and 12 - The responsible agency will provide additional instructions.
- 13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.
- 14 The responsible agency will provide instructions.
- 15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.
- 16 through 19 - Providing this information in as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, **do not** address this subject. The responsible agency will provide additional instructions.

Application **must** be signed by the applicant or applicant's authorized representative.

If additional space is needed to complete any item, please put the information on a separate sheet of paper and identify it as "Continuation of Item".

SUPPLEMENTAL

NOTE: The responsible agency(ies) will provide additional instructions	CHECK APPROPRIATE BLOCK	
	ATTACHED	FILED*
I - PRIVATE CORPORATIONS		
a. Articles of Incorporation	<input type="checkbox"/>	<input type="checkbox"/>
b. Corporation Bylaws	<input type="checkbox"/>	<input type="checkbox"/>
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State.	<input type="checkbox"/>	<input type="checkbox"/>
d. Copy of resolution authorizing filing	<input type="checkbox"/>	<input type="checkbox"/>
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	<input type="checkbox"/>	<input type="checkbox"/>
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications.	<input type="checkbox"/>	<input type="checkbox"/>
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	<input type="checkbox"/>	<input type="checkbox"/>
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	<input type="checkbox"/>	<input type="checkbox"/>
b. Proof of organization	<input type="checkbox"/>	<input type="checkbox"/>
c. Copy of Bylaws	<input type="checkbox"/>	<input type="checkbox"/>
d. Copy of resolution authorizing filing	<input type="checkbox"/>	<input type="checkbox"/>
e. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	<input type="checkbox"/>	<input type="checkbox"/>
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	<input type="checkbox"/>	<input type="checkbox"/>
b. If one partner is authorized to sign, resolution authorizing action is	<input type="checkbox"/>	<input type="checkbox"/>
c. Name and address of each participant, partner, association, or other	<input type="checkbox"/>	<input type="checkbox"/>
d. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	<input type="checkbox"/>	<input type="checkbox"/>

* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

The Paperwork Reduction Act of 1995 requires us to inform you that:
 The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certifications for the use of Federal lands.
 Federal agencies use this information to evaluate your proposal.
 No Federal agency may request or sponsor, and you are not required to respond to a request for information which does not contain a currently valid OMB Control Number.

BURDEN HOURS STATEMENT

The public burden for this form is estimated at 25 hours per response including the time for reviewing instructions, gathering and maintaining data, and

completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to: U.S. Department of the Interior, Bureau of Land Management (1004-0189), Bureau Information Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401LS, Washington, D.C. 20240

A reproducible copy of this form may be obtained from the Bureau of Land Management, Land and Realty Group, 1620 L Street, N.W., Rm. 1000LS, Washington, D.C. 20036.

NOTICE

NOTE: This applies to the Department of the Interior/Bureau of Land Management (BLM).

The Privacy Act of 1974 provides that you be furnished with the following information in connection with the information provided by this application for an authorization.

AUTHORITY: 16 U.S.C. 310 and 5 U.S.C. 301.

PRINCIPAL PURPOSE: The primary uses of the records are to facilitate the (1) processing of claims or applications; (2) recordation of adjudicative actions; and (3) indexing of documentation in case files supporting administrative actions.

ROUTINE USES: BLM and the Department of the Interior (DOI) may disclose your information on this form: (1) to appropriate Federal agencies when concurrence or supporting information is required prior to granting or acquiring a right or interest in lands or resources; (2) to members or the public who have a need for the information that is maintained by BLM for public record; (3) to the U.S. Department of Justice, court, or other adjudicative body when DOI determines the information is necessary and relevant to litigation; (4) to appropriate Federal, State, local, or foreign agencies responsible for investigating, prosecuting violation, enforcing, or implementing this statute, regulation, or order; and (5) to a congressional office when you request the assistance of the Member of Congress in writing.

EFFECT OF NOT PROVIDING THE INFORMATION: Disclosing this information is necessary to receive or maintain a benefit. Not disclosing it may result in rejecting the application.

Project description:

In 1989, the US Department of the Interior – Bureau of Land Management (BLM) issued a Record of Decision to the Southern California Edison Company (SCE) for the Devers Palo Verde 2 (DPV2) 500 kilovolt (kV) transmission line project. Later that year, the BLM issued Right-of-Way Grant CA-17905 / AZ-23805 to SCE for the construction, operation, and maintenance of DPV2 across federal land, pursuant to Title V of the Federal Land Policy and Management Act of 1976. The route followed the existing DPV1 line and terminated at the Palo Verde Nuclear Generating Station (PVNGS).

In this application, SCE requests an amendment to the existing Right-of-Way Grant for DPV2 to accommodate the following:

- 1) construction of a new series capacitor site in Arizona (an additional 75 ft X 321 ft = .55 acres);
- 2) construction of a new series capacitor site in California (an additional 75 ft X 321 ft = .55 acres);
- 3) construction of a 500 kV switchyard called the Midpoint Substation (Midpoint) west of Blythe, California. The preferred location and one alternate site (Wiley Well) are located on BLM land. The other alternate site (Mesa Verde) is located on private land. Midpoint would be constructed if SCE and Desert Southwest Power, LLC, agree to share a single 500 kV transmission line between Blythe and Devers (Total necessary is 1,000 ft X 1,900 ft = 43.62 acres);
- 4) addition of a land parcel upon which SCE would construct the 500 kV transmission line in Arizona as the line proceeds to a new termination point at the Harquahala Generating Station Switchyard, located approximately 16 miles northwest of PVNGS. SCE prefers to terminate the proposed 500kV transmission line at the Harquahala Generating Station Switchyard; however, SCE must retain the existing right-of-way to the PVNGS to preserve the ability to implement the Palo Verde sub-alternate route described in the response to Question 13a.iii) in this application and authorized in the existing DPV2 Right of Way grant (add'l r/w necessary 100 ft X 5280 ft = 12.12 acres).
- 5) Revision to Exhibit B-6, Visual Mitigation Measure 2 to allow DPV2 tower heights and spacing to be different than the existing DPV1 line towers and spacing in certain circumstances, as discussed in Section 17.b) of this application.

These five revisions to the existing DPV2 Right of Way grant are considered the "Project". The Project areas on BLM land not previously identified in the existing Right of Way grant are as follows:

Facility	Section	Township	Range	Distance	PEA Map
Arizona Series Capacitor	18	2N	14W	75 ft X 321 ft	3-2a
California Series Capacitor	6	6S	14E	75 ft X 321 ft	3-2b
Midpoint Substation					
Preferred Site	26	2N	21E	1,000 ft x 1,900 ft	3-2a
Wiley Well Alternate Site	5	3N	20E	1,000 ft x 1,900 ft	3-2a
500kV Transmission Line	34	2N	8W	100 ft X 5,280 ft	*

* Project area location shown on Attachments A and B.

SCE filed an Application for a Certificate of Public Convenience and Necessity (CPCN) with the California Public Utilities Commission (CPUC) for DPV2 on April 11, 2005. SCE understands that the BLM must evaluate the potential environmental impacts associated with the amendments to the DPV2 Right of Way Grant pursuant to the National Environmental Policy Act. To assist the BLM in its evaluation, April 13, 2005 SCE delivered copies of the Proponent's Environmental Assessment (PEA) that was included in the CPUC filing. The PEA describes the entire DPV2 project because the CPUC has not previously approved the construction of this project. Although the BLM only needs to review the amendments to the existing, previously approved Right of Way Grant, the PEA may be used for that more limited NEPA review by focusing on the changes described in this amendment application.

(a) Type of system or facility: 500kV electrical transmission line, two series capacitor bank stations, and Midpoint. See Sections 3.1-3.4 of the PEA.

(b) Related structures and facilities: see Section 3.3 of the PEA for transmission line structures, Section 3.4 of the PEA for series capacitor facilities, and 3.1.2.2 for Midpoint.

(c) Physical specifications: see attached plot plan for series capacitors, attachment A and B for the transmission line, and Figure 3-1 of the PEA for Midpoint.

(d) Term of years needed: perpetual, consistent with existing Right of Way Grant.

(e) Time of year of use or operation: Year-round

(f) Volume or amount of product to be transported: The electric transmission line will transport approximately 2,700 amps of electricity under normal conditions and about 3,600 amps of electricity under contingency conditions.

(g) Duration and timing of construction: Construction of the entire transmission line and series capacitor banks will require approximately 2 years, including mobilization and demobilization of the workforce. See Section 3.5 of the PEA.

(h) Temporary work areas needed for construction: Material and equipment staging areas are needed for construction. See Section 3.5.4 of the PEA.

13a. Describe other reasonable alternatives routes and modes considered.

- i) Series Capacitor Banks: SCE considered installing the series capacitor banks at the existing Devers substation and Harquahala Switchyard.
- ii) Midpoint Substation: As discussed in Section 3.2.2.4 of the PEA, SCE has considered a preferred and two alternate sites for the substation. The two alternative locations are located to the west of the preferred site. They are referred to as the Wiley Well and Mesa Verde sites.
- iii) Transmission Line route section 34, T2N, R8W: As discussed below, other proposed transmission line projects are also considering terminating at the

Harquahala Switchyard. In addition to the BLM and CPUC, SCE must also receive approval of the DPV2 route in Arizona from the Arizona Corporation Commission (ACC). Due to the uncertainty of approval of SCE's proposed route to the Harquahala Switchyard by the ACC due to the possibility of competing applications, SCE considered the following two alternative routes to the proposed route to the Harquahala Switchyard:

- a. Harquahala–West subalternate route (see page 3-13 of the PEA).
Currently, Arizona Public Service (APS) is planning for a Palo Verde Hub to TS-5 500 kV transmission line that may parallel DPV1 between the PVNGS interconnection area and the Central Arizona Project Canal (CAP). The Harquahala-West subalternate route may become SCE's preferred route if the Palo Verde Hub to TS-5 line is constructed in a manner that would preclude the DPV2 line from entering the Harquahala Switchyard from the east.
- b. The Palo Verde subalternate route (see page 3-14 and Map 3-3 of the PEA). The Right-of-Way grant for construction of the DPV2 line is parallel to the DPV1 line from the Harquahala Switchyard Junction to PVNGS. This existing, subalternate route may become SCE's preferred route if the Palo Verde Hub to TS-5 line is constructed in a manner that would preclude the DPV2 line from entering the Harquahala switchyard from the east and the Harquahala –West subalternate is not approved by the ACC or any other agency with approval authority. SCE would relinquish this subalternate right-of-way route should either the proposed route or Harquahala-West subalternate route be utilized to allow termination of the DPV2 line at the Harquahala Switchyard.

13b. Why were these alternatives not selected?

- i) The series capacitor banks would be located at sites that would optimize system reliability performance due to the spacing between the new capacitors and existing substation sites. This spacing lowers short circuit duty, which in turn reduces the complexity in protection design and coordination as compared to the alternate locations. The selected sites are adjacent to the existing DPV1 series capacitor bank facilities whose locations were selected for the same reasons. Additionally, due to the prior construction of the DPV1 series capacitors, these two preferred sites are on partially disturbed land.
- ii) The preferred location for the Midpoint Substation is farther from I-10 than the Mesa Verde and Wiley Well alternate sites and would have less potential for visual impact to travelers. Additionally, the Mesa Verde site would require building a longer substation access road, creating a potential for greater environmental impact. The preferred site is located within an existing utility corridor with convenient access to existing regional transmission lines including the DPV1 and DPV2 lines and the existing 161 kV Western and IID north-south trending lines. The alternate sites would require longer new transmission lines to interconnect with the existing regional lines, which creates a potential for greater land disturbance and visual impact and would establish transmission lines outside the existing utility corridor.

- iii) The Harquahala-West subalternate route was not selected because it would result in more land disturbance than the preferred route, see section 5.3.1 of the PEA. Although the Harquahala-West alternative is the shortest route, this route has no existing transmission lines, whereas the proposed route traverses previously disturbed lands adjacent to the existing DPV1 transmission line and the Harquahala-Hassayampa transmission line.

As discussed in Section 2.3.2 of the PEA, for the proposed DPV2 project, SCE would construct a new 500 kV line from Devers to the Harquahala Switchyard instead of the PVNGS Switchyard. SCE would then use the existing Harquahala - Hassayampa 500 kV line to complete the electrical connection of the DPV2 Project to the Hassayampa Switchyard. The Hassayampa Switchyard is a satellite switchyard and is functionally equivalent to connecting at the PVNGS Switchyard, as is permitted in the existing DPV2 right-of-way grant. Terminating at the Harquahala Switchyard eliminates the potential ground disturbance to about 11 acres (8.9 acres of temporary disturbance) and the construction of an additional 27 transmission line towers (see PEA Section 5.3.1.2.) However, SCE would use the Palo Verde subalternate route directly to PVNGS if SCE is unable to obtain the right to use the Harquahala - Hassayampa 500 kV transmission line.

13c. Give an explanation as to why it is necessary to cross federal lands. The federal lands for the proposed series capacitors are within or adjunct to the corridor established for the DPV2 line in the 1989 right of way grant. The existing rights of way for the DPV1, DPV2, and Harquahala-Hassayampa transmission lines are also already partially on federal lands. Thus, installing the new facilities on these previously disturbed federal lands is the most efficient and least impacting proposal.

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency.

- i) The BLM approved the Right of Way Grant for the DPV1 project in 1978. This transmission line began operation in 1982.
- ii) The BLM approved the Right of Way Grant for the DPV2 project in 1989.
- iii) The BLM approved an amendment to the Devers - Palo Verde right of way grant to build the DPV1 series capacitors in 1984. The series capacitors are in operation.
- iv) SCE is aware that the BLM approved the Harquahala Generating Company project for the Harquahala Generating Station and Switchyard, and the Harquahala-Hassayampa transmission line.
- v) Based upon BLM staff recommendation, SCE will be submitting a separate application to the BLM for construction of a new telecommunications facility needed for the DPV2 project. The new facility is described in section 3.4.2 of the enclosed PEA. The facility would be located on BLM land, 1 mile northwest of Salome in La Paz County, Arizona in Section 31 T6N, R10W.

- vi) SCE understands that the BLM is considering a proposal to construct the Desert Southwest Transmission Line Project from Blythe to Devers.
- vii) SCE understands that the California Energy Commission is considering an application from Blythe Energy, LLC for the proposed Blythe Energy Project 230kV Transmission Line Modifications from SCE's Buck Boulevard substation in Blythe to Metropolitan Water District's Julian Hinds substation.
- viii) SCE is aware of a pending Arizona Public Service TS-5 transmission line project from a proposed substation north of Phoenix, Arizona to the PVNGS switchyard.

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal (construction, operation, and maintenance); (b) estimated cost of next best alternative; and (c) expected public benefits.

Please see PEA Chapter 2 for a discussion of Project need, alternatives, and benefits. Project cost information is provided under section 3.8 of the enclosed PEA. The cost of the series capacitors is shown in Table 3-10 of the PEA. The cost of the transmission line segment on Section 34, T2N, R8W is approximately \$600,000 and is included in the transmission line costs shown in Table 3-10. The need for the series capacitors is discussed in section 3.4.1 of the PEA. The potential need for the Midpoint Substation is discussed in Section 2.5 of the PEA. The transmission line segment on Section 34, T2N, R8W is needed to complete the proposed alignment into the Harquahala Generating Station switchyard. SCE expects that these improvements will allow for increased transmission of electric energy to the benefit of residents in the Southwest.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

The new series capacitors, the Midpoint Substation, and the construction of the transmission line to the Harquahala Switchyard will not likely have any effects on the population and rural lifestyle in the area. Please see PEA Section 5.1.3, which presents a detailed discussion of potential project effects on the socio-economics, population and housing of the entire project area.

An estimated total of 205 construction personnel are expected to be needed for the entire project in California and Arizona. Approximately thirty construction personnel will be needed at any one time for construction of the series capacitor, Midpoint Substation, and Harquahala East transmission line segment described in this application. No permanent housing would be required since a long-term work force would not be needed after construction is completed. Temporary housing is available in the Project area. Workers involved with construction of the proposed facilities would commute from nearby communities (Blythe or Indio in California or Blythe or Goodyear in Arizona).

Project construction would benefit the economy of the local counties by providing construction employment and an increase in property tax revenues. The rural lifestyle of the area would be temporarily disturbed by the influx of workers during the construction

period, but would not be permanently affected once the Project becomes operational. Maintenance activities generally involve an annual inspection of the transmission line and will have little, short-term impact on the local area.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

Please see the following six sections of the PEA:

a) air quality: Section 5.1.6 presents a detailed discussion of potential project effects on the air quality of the project area. Construction of the series capacitors, Midpoint Substation, and the additional transmission line will not have any adverse environmental impacts related to air quality. Construction activities will result in short-term vehicle and equipment emissions and dust. Vehicles and equipment will be maintained to manufacturers' specifications and best available control techniques will be used to minimize emissions. Water or other dust suppression measures will be used to minimize and control dust on disturbed surfaces.

b) visual impact: Sections 5.1.11 and 5.4.10 present a detailed discussion of potential project effects on the visual resources of the project area. The preferred and alternate Midpoint Substation sites are not located in close proximity to potential viewers. The proposed series capacitor and transmission facilities would be located adjacent to existing similar facilities, with existing access routes and other land modifications. Therefore project effects to visual resources of the area would be minimized.

Exhibit B-6, Visual Mitigation Measure 2 of the existing BLM Right-of-Way grant for DPV2 states:

"For the proposed alignment, tower spacing will correspond to the spacing of the existing transmission line, except where other resource concerns warrant. Additionally, new tower heights will be adjusted such that the top elevations of each set of towers (new and existing) are horizontal with each other. This will visually coordinate perceptions of towers and conductors as one element. Site specific conditions will determine when such mitigation is feasible. Other exceptions to these two measures are where towers will be sited to avoid sensitive features and/or to allow conductors to clearly span the features."

. In a June 24, 2004 Board of Governors Motion (refer to weblink <http://www.caiso.com/docs/09003a6080/31/ac/09003a608031ac4d.pdf>), the California Independent System Operator (CAISO) directed SCE to complete an upgrade of the DPV1 series capacitors to a minimum 2700 amp rating. SCE system criteria require that a parallel line (in this case DPV2) have the same rating. This capacity rating necessitates that the heights of some of the proposed Devers-Harquahala towers be slightly taller than

the existing adjacent DPV1 towers and, in some locations, tower spacing may not correspond to the adjacent DPV1 towers, to provide adequate conductor ground clearance. SCE will comply with the above mitigation measure to the extent feasible. The DPV2 line would be constructed in a utility corridor adjacent to the DPV1 line and visual impacts would be less than significant even when compliance with this mitigation measure is not possible.

c) surface and ground water quality and quantity: Section 5.1.5 presents a detailed discussion of potential project effects on the hydrology of the project area. No groundwater would be used for construction or operations. Surface water run-off and sedimentation would be minimized because existing access routes would be used.

d) control or structural change on any stream or surface water bodies: Section 5.1.5 presents a detailed discussion of potential project effects on the hydrology of the project area. Placement of project facilities in streams and washes would be avoided wherever possible. Any streams or washes affected by construction of the series capacitors and the Midpoint Substation would be restored to pre-construction configuration in accordance with best management practices and any applicable regulatory requirements of any agencies from whom permits must be obtained for performing work in or affecting streams or washes, such as the U.S. Army Corps of Engineers.

e) existing noise levels: Section 5.1.9 presents a detailed discussion of potential project effects on noise levels in the project area. The series capacitor and Midpoint Substation sites are located in vacant desert areas with no residences or sensitive receptors located within audible range. Construction would comply with local noise ordinances. Audible noise associated with operation of the transmission line is a crackling or buzzing sound caused by corona discharge near the conductors or insulators. The level of corona-generated noise levels would be below ambient levels.

f) the surface of the land, including vegetation, permafrost, soil and soil stability: Section 5.1.8 presents a detailed discussion of potential project effects on the biological resources of the project area. Based on available information including recent field surveys, the project would not affect the biological resources of the project area. Section 5.1.4 presents a detailed discussion of potential project effects on the soils of the project area. Since existing access would be used, soil erosion would be minimized. Surfaces that were disturbed temporarily by construction would be revegetated.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

Please see PEA Section 5.1.8, which presents a detailed discussion of potential project effects on the biological resources of the project area. Construction activities could potentially result in some loss of habitat and potential for harm to threatened and endangered species within the direct construction area. However, implementation of appropriate mitigation measures is expected to reduce any impacts to less than significant. SCE will conduct desert tortoise protocol surveys of the California series capacitor site and applicable Midpoint Substation sites to collect data for use in a Biological Assessment. Impacts to listed species will need to be evaluated by the BLM

and the U.S. Fish and Wildlife Service to meet any regulatory requirements of any agencies from whom permits or take authorizations must be obtained.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

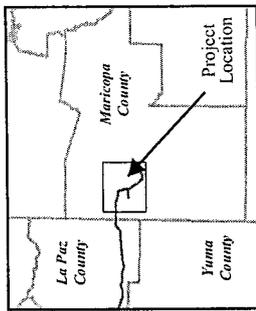
Please see PEA Section 5.1.13, which presents a detailed discussion of potential project effects related to hazardous materials. Project construction activities would involve the operation of heavy equipment and support vehicles, on site. A hazardous substance management, handling, storage, disposal, and emergency response plan have been included as part of the project design and are incorporated into SCE's standard construction, operation, and maintenance procedures. Operation of the proposed facilities would not cause the routine transport, use, or disposal of hazardous materials.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

USDOJ – BLM
690 West Garnet
P.O. Box 581260
North Palm Springs, CA 92258-1260

DPV2 BLM Application5 05/10/05

ATTACHMENT A



- Proposed Devers - Palo Verde No. 2 500kV Transmission Line
- Existing Devers - Palo Verde No. 1 500kV Transmission Line
- Existing Harquahala - Hassayampa 500kV Transmission Line



Not to Scale - Line separation shown for illustrative purposes.



To Devers

Proposed Devers - Palo Verde No. 2 (New Construction)

Devers - Palo Verde No. 1

Harquahala Generation Station

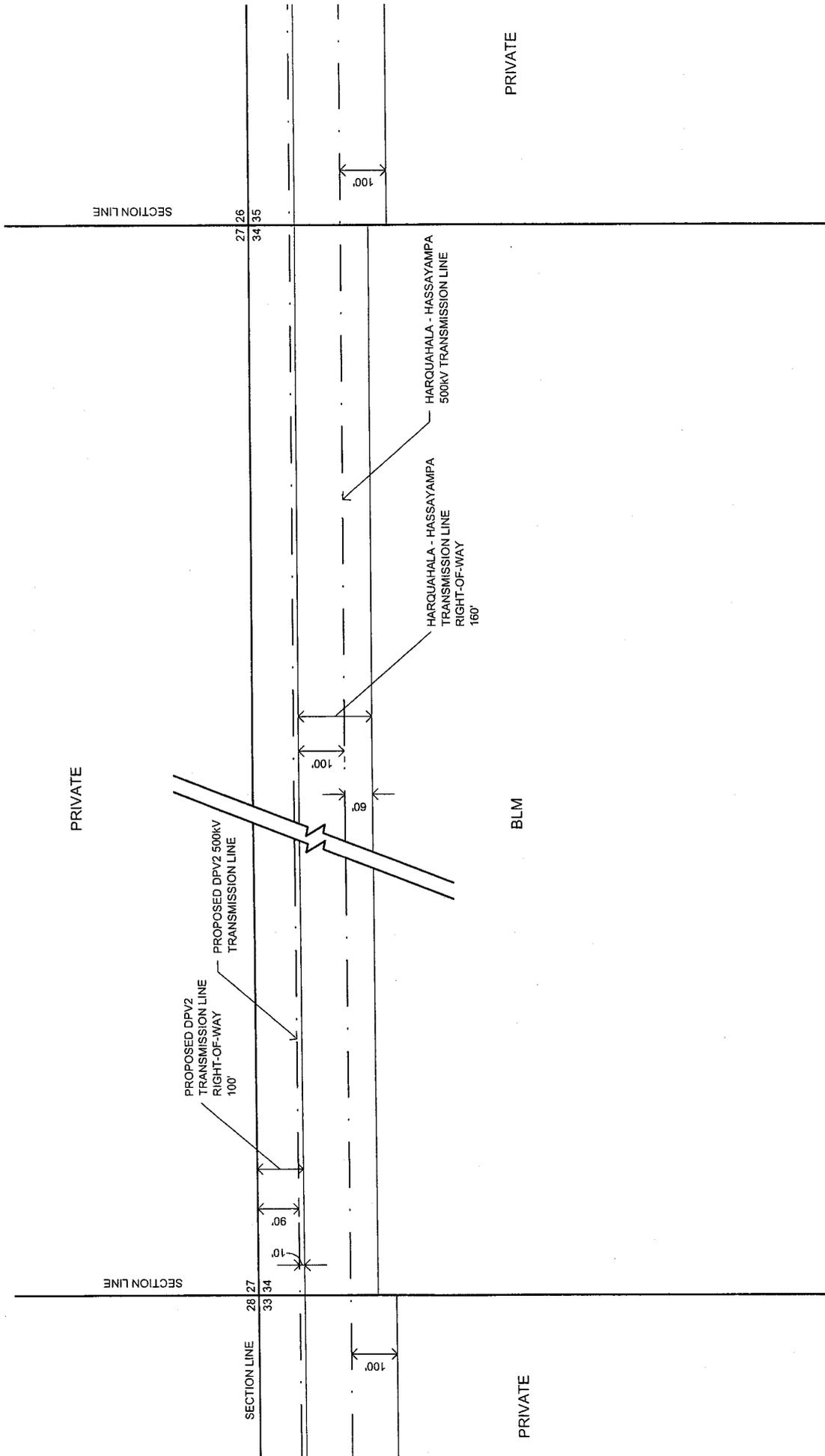
Portion of Proposed DPV2 Transmission Line which requires new right-of-way from BLM (See Attachment B)

Harquahala - Hassayampa

Palo Verde Switchyard

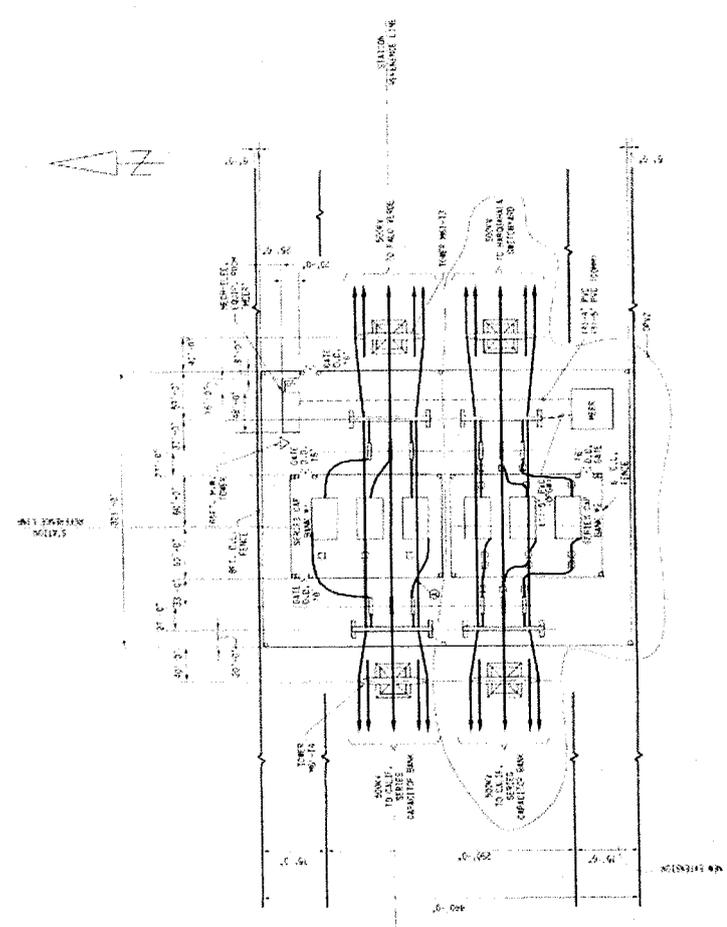
Hassayampa Switchyard

MARICOPA COUNTY



Attachment B
 Devers - Palo Verde No. 2
 Right-of-Way Application

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 O FOR SEE DRAWING SHEET 5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

EDISON		EDISON INTERNATIONAL COMPANY	
500KV SERIES CAPACITOR BANKS PLOT PLAN		SHEET NO.	
DATE	REV.	BY	CHKD.
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11-15-50	100	J. H. BROWN	J. H. BROWN

DPV2 ARIZONA SERIES CAPACITORS DRAFT-0

EDISON INTERNATIONAL COMPANY
 500KV SERIES CAPACITOR BANKS PLOT PLAN
 SHEET NO. 0
 DATE 11-15-50
 BY J. H. BROWN
 CHKD. J. H. BROWN

4

Code of Federal Regulations Title 50 Wildlife and Fisheries

CHAPTER I—UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

Subpart B—Rights-of-Way General Regulations

§29.21 What do these terms mean?

Compatible use means a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge. The term “inconsistent” in section 28(b)(1) of the Mineral Leasing Act of 1920 (30 U.S.C. 185) means a use that is not compatible.

Department means U.S. Department of the Interior unless otherwise specified.

National Wildlife Refuge System land means lands and waters, or interests therein, administered by the Secretary as wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.

Other lands means all other lands, or interests therein, and waters administered by the Secretary through the U.S. Fish and Wildlife Service which are not included in National Wildlife Refuge System lands, e.g., administrative sites, research stations, fish hatcheries, and fishery research stations.

Project Manager means the officer in charge of the land under administration by the U.S. Fish and Wildlife Service.

[34 FR 19907, Dec. 19, 1969, as amended at 39 FR 5490, Feb. 13, 1974; 42 FR 43917, Aug. 31, 1977; 44 FR 42976, July 23, 1979; 48 FR 31655, July 11, 1983; 51 FR 7575, Mar. 5, 1986; 65 FR 62483, Oct. 18, 2000]

§29.21–1 Purpose and scope.

The regulations in this subpart prescribe the procedures for filing applications and the terms and conditions under which rights-of-way over and across the lands administered by the U.S. Fish and Wildlife Service may be granted.

(a) *National Wildlife Refuge System lands.* Applications for all forms of rights-of-way on or over such lands shall be submitted under authority of Pub. L. 89–669, (80 Stat. 926; 16 U.S.C. 668dd) as amended, or for oil and gas pipelines under section 28 of the Mineral Leasing Act of 1920 (41 Stat. 449; 30 U.S.C. 185) as amended by Pub. L. 93–153, following application procedures set out in §29.21–2. No right-of-way will be approved unless it is determined by the Regional Director to be compatible. See §29.21–8 for additional requirements applicable to rights-of-way for electric power transmission lines and §29.21–9 for additional requirements applicable to rights-of-way for pipelines for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom.

(b) *National Wildlife Refuge System lands—easement interest.* Applications for all forms of rights-of-way across lands in which the United States owns only an easement interest may be submitted to the Regional Director in letter form. No map exhibit is required, however, the affected land should be described in the letter or shown on a map sketch. If the requested right-of-way will not adversely affect the United States’ interest, the Regional

Director may issue a letter stating that the interest of the United States to the right-of-way easement would not be affected provided there would be no objection to a right-of-way by the fee owner. If the interest of the United States will be affected, application for the right-of-way must be submitted in accordance with procedures set out in §29.21-2.

(c) *Other lands outside the National Wildlife Refuge System.* Rights-of-way on or over other lands will be granted in accordance with controlling authorities cited in 43 CFR part 2800, or for oil and gas pipelines under section 28 of the Mineral Leasing Act of 1920 (41 Stat. 449; 30 U.S.C. 185) as amended by Pub. L. 93-153. See §29.21-8 for additional requirements applicable to rights-of-way for electric power transmission lines and §29.21-9 for additional requirements applicable to rights-of-way for pipelines for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any other refined product produced therefrom. Applications will be submitted in accordance with procedures set out in §29.21-2.

[34 FR 19907, Dec. 19, 1969, as amended at 36 FR 2402, Feb. 4, 1971; 39 FR 5490, Feb. 13, 1974; 42 FR 43917, Aug. 31, 1977; 44 FR 42976, July 23, 1979; 48 FR 31655, July 11, 1983]

§29.21-2 Application procedures.

(a) *Application.* (1) No special form of application is required. The application should state the purpose for which the right-of-way is being requested together with the length, width on each side of the centerline, and the estimated acreage. Applications, including exhibits, shall be filed in triplicate with the Regional Director for the region in which the State is located. A list of States in each region and the addresses of the Regional Directors are contained in paragraph (c) of this section.

(2)(i) All applications filed pursuant to this subpart in the name of individuals, corporations, or associations must be accompanied by a nonreturnable application fee. No application fee will be required of (A) State of local governments or agencies or instrumentalities thereof except as to rights-of-way, easements or permits under section 28 of the Mineral Leasing Act of 1920, as amended by Pub. L. 93-153, or (B) Federal Government agencies.

(ii) Application fees will be in accordance with the following schedule:

(A) For linear facilities (e.g., powerlines, pipelines, roads, etc.).

Length	Payment
Less than 5 miles.....	\$50 per mile or fraction thereof.
5 to 20 miles.....	\$500.
20 miles and over.....	\$500 for each 20 miles or fraction thereof.

(B) For nonlinear facilities, \$250 for each 40 acres or fraction thereof.

(C) Where an application includes both linear and nonlinear facilities, payment will be the aggregate of amounts under paragraphs (a)(2)(ii)(A) and (B) of this section.

(D) When an application is received, the Regional Director will estimate the costs expected to be incurred in processing the application. If the estimated costs exceed the payments under paragraph (a)(2)(ii) (A), (B), or (C) of this section by an amount greater than the cost of maintaining actual cost records, the Regional Director shall require the applicant to make periodic payments in advance of the incurrence of such costs by the United States except for the last payment which will reflect final reimbursement for actual costs of the United States in processing the application. Overpayments may be refunded or adjusted by the Regional Director as appropriate.

(E) The Regional Director shall, on request by an applicant or prospective applicant, give an estimate based on the best available cost information, of the costs which would be incurred by the United States in processing an application. However, reimbursement will not be limited to the estimate of the Regional Director if the actual costs exceed the estimate. Prospective applicants are encouraged to consult with the Regional Director in advance of filing an application in regard to probable costs and other requirements.

(3)(i) By accepting an easement or permit under this subpart, the holder agrees to reimburse the United States for reasonable costs incurred by the Fish and Wildlife Service in monitoring the construction, operation, maintenance, and termination of facilities within or adjacent to the easement or permit area. No reimbursement of monitoring costs will be required of (A) State or local governments or agencies or instrumentalities thereof except as to right-of-way, easements, or permits granted under section 28 of the Mineral Leasing Act of 1920 as amended by Pub. L. 93-153, or (B) Federal Government agencies.

(ii) Within 60 days of the issuance of an easement or permit the holder must submit a nonreturnable payment in accordance with the following:

(A) For linear facilities e.g., powerlines, pipelines, roads, etc.).

Length	Payment
Less than 5 miles.....	\$20 per mile or fraction thereof.
5 to 20 miles.....	\$200.
20 miles and over.....	\$200 for each 20 miles or fraction thereof.

(B) For nonlinear facilities, \$100 for each 40 acres or fraction thereof.

(C) Where an easement or permit includes both linear and nonlinear facilities, payment will be the aggregate amounts under paragraph (a)(3)(2)(ii) (A) and (B) of this section.

(D) When an easement or permit is granted the Regional Director shall estimate the costs, based on the best available cost information, expected to be incurred by the United States in monitoring holder activity. If the estimated costs exceed the payments under paragraph (a)(3)(2) (ii), (A), (B), or (C) of this section by an amount which is greater than the cost of maintaining actual cost records for the monitoring process, the Regional Director shall require the holder to make periodic payments of the estimated reimbursable costs prior to the incurrence of such costs by the United States. Overpayments may be refunded or adjusted by the Regional Director as appropriate.

(E) Following the termination of an easement or permit, the former holder will be required to pay additional amounts to the extent the actual costs to the United States have exceeded the payments required by paragraphs (a)(3)(ii)(A), (B), and (C) of this section.

(4) All applications filed pursuant to this subpart must include a detailed environmental analysis which shall include information concerning the impact of the proposed use of the environment including the impact on air and water quality; scenic and esthetic features; historic, architectural, archeological, and cultural features; wildlife, fish and marine life, etc. The analysis shall include sufficient data so as to enable the Service to prepare an environmental assessment and/or impact statement in accordance with section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and comply with the requirements of the National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.), the Archeological and Historic Preservation Act of 1974 (16 U.S.C. 469 et seq.), Executive Order 11593 "Protection and Enhancement of the Cultural Environment" of May 13, 1971 (36 FR 8921), and "Procedures for the Protection of Historic and Cultural Properties" (36 CFR, part 800). Concerning the National Environmental Policy Act, the Regional Director may, at his discretion, rely on an environmental assessment or impact statement prepared by a "lead agency."

(b) *Maps.* A map or plat must accompany each copy of the application and must show the right-of-way in such detail that the right-of-way can be accurately located on the ground. Ties to Service land boundary corner monuments or some prominent cultural features which can be readily recognized and recovered should be shown where the right-of-way enters and leaves Service project land together with courses and distances of the centerline. The width of the right-of-way on each side of the centerline together with the acreage included within the right-of-way or site must also be shown. If the right-of-way or site is located wholly within Service project land, a tie to a Government corner or prominent cultural feature which can be readily recognized and recovered should be shown.

(c) *Regional or Area Director's Addresses.*

(1) For the States of California, Hawaii, Idaho, Nevada, Oregon and Washington:

Regional Director, U.S. Fish and Wildlife Service, Lloyd 500 Building, Suite 1692, 500 NE. Multnomah Street, Portland Oregon 97232.

(2) For the States of Arizona, New Mexico, Oklahoma, and Texas:

Regional Director, U.S. Fish and Wildlife Service, 500 Gold Avenue, P.O. Box 1306, Albuquerque, New Mexico 87103.

(3) For the States of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin:

Regional Director, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111.

(4) For the States of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and Virgin Islands:

Regional Director, U.S. Fish and Wildlife Service, Richard B. Russell, Federal Building, Suite 1200, 75 Spring Street, S.W., Atlanta, Georgia 30303.

(5) For the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, New Jersey, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia:

Regional Director, U.S. Fish and Wildlife Service, One Gateway Center, Suite 700, Newton Corner, Massachusetts 03158.

(6) For the States of Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming:

Regional Director, U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225.

(7) For the State of Alaska:

Regional Director, U.S. Fish and Wildlife Service, 1101 E. Tudor Road, Anchorage, Alaska 99503.

[31 FR 16026, Dec. 15, 1966, as amended at 42 FR 43917, Aug. 31, 1977; 44 FR 42976, July 23, 1979; 48 FR 31655, July 11, 1983]

§29.21-3 Nature of interest granted.

(a) Where the land administered by the Secretary is owned in fee by the United States and the right-of-way is compatible with the objectives of the area, permit or easement may be approved and granted by the Regional Director. Generally an easement or permit will be issued for a term of 50 years or so long as it is used for the purpose granted, or for a lesser term when considered appropriate. For rights-of-way granted under authority of section 28 of the Mineral Leasing Act of 1920, as amended, for pipelines for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom, the grant may be for a term not to exceed 30 years and the right-of-way may not exceed 50 feet, plus the area occupied by the pipeline and its related facilities unless the Regional Director finds, and records the reasons for his finding, that, in his judgment, a wider right-of-way is necessary for operation and maintenance after construction, or to protect the environment or public safety. Related facilities include but are not limited to valves, pump stations, supporting structures, bridges, monitoring and communication devices, surge and storage tanks, terminals, etc. However, a temporary permit supplementing a right-of-way may be granted for additional land needed during construction, operation, maintenance, or termination of the pipeline, or to protect the natural environment or public safety.

(b) Unless otherwise provided, no interest granted shall give the grantee any right whatever to remove any material, earth, or stone for construction or other purpose, except that stone or earth necessarily removed from the right-of-way in the construction of a project may be used elsewhere along the same right-of-way in the construction of the same project.

[31 FR 16026, Dec. 15, 1966, as amended at 42 FR 43918, Aug. 31, 1977]

§29.21-4 Terms and conditions.

(a) Any right-of-way easement or permit granted will be subject to outstanding rights, if any, in third parties.

(b) An applicant, by accepting an easement or permit agrees to such terms and conditions as may be prescribed by the Regional Director in the granting document. Such terms and conditions shall include the following, unless waived in part by the Regional Director, and may include additional special stipulations at his discretion. See §29.21-8 for special requirements for electric powerlines and §29.21-9 for special requirements for oil and gas pipelines.

(1) To comply with State and Federal laws applicable to the project within which the easement or permit is granted, and to the lands which are included in the right-of-way, and lawful existing regulations thereunder.

(2) To clear and keep clear the lands within the easement or permit area to the extent and in the manner directed by the project manager in charge; and to dispose of all vegetative and other material cut, uprooted, or otherwise accumulated during the construction and maintenance of the project in such a manner as to decrease the fire hazard and also in accordance with such instructions as the project manager may specify.

- (3) To prevent the disturbance or removal of any public land survey monument or project boundary monument unless and until the applicant has requested and received from the Regional Director approval of measures the applicant will take to perpetuate the location of aforesaid monument.
- (4) To take such soil and resource conservation and protection measures, including weed control on the land covered by the easement or permit as the project manager in charge may request.
- (5) To do everything reasonably within his power, both independently and on request of any duly authorized representative of the United States, to prevent and suppress fires on or near, lands to be occupied under the easement or permit area, including making available such construction and maintenance forces as may be reasonably obtainable for the suppression of such fires.
- (6) To rebuild and repair such roads, fences, structures, and trails as may be destroyed or injured by construction work and upon request by the Regional Director, to build and maintain necessary and suitable crossings for all roads and trails that intersect the works constructed, maintained, or operated under the right-of-way.
- (7) To pay the United States the full value for all damages to the lands or other property of the United States caused by him or by his employees, contractors, or employees of the contractors, and to indemnify the United States against any liability for damages to life, person or property arising from the occupancy or use of the lands under the easement or permit, except where the easement or permit is granted hereunder to a State or other governmental agency which has no legal power to assume such a liability with respect to damages caused by it to lands or property, such agency in lieu thereof agrees to repair all such damages. Where the easement or permit involves lands which are under the exclusive jurisdiction of the United States, the holder or his employees, contractors, or agents of the contractors, shall be liable to third parties for injuries incurred in connection with the easement or permit area. Grants of easements or permits involving special hazards will impose liability without fault for injury and damage to the land and property of the United States up to a specified maximum limit commensurate with the foreseeable risks or hazards presented. The amount of no-fault liability for each occurrence is hereby limited to no more than \$1,000,000.
- (8) To notify promptly the project manager in charge of the amount of merchantable timber, if any, which will be cut, removed, or destroyed in the construction and maintenance of the project, and to pay the United States in advance of construction such sum of money as the project manager may determine to be the full stumpage value of the timber to be so cut, removed, or destroyed.
- (9) That all or any part of the easement or permit granted may be terminated by the Regional Director, for failure to comply with any or all of the terms or conditions of the grant, or for abandonment. A rebuttable presumption of abandonment is raised by deliberate failure of the holder to use for any continuous 2-year period the easement or permit for the purpose for which it was granted or renewed. In the event of noncompliance or abandonment, the Regional Director will notify in writing the holder of the easement or permit of his intention to suspend or terminate such grant 60 days from the date of the notice, stating the reasons therefor, unless prior to that time the holder completes such corrective actions as are specified in the notice. The Regional Director may grant an extension of time within which to complete corrective actions when, in his judgment, extenuating circumstances not within the holder's control such as adverse weather conditions, disturbance to wildlife during breeding periods or periods of peak concentration, or other compelling reasons warrant. Should the holder of a right-of-way issued under authority of the Mineral Leasing Act, as amended, fail to take corrective action within the 60-day period, the Regional Director will provide for an administrative proceeding pursuant to 5 U.S.C. 554, prior to a final Departmental decision to suspend or terminate the easement or permit. In the case of all other right-of-way holders, failure to take corrective action within the 60-day period will result in a determination by the Regional Director to suspend or terminate the easement or permit. No administrative proceeding shall be required where the easement or permit terminates under its terms.

(10) To restore the land to its original condition to the satisfaction of the Regional Director so far as it is reasonably possible to do so upon revocation and/or termination of the easement or permit, unless this requirement is waived in writing by the Regional Director. Termination also includes permits or easements that terminate under the terms of the grant.

(11) To keep the project manager informed at all times of his address, and, in case of corporations, of the address of its principal place of business and the names and addresses of its principal officers.

(12) That in the construction, operation, and maintenance of the project, he shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin and shall require an identical provision to be included in all subcontracts.

(13) That the grant of the easement or permit shall be subject to the express condition that the exercise thereof will not unduly interfere with the management, administration, or disposal by the United States of the land affected thereby. The applicant agrees and consents to the occupancy and use by the United States, its grantees, permittees, or lessees of any part of the easement or permit area not actually occupied for the purpose of the granted rights to the extent that it does not interfere with the full and safe utilization thereof by the holder. The holder of an easement or permit also agrees that authorized representatives of the United States shall have the right of access to the easement or permit area for the purpose of making inspections and monitoring the construction, operation and maintenance of facilities.

(14) That the easement or permit herein granted shall be subject to the express covenant that any facility constructed thereon will be modified or adapted, if such is found by the Regional Director to be necessary, without liability or expense to the United States, so that such facility will not conflict with the use and occupancy of the land for any authorized works which may hereafter be constructed thereon under the authority of the United States. Any such modification will be planned and scheduled so as not to interfere unduly with or to have minimal effect upon continuity of energy and delivery requirements.

(15) That the easement or permit herein granted shall be for the specific use described and may not be construed to include the further right to authorize any other use within the easement or permit area unless approved in writing by the Regional Director.

[31 FR 16026, Dec. 15, 1966, as amended at 42 FR 43918, Aug. 31, 1977]

§29.21-5 Construction.

(a) If construction is not commenced within two (2) years after date of right-of-way grant, the right-of-way may be canceled by the Director of the U.S. Fish and Wildlife Service at his discretion.

(b) Proof of construction: Upon completion of construction, the applicant shall file a certification of completion with the Regional Director.

[42 FR 43919, Aug. 31, 1977]

§29.21-6 Disposal, transfer or termination of interest.

(a) *Change in jurisdiction over and disposal of lands.* The final disposal by the United States of any tract of land traversed by a right-of-way shall not be construed to be a revocation of the right-of-way in whole or in part, but such final disposition shall be deemed and taken to be subject to such right-of-way unless it has been specifically canceled.

(b) *Transfer of easement or permit.* Any proposed transfer, by assignment, lease, operating agreement or otherwise, of an easement or permit must be filed in triplicate with the Regional Director and must be supported by a stipulation that the transferee agrees to comply with and be bound by the terms and conditions of the original grant. A \$25 nonreturnable service fee must accompany the proposal. No transfer will be recognized unless and until approved in writing by the Regional Director.

(c) *Disposal of property on termination of right-of-way.* In the absence of any agreement to the contrary, the holder of the right-of-way will be allowed 6 months after termination to remove all property or improvements other than a road and useable improvements to a road, placed thereon by him; otherwise, all such property and improvements shall become the property of the United States. Extensions of time may be granted at the discretion of the Regional Director.

[31 FR 16026, Dec. 15, 1966, as amended at 42 FR 43919, Aug. 31, 1977]

§29.21-7 What payment do we require for use and occupancy of national wildlife refuge lands?

(a) Payment for use and occupancy of lands under the regulations of this subpart will be required and will be for fair market value as determined by appraisal by the Regional Director. At the discretion of the Regional Director, the payment may be a lump sum payment or an annual fair market rental payment, to be made in advance. If any Federal, State or local agency is exempted from such payment by and any other provision of Federal law, such agency shall otherwise compensate the Service by any other means agreeable to the Regional Director, including, but not limited to, making other land available or the loan of equipment or personnel, except that any such compensation shall relate to, and be consistent with the objectives of the National Wildlife Refuge System. The Regional Director may waive such requirement for compensation if he finds such requirement impracticable or unnecessary.

(b) When annual rental payments are used, such rates shall be reviewed by the Regional Director at any time not less than 5 years after the grant of the permit, right-of-way, or easement or the last revision of charges thereunder, The Regional Director will furnish a notice in writing to the holder of an easement or permit of intent to impose new charges to reflect fair market value commencing with the ensuing charge year. The revised charges will be effective unless the holder files an appeal in accordance with §29.22.

[42 FR 43919, Aug. 31, 1977, as amended at 65 FR 62483, Oct. 18, 2000]

§29.21-8 Electric power transmission line rights-of-way.

By accepting a right-of-way for a power transmission line, the applicant thereby agrees and consents to comply with and be bound by the following terms and conditions, except those which the Secretary may waive in a particular case, in addition to those specified in §29.21-4(b).

(a) To protect in a workmanlike manner, at crossings and at places in proximity to his transmission lines on the right-of-way authorized, in accordance with the rules prescribed in the National Electric Safety Code, all Government and other telephone, telegraph and power transmission lines from contact and all highways and railroads from obstruction and to maintain his transmission lines in such manner as not to menace life or property.

(b) Neither the privilege nor the right to occupy or use the lands for the purpose authorized shall relieve him of any legal liability for causing inductive or conductive interference between any project transmission line or other project works constructed, operated, or maintained by him on the servient lands, and any radio installation, telephone line, or other communication facilities now or hereafter constructed and operated by the United States or any agency thereof.

§29.21-9 Rights-of-way for pipelines for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom.

(a) *Application procedure.* Applications for pipelines and related facilities under this section are to be filed in accordance with §29.21-2 of these regulations with the following exception:

When the right-of-way or proposed facility will occupy Federal land under the control of more than one Federal Agency and/or more than one bureau or office of the Department of the Interior, a single application shall be filed with the appropriate State Director of the Bureau of Land Management in accordance with regulations in 43 CFR part 2800.

Any portion of the facility occupying land of the National Wildlife Refuge System will be subject to the provisions of these regulations.

(b) *Right-of-way grants* under this section will be subject to the special requirements of section 28 of the Mineral Leasing Act of 1920 (30 U.S.C. 185), as amended, as set forth below. Gathering lines and associated structures used solely in the production of oil and gas under valid leases on the lands administered by the Fish and Wildlife Service are excepted from the provisions of this section.

(1) *Pipeline safety.* Rights-of-way or permits granted under this section will include requirements that will protect the safety of workers and protect the public from sudden ruptures and slow degradation of the pipeline. An applicant must agree to design, construct, and operate all proposed facilities in accordance with the provisions of parts 192 and/or 195 of title 49 of the CFR and in accordance with the Occupational Safety and Health Act of 1970, Pub. L. 91-596, including any amendments thereto.

(2) *Environmental protection.* An application for a right-of-way must contain environmental information required by §29.21-2(a)(4) of this subpart. If the Regional Director determines that a proposed project will have a significant affect on the environment, there must also be furnished a plan of construction, operations, and rehabilitation of the proposed facilities. In addition to terms and conditions imposed under §29.21-4, the Regional director will impose such stipulations as may be required to assure: (i) Restoration, revegetation and curtailment of erosion of the surface; (ii) that activities in connection with the right-of-way or permit will not violate applicable air and water quality standards in related facilities siting standards established by law; (iii) control or prevention of damage to the environment including damage to fish and wildlife habitat, public or private property, and public health and safety; and (iv) protection of the interests of individuals living in the general area of the right-of-way or permit who rely on the fish, wildlife, and biotic resources of the area for subsistence purposes.

(c) *Disclosure.* If the applicant is a partnership, corporation, association, or other business entity it must disclose the identity of the participants in the entity. Such disclosure shall include where applicable (1) the name and address of each partner, (2) the name and address of each shareholder owning 3 percentum or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote, and (3) the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.

(d) *Technical and financial capability.* The Regional Director may grant or renew a right-of-way or permit under this section only when he is satisfied that the applicant has the technical and financial capability to

construct, operate, maintain and terminate the facility. At the discretion of the Regional Director, a financial statement may be required.

(e) *Reimbursement of costs.* In accordance with §29.21-2(a)(3) of this subpart, the holder of a right-of-way or permit must reimburse the Service for the cost incurred in monitoring the construction, operation, maintenance, and termination of any pipeline or related facilities as determined by the Regional Director.

(f) *Public hearing.* The Regional Director shall give notice to Federal, State, and local government agencies, and the public, and afford them the opportunity to comment on right-of-way applications under this section. A notice will be published in the *Federal Register* and a public hearing may be held where appropriate.

(g) *Bonding.* Where appropriate the Regional Director may require the holder of a right-of-way or permit to furnish a bond, or other security satisfactory to him, to secure all or any of the obligations imposed by the terms and conditions of the right-of-way or permit or by any rule or regulation, not to exceed the period of construction plus one year or a longer period if necessary for the pipeline to stabilize.

(h) *Suspension of right-of-way.* If the Project Manager determines that an immediate temporary suspension of activities within a right-of-way or permit area is necessary to protect public health and safety or the environment, he may issue an emergency suspension order to abate such activities prior to an administrative proceeding. The Regional Director must make a determination and notify the holder in writing within 15 days from the date of suspension as to whether the suspension should continue and list actions needed to terminate the suspension. Such suspension shall remain in effect for only so long as an emergency condition continues.

(i) *Joint use of rights-of-way.* Each right-of-way or permit shall reserve to the Regional Director the right to grant additional rights-of-way or permits for compatible uses on or adjacent to rights-of-way or permit areas granted under this section after giving notice to the holder and an opportunity to comment.

(j) *Common carriers.* (1) Pipelines and related facilities used for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom shall be constructed, operated, and maintained as common carriers.

(2)(i) The owners or operators of pipelines subject to this subpart shall accept, convey, transport, or purchase without discrimination all oil or gas delivered to the pipeline without regard to whether such oil or gas was produced on Federal or non-Federal lands.

(ii) In the case of oil or gas produced from Federal lands or from the resources on the Federal lands in the vicinity of the pipelines, the Secretary may, after a full hearing with due notice thereof to the interested parties and a proper finding of facts, determine the proportionate amounts to be accepted, conveyed, transported or purchased.

(3)(i) The common carrier provisions of this section shall not apply to any natural gas pipeline operated by any person subject to regulation under the Natural Gas Act or by any public utility subject to regulation by a State or municipal regulatory agency having jurisdiction to regulate the rates and charges for the sale of natural gas to consumers within the State or municipality.

(ii) Where natural gas not subject to state regulatory or conservation laws governing its purchase by pipelines is offered for sale, each such pipeline shall purchase, without discrimination, any such natural gas produced in the vicinity of the pipeline.

(4) The Regional Director shall require, prior to granting or renewing a right-of-way, that the applicant submit and disclose all plans, contracts, agreements, or other information or material which he deems necessary to determine whether a right-of-way shall be granted or renewed and the terms and conditions which should be

included in the right-of-way. Such information may include, but is not limited to: (i) Conditions for, and agreements among owners or operators, regarding the addition of pumping facilities, looping, or otherwise increasing the pipeline or terminal's throughput capacity in response to actual or anticipated increases in demand; (ii) conditions for adding or abandoning intake, offtake, or storage points or facilities; and (iii) minimum shipment or purchase tenders.

(k) *Limitations on export.* Any domestically produced crude oil transported by pipeline over rights-of-way granted pursuant to section 28 of the Mineral Leasing Act of 1920, except such crude oil which is either exchanged in similar quantity for convenience or increased efficiency of transportation with persons or the government of an adjacent foreign state, or which is temporarily exported for convenience or increased efficiency of transportation across parts of an adjacent foreign state and reenters the United States, shall be subject to all of the limitation and licensing requirements of the Export Administration Act of 1969.

(l) *State standards.* The Regional Director shall take into consideration, and to the extent practical comply with, applicable State standards for right-of-way construction, operation, and maintenance.

(m) *Congressional notification.* The Secretary shall notify the House and Senate Committees on Interior and Insular Affairs promptly upon receipt of an application for a right-of-way for pipeline 24 inches or more in diameter, and no right-of-way for such a pipeline shall be granted until 60 days (not including days on which the House or Senate has adjourned for more than three days) after a notice of intention to grant the right-of-way together with the Secretary's detailed findings as to terms and conditions he proposes to impose, has been submitted to the Committees, unless each Committee by resolution waives the waiting period.

[42 FR 43921, Aug. 31, 1977]

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***COMPREHENSIVE MANAGEMENT PLAN KOFA NWR & WILDERNESS
WILDERNESS MANAGEMENT PLAN NEW WATER MOUNTAINS WILDERNESS***

PREFACE

Adjacent locations and common wilderness management and wildlife habitat concerns led to a coordinated effort between the U.S. Fish and Wildlife Service (Service) and the Bureau of Land management (BLM) to develop one management plan that will cover both (Map 1) the New Water Mountains Wilderness (New Waters) and the Kofa National Wildlife Refuge and Wilderness (Kofa).

A joint Service/BLM management plan document has been published separate from this more detailed version. The joint agency document is shorter and does not contain a full description of agency legal mandates and policies as does this version. This version is meant to be used as the Refuge Manager's working tool as it contains some of the pertinent discussions regarding the major issues. Both documents attempt to integrate both agency concerns and issues in a way that recognizes the differences in legal mandates, but that focuses on the ecological relationship between the two wilderness areas. The plan objectives at the end of both documents are the result of consideration of the resources, the issues relative to the resources, and the respective agency mandates that come into play including the Wilderness Act.

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PART I:

The Planning Area, Boundary, and Background: An Area of Ecological Concern¹

This joint agency management plan is primarily concerned with Kofa NWR the adjacent New Waters. The goals and objectives contained in this document reflect a dominant wilderness management theme and focus on issues pertaining to Kofa and the New Waters, which are contiguous. Kofa consists of 665,400 total acres of which 510,900 acres is designated wilderness and is managed by the Service. The New Waters consist of 24,600 designated wilderness acres and is managed by the BLM. Both areas, along with various adjacent lands, form an ecological area that will be considered in this plan as the "area of ecological concern" (planning area).²

Historically, Kofa and the New Waters have played a central wildlife and wildlands conservation role in western Arizona. To counter dwindling populations of desert bighorn sheep in the earlier part of the century, a management theme relating to the recovery of the species had become necessary beyond the establishment of legal protection for the species under the Arizona State Game code.³ Thus, a clear and dominant strategy for the management of these historically "rocky, waterless sierras..." was designed specifically for the recovery of bighorn sheep populations.⁴

The Kofa Game Range was established in 1939 by Executive Order 8039 specifically for the recovery of bighorn sheep populations. Administrative responsibility for Kofa was shared by

¹ An Area of Ecological Concern can be defined as: "An essentially complete ecosystem (or set of interrelated ecosystems) of which one part cannot be discussed without considering the remainder." [*Malheur National Wildlife Refuge Master Plan and Environmental Assessment*, 1985, p. 7] For purposes of this plan both the New Water Mountains designated wilderness area, the Kofa NWR, and lands immediately adjacent to them are considered as the Area of Ecological Concern. The Service and the BLM realize this Area of Ecological Concern falls into a larger category of watersheds and ecoregions. For purposes of setting effective wildlife and wilderness management objectives, this plan needs to focus on a specifically defined geographical area (i.e., area of ecological concern) which will be termed the "planning area." Mineral Survey 3207, adjacent to the northwest side of the New Waters is also considered within the planning area.

As a point of clarification, the term "area of ecological concern" is an informal term used by the Service in its Comprehensive Management Planning process. It is not to be confused with the BLM's more formalized Area of Critical Environmental Concern (ACEC). An ACEC is an area of national or international significance that is threatened by adverse change -- a reduction or loss of values - unless special management attention is applied. With ACEC status, public land is managed to prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes. The actions prompted by this kind of status are similar to those implied by Wilderness designation. By virtue of Wilderness designation, this kind of special focus is afforded an area.

²The La Posa Interdisciplinary Plan addresses management concerns for lands on the west and north side of the New Waters and Kofa. Several actions in the La Posa Plan have been coordinated with this planning effort to assist in preserving natural values of this planning area.

³ According to David Brown, the Arizona bighorn sheep population received legal protection with the establishment of the State Game Code in 1913. He writes: "Although enforcement of the game laws may have been lax, and bighorn sheep continued to be killed for meat and as trophies those populations in desert ranges too arid and precipitous for livestock persisted. Isolated and peripheral populations continued to be extirpated..." Brown, David, *Early History*, in *The Desert Bighorn Sheep in Arizona*, Raymond M. Lee, editor, (Phoenix, AZ.: State of Arizona, 1993); p.5.

⁴ Original source, Baird, S.F. 1859. Mammals. p. 1-62 in Emory (1959): Part 2 -- Zoology of the boundary. United States and Mexican boundary survey. Dept. of the Interior. Washington, D.C., as noted in Lee, Raymond M., *The Desert Bighorn Sheep in Arizona*, (Phoenix, Az.: State of Arizona, 1993) p.1.

the Service and the U.S. Grazing Service until 1946. In 1946, the game range came under joint management of the Service and the newly established BLM. The Service and BLM co-managed Kofa until sole jurisdiction of the refuge was given to the Service with Public Law 94-223 in 1976. As with all Federal lands, the BLM still manages mining claim recordation of processes for Kofa. With passage of the Arizona Desert Wilderness Act of 1990, portions of Kofa and New Waters were designated as part of the National Wilderness Preservation System. This gave both the Service and BLM a common legal mandate for managing these specially designated areas.

By implementing this plan, the Service and the BLM will continue important efforts on behalf of the bighorn sheep. Both agencies also hope to engage in several strategies to promote enhancement of natural habitats for a variety of native species. The Wilderness designations imply the implementation of strategies that engender ecological and landscape outcomes that stem from natural processes. Thus, these designations, while not changing the purposes of these areas or the importance of current activities, call for the consideration of these activities within the larger ecological contexts and within national wilderness goals inherent in the Wilderness Act of 1964 and the Arizona Desert Wilderness Act of 1990.

Plan Purpose and Legal Foundations

This document provides management direction for the planning area for the foreseeable future. For refuge purposes, a period of 10 years is determined to be the working timeframe of this plan. All other previous management direction for the planning area is amended and replaced by this plan. Any future management guidance whose sphere of influence covers this planning area shall abide by the provisions of this document and become an amendment thereto.

The Service -- Executive Order 8039⁵, the legal authority that established the Kofa National Wildlife Refuge, 6 Refuge Manual 8, the Title 50 43, Code of Federal Regulations, Subpart 8560, will provide general management guidance for portions of the project area administered by the Service. Additionally general guidance for the project area will be provided by the Wilderness Act of 1964, the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668 *et seq.*), the Refuge Recreation Act of 1962 (16 U.S.C. 460 *et seq.*), and the Arizona Desert Wilderness Act of 1990.⁶

The BLM -- Direction for the New Waters in this plan is in conformance with the Lower Gila South Resource Management Plan. BLM Manual 8560 will provide general

⁵Section 1 of Executive Order 8038 states as follows: "Subject to the conditions expressed in the above mentioned acts and to all valid rights, the following described lands, in so far as title thereto is in the United States, are hereby withdrawn from settlement, locati on, sale, or entry, and reserved and set apart for the conservation and development of natural wildlife resources..."(Emphasis added)

⁶ This CMP document contains a more inclusive list of appropriate citations of law and other general legal guidance relative to the management of national wildlife refuges on page 10.

management guidance for BLM portions of the project area. Additionally, general guidance for the project area will be provided by the Wilderness Act of 1964, the Federal Land Policy Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.), and the Arizona Desert Wilderness Act of 1990.

Expected Planning Outcomes -- The following are the desired outcomes of this planning effort for both the New Water and Kofa areas.

The planning effort will ensure that wilderness values will be incorporated into the management of both the New Water and Kofa designated wilderness areas.

The planning effort will ensure that all other applicable legal mandates and national policy direction are incorporated in the management of the Kofa NWR and the New Water Wilderness Area.

The planning effort will provide a systematic process for making and documenting decisions for both the Kofa NWR and the New Water Wilderness Area.

The planning effort will determine the capability of the Kofa NWR and the New Water Wilderness Area to further Service and BLM long-range resource plans, and to provide a means of evaluating accomplishments.

The planning effort should provide a systematic process for making and documenting decisions in each area.

The planning effort should establish broad management strategies that are, to the degree possible, consistent with a Sonoran desert ecosystem perspective.

This planning effort should provide a practical basis for budgeting requests to implement management programs leading to the achievement of objectives for both areas.

This planning effort should achieve an optimum level of public acceptance and/or support for the management strategies adopted through effective involvement in the planning process.

The planning effort should facilitate and encourage cooperative, coordinated, and integrated resource conservation planning and management throughout the Area of Ecological Concern.

Planning Perspectives -- The comprehensive management planning effort will integrate various perspectives to produce holistic management approaches for the overall planning area

(i.e., Kofa and New Water areas) and ultimately the surrounding landscape over the next 10 years. The plan includes the following:

Integration of a broad landscape perspective that integrates all natural components of the area of ecological concern including, wilderness and non wilderness areas and the surrounding landscape.

Integration of a more narrow perspective for national wildlife refuge related policy issues that affect management of both wilderness and non wilderness areas

Integration of a more narrow perspective for designated wilderness to be managed by the BLM.

An understanding of these perspectives and the relationships between them leads to the formulation of an integral set of objectives for both the New Waters and Kofa areas for the next 10 years or the foreseeable future.

The comprehensive management plan goals and objectives for Kofa, and Wilderness objectives for the New Waters form the practical basis for the development of reasonable sets of actions by both agencies both individually and cooperatively. The refuge objectives form the basis for realistic and justifiable budget requests. The acquisition of the necessary funding and resources is expected to influence the degrees of intensity of the implementation process for both agencies.

The Issues -- An issue is considered to be a problem or opportunity arising from agency directives, resource conflicts, and expectations as identified in the initial stage of this effort, by agency resource specialists and the public. In addressing the identified issues, there are dominant wilderness and wildlife management themes for the planning area that include guidelines both agencies must follow. The agencies have made an effort to learn what issues are most important to the public within considerations of how the area's resources are to be managed for the long-term.

The issues that were identified were separated into three categories: activity plan issues, and issues solved by policy. Following is the final list of issues.

- **Issue #1: Protection of Wilderness Values** -- The long-term preservation of wilderness values is mandated by the Wilderness Act. The Arizona Desert Wilderness Act of 1990 effected wilderness mandates in specific areas including those that are a part of this project area. Sub-issues include: *Effects of visitor uses, illegal vehicle trespass, monitoring of effects of uses, monitoring effects of uses, need for facilities to protect values, management of exotic species, and opportunities for environmental education and public outreach.*

- **Issue #2: Wildlife and Habitat Management** -- The Service has mandated habitat and wildlife management responsibilities. BLM manages wildlife habitat. In coordination with AGFD, both agencies are striving to manage the range of habitats within the planning area to support a diversity of wildlife including special status species. Included in this issue is the management of the various facilities and associated maintenance of artificial water catchments in and outside the wilderness areas. This plan establishes a range of wildlife and habitat management strategies within the context of wilderness and the surrounding areas. Sub-issues include: *Cooperative management; scarcity of data; desert bighorn sheep; water developments; endangered, threatened, and candidate species⁷; management of exotic/ non-native species including pathogenic organisms; and fire management.*
- **Issue #3: Recreation and Public Access** -- Access routes for hunting, wildlife observation, and camping have presented resource protection challenges throughout the refuge and the northwestern portion of the New Waters area. Legal public access needs to be acquired through patented land along the northwest portion of the New Waters. Sub-issues include: *Legal Access; hunting; wildlife observation, camping, and photography; wilderness opportunities for solitude⁸, and noncompatible uses of the planning area.*
- **Issue #4: Minerals Management - Active Mining Claims** -- Several unpatented mining claims exist within Kofa. Future activities in these areas could affect visual resource values and wildlife habitat within the planning area. This plan will establish strategies for minimizing impacts of all claims.
- **Issue #5: Minimizing Potential Impacts from Private Lands** -- There are several private inholdings within the non-wilderness portion of Kofa and one private land parcel adjacent to the north end of the New Waters. Future activities in these areas could affect visual resource values and wildlife habitats within the planning area. This plan will establish strategies for eliminating potential impacts from these non-federal lands.
- **Issue #6: Surface Disturbances:** The wilderness portion of the planning area contains several surface disturbances that affect the area's natural appearance. This plan

⁷The major part of the Service's guidance is contained within applicable sections of 50 CFR 25.11, 50 CFR 35.3, and 6 Refuge Manual 8.8. For the BLM portions of the planning area, sensitive species will be managed under existing policy outlined in BLM Manual 8560.34.

⁸ The Wilderness Act defines wilderness as: "A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation (emphasis added); (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

determines some strategies for minimizing the effects of existing disturbances on wilderness values.

Issues To Be Resolved Through Existing Policy

Both agencies have existing policies as noted to address the following issues.

Issue #7: Cultural Resource Management -- Several cultural features are contained within the planning area. These areas will be managed in compliance with the Archeological Resource Protection Act and the National Historic Preservation Act of 1966. Cultural resource studies will be authorized on a case-by-case basis and guided by existing policy in BLM Manual 8560.32 on the New Waters, and regulations in 50 CFR 271.63 and 35.11 for the refuge.

Issue #8: Management of Rights of Way -- Guidance for the management of utility easements in nonwilderness portions of Kofa can be found in 50 CFR 29.21. No additional guidance is needed.

Issue #9: Scientific Research -- Studies for management, scientific, educational, or historical/cultural purposes in the New Waters will be guided by BLM Manual sections 8560.18. Studies on the refuge will be guided by 6 Refuge Manual 8.9(h), 50 CFR 27.63, and 50 CFR 35.11..

Issue #10: Law Enforcement and Emergency Services -- There are established wilderness management policies and regulations in BLM Manual 8560.39 and 43 CFR 8560.3, and 6 Refuge Manual 8.8 and 50 CFR 35.5, that provide for law enforcement and emergency access and equipment uses in incidents involving public health and safety and violations of civil and criminal law. No additional guidance is needed.

Issue #11: Military Ordnance Contamination -- A possibility of ordnance contamination exists on the Refuge portion of the planning area due to past military activities. Ordnance has previously been recovered from the refuge. In the event that unexploded ordnance is discovered, the Department of Defense will be contacted for its removal using the minimum tool required for safe removal in accordance with 6 Refuge Manual 8.8 - A. This concern is not an issue for the New Waters.

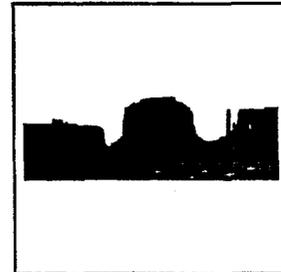
Issue #12: Native American Religious Access -- There have been no instances in which the Service or the BLM has been contacted by Native American tribes for arrangements to access spiritual sites. However, both agencies acknowledge that certain sites within the planning area are considered to be sacred. Both agencies will consider any requests by the Native American tribes in consideration of the Native American Religious Freedom Act.

Issue #13: Military Overflights -- The Arizona Desert Wilderness Act of 1990 states the following: "Nothing in this title shall preclude low level overflights of military aircraft, the designation of new units of special airspace, or the use or establishment of military flight training routes over wilderness areas designated by this title." The Service and BLM will continue to cooperate with the military in pursuing mutually beneficial opportunities to protect the integrity of wilderness airspace and the protection of natural resources within the planning area. .

UNIT 2 -- LEGAL, POLICY, AND ADMINISTRATIVE GUIDELINES AND OTHER SPECIAL CONSIDERATIONS

1. Introduction

This Unit outlines current legal, administrative, and policy guidelines for the management of national wildlife refuges, as well as those that provide guidance to the BLM relative to management of the New Waters. The Unit begins with the more general considerations, such as laws and executive orders for both the Service and BLM, then moves toward those guidelines that specifically apply to the Service and national wildlife refuges.



All of the legal, administrative, policy, and planning guidelines provide the framework within which management activities are proposed and developed. This guidance also provides the basis for a continued and improved partnership between the BLM and the Service and other natural resource agencies.

2. General Guidance Regarding Multi-jurisdictional Cooperation

As demonstrated by the participation of representatives from the Arizona Game and Fish Department (AGFD) at public meetings held for this planning effort, a third agency has a key interest in the development of this management plan. The AGFD, acting under the authority of the Arizona Game and Fish Commission, has responsibilities for the preservation and management of all wildlife species in the State of Arizona. Therefore, the AGFD will play a critical role during the planning and implementation of this plan. For wildlife resources on national wildlife refuges within the State of Arizona, the Service and the AGFD Department have always considered themselves as cooperative wildlife managers.

BLM Lands -- Management guidance for AGFD concerns on BLM portions of the planning area will be guided by the Master Memorandum of Understanding Between State of Arizona, Arizona Game and Fish Commission and Department of the Interior, Bureau of Land Management, March 1987.

Refuge Lands -- AGFD wildlife management concerns pertaining the Service portions of the planning area will be guided by legal and regulatory references cited below.

Multi jurisdictional Goal -- Due to the multi jurisdictional aspects of this planning effort, a specific goal of this plan is to ensure future coordination between the Service, BLM, and AGFD to promote the optimum protection of natural resources in the planning area and to provide for a naturally functioning ecosystem.

2. Legal Mandates

Administration of Kofa and New Waters is ultimately guided by bills passed by the United States Congress and signed into law by the President of the United States. These statutes are considered to be the law of the land, as are Executive Orders promulgated by the President. The following is a list of most of the pertinent statutes establishing legal parameters and policy direction to the National Wildlife Refuge System. Included are those statutes and mandates that pertain to the management of Wilderness and public domain lands.

Summary of Congressional Acts, Treaties, and other Legal Acts Relating to Administration of the National Wildlife Refuge System

1. *Lacey Act of 1900, as amended* (16 U.S.C. 701).
2. *Antiquities Act of 1906* (16 U.S.C. 431).
3. *Migratory Bird Treaty Act of 1918* (16 U.S.C. 703-711).
Migratory Bird Treaty Act of 1978 (40 Stat. 755).
4. *Migratory Bird Conservation Act (1929), as amended* (16 U.S.C. 715-715s).
5. *Migratory Bird Hunting Stamp Act of 1934* (U.S.C. 718-718h).
6. *Fish and Wildlife Coordination Act (1934), as amended* (16 U.S.C. 661-666).
7. *Historic Sites Act of 1935* (16 U.S.C. 461).
8. *Convention Between the United States of America and the Mexican States for the Protection of Migratory Birds and Game Mammals (1936)* (50 Sta. 1311).
9. *Convention of Nature Protection and Wildlife Preservation in the Western Hemisphere 1940* (56 Stat. 1354).
10. *Fish and Wildlife Act of 1956, as amended* (16 U.S.C. 742-742j).
11. *Refuge Recreation Act, as amended* (Public Law 87-714.76 Sta. 653; 16 U.S.C. 460k) September 28, 1962.
12. *Refuge Revenue Sharing Act of 1964* (16 U.S.C. 715s), *as amended* (P.L. 95-469, approved 10-17-78).
13. *Wilderness Act of 1964* (16 U.S.C. 1131-1136).

14. *Land and Water Conservation Fund Act of 1965, as amended* (16 U.S.C. 460L-4 to 460L-11), *and as amended through 1987*.
15. *National Wildlife Refuge System Administration Act of 1966* (16 U.S.C. 668dd-668ee).
16. *National Historic Preservation Act of 1966* (16 U.S.C. 470).
17. *National Environmental Policy Act of 1969, as amended* (42 U.S.C. 4321-4347).
18. *Protection and Enhancement of Environmental Quality Executive Order of 1970* (Executive Order 11514, dated March 5, 1970).
19. *Environmental Education Act of 1975* (20 U.S.C. 1531-1536).
20. *Use of Off-Road Vehicles on the Public Lands Executive Order of 1972, as amended* (Executive Order 11644, dated February 8, 1972, as amended by Executive Order 11989, dated May 24, 1977).
21. *Endangered Species Act of 1973* (16 U.S.C. 1531-1543 87 Stat. 884)(P.L. 93-205). *The Endangered Species Act as amended by Public Law 97-304, The Endangered Species Act Amendments of 1982, dated February 1983*.
22. *The Archeological Resource Protection Act of 1979* (P.L. 96-95, 93 Sta. 721, dated October 1979) (16 U.S.C. 470aa - 47011).
23. *Fish and Wildlife Conservation Act of 1980* (P.L. 96-366, dated September 29, 1980). ("Nongame Act") (16 U.S.C. 2901-2911; 94 Stat. 1322).
24. *Administrative Procedures Act* (5 U.S.C. 551-559, 701-706, 1305, 3105, 3344, 4301, 5362, 7521; 60 Stat. 237), *as amended* (P.L. 79-404, as amended).
25. *Bald Eagle Protection Act of 1940* (16 U.S.C. 668-668d; 54 Stat., as amended).
26. *Canadian United States Migratory Bird Treaty* (Convention Between the United States and Great Britain for Canada for the Protection of Migratory Birds. (39 Stat. 1702; TS 628), as amended).
27. *Clean Air Act* (42 U.S.C. 1857-1857f; 69 Stat. 322), *as amended*.
28. *Cooperative Research and Training Units Act* (16 U.S.C. 753a-753b, 74 Stat. 733), as amended. P.L. 86-686).

29. *Federal Aid in Wildlife Restoration Act* (16 U.S.C. 669-669j; 50 Stat. 917), *as amended*.
30. *Federal Land Policy Management Act of 1976* (43 U.S.C. 1701-1771, and other U.S.C. sections; 90 Stat. 2743). Public Law 94-579, October 1976.
31. *Federal Property and Administrative Services Act of 1949* (40 U.S.C. 471-535, and other U.S.C. sections; 63 Stat. 378), *as amended*.
32. *Fish and Wildlife Improvement Act of 1978* (16 U.S.C. 7421; 92 Stat. 3110) P.L. 95-616, November 1978.
33. *Freedom of Information Act* (5 U.S.C. 552; 88 Stat. 1561).
34. *Refuge Trespass Act* (18 U.S.C. 41; Stat 686).
35. *Transfer of Certain Real Property for Wildlife Conservation Purposes Act of May 1948*, (16 U.S.C. 667b-667d; 62 Stat. 240), *as amended*.
36. *Arizona Desert Wilderness Act of 1990*.

Bureau of Land Management Mandates

1. *BLM Manual 8560*
2. *Title 43, Code of Federal Regulations, Subpart 8560*
3. *Wilderness Act of 1964*
4. *Federal Land Policy and Management Act of 1976* (43 U.S.C. 1701 et seq.)
5. *Arizona Desert Wilderness Act of 1990*

State of Arizona Statutes

The following are pertinent sections of Arizona law which help clarify the role of AGFD in wildlife management activities within the State of Arizona.

1. Arizona Revised Statutes, Title 17, Sec. 102

Section 102 states: "Wildlife, both resident and migratory, native or introduced, found in this state except fish and bullfrogs impounded in private

ponds or tanks or wildlife and birds reared or held in captivity under a permit from the commission, are property of the state and may be taken at such times, in such places, in such manner and with such devices as provided by law or rule of the commission."

2. Arizona Revised Statutes, Title 17, Sec. 201

Section 201 states: "The laws of the state relating to wildlife shall be administered by the game and fish department."

3. Agency Wide Policy Directions

Fish and Wildlife Service Agency Mission

While the Service mission and purpose have been evolving since the early 1900s, it has always held on to a fundamental national commitment to threatened wildlife. The earliest national wildlife refuges and preserves are examples of this. Pelican Island, the first refuge, was established in 1903 for the protection of colonial nesting birds such as the snowy egret and the endangered brown pelican. The National Bison Range was instituted for the endangered bison in 1906, and Malheur NWR was established in Oregon in 1908 to benefit all migratory birds, with emphasis on colonial nesting species on Malheur Lake. It was not until the 1930s that the focus of refuge programs began to shift toward protection of migratory waterfowl (i.e., ducks and geese). As a result of drought conditions in the 1930s, waterfowl populations became severely depleted. During the next several decades, the special emphasis of the Service, then the Bureau of Sport Fisheries and Wildlife, became the restoration of critically depleted migratory waterfowl populations.

The passage of the Endangered Species Act of 1973 refocused the activities of the Service and other government agencies. This Act mandated the conservation of threatened and endangered species of fish, wildlife, and plants both through Federal action and by encouraging the establishment of state programs. In the late 1970s, the Bureau of Wildlife and Sport Fisheries was renamed the U.S. Fish and Wildlife Service, and its scope of wildlife conservation responsibilities was broadened to include endangered species and both game and nongame species. A myriad of other conservation oriented laws followed, including the Fish and Wildlife Conservation Act of 1980, which emphasized the conservation of nongame species.

The Service has no "organic" act on which to focus for the purposes of generating an agency mission. The agency mission has always been derived in consideration of the multitude of laws (as listed in Section 2 of this Unit) and treaties that collectively outlined public policy concerning wildlife conservation. The Department of the Interior Departmental Manual states the following:

*"The U.S. Fish and Wildlife Service is responsible for conserving, enhancing, and protecting fish and wildlife and their habitats for the continuing benefit of people through Federal programs relating to wild birds, endangered species, certain marine mammals, inland sport fisheries, and specific fishery and wildlife research activities."*⁹

⁹ Department Manual, 2 AM 2, Organization, 142 DM 1.1

National Wildlife Refuge System: Mission and Goals -- The National Wildlife Refuge System (System) is the only existing system of Federally owned lands managed chiefly for the conservation of wildlife. The System mission is a derivative of the Service mission. This mission was most recently revised by the President of the United States in Executive Order 12996 to reflect the importance of conserving natural resources for the benefit of present and future generations of people. The Executive Order states:

The mission of the National Wildlife Refuge System is to preserve a national network of lands and waters for the conservation and management of fish, wildlife, and plant resources of the United States for the benefit of present and future generations.

The Executive Order continues by specifying broad guiding principles describing a level of responsibility and concern for the nation's wildlife resources for the ultimate benefit of the people. These principles are as follows:

Public Use: The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Habitat: Fish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.

Partnerships: America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within wildlife refuges. Conservation partnerships with other Federal agencies, State agencies, Tribes, organizations, industry, and the general public can make significant contributions to the growth and management of the Refuge System.

Public Involvement: The public should be given a full and open opportunity to participate in decisions regarding acquisition and management of our National Wildlife Refuges.

Service Wilderness Objectives (Manual 6 RM 8.2 and 8.3)

1. Manage so as to maintain the wilderness resource for future benefit and enjoyment;
2. Preserve the wilderness character of the biological and physical features of the area;

3. Provide opportunities for research, solitude, and primitive recreational uses;
4. Retain the same level of pre-wilderness designation condition of the area;
and,
5. Ensure that the Works of man remain substantially unnoticeable.

BLM Mission and Vision: Ecosystem Management

The BLM is under congressional mandates to provide for orderly use and development of the public lands and to preserve the land and its resources from destruction. The Federal Land Policy and Management Act of 1976 (FLPMA) directs BLM to periodically inventory the lands and to project present and future uses in land use plans. These plans, management framework plans and resource management plans ensure that public lands are managed on a multiple use and sustained yield basis and that the quality of natural resources is preserved. The definition of multiple use is as follows:

"...[H]armonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output."¹⁰

Like the Service, the BLM has been evolving over the past two decades. New approaches are being implemented, moving away from traditional resource management strategies which emphasized commodity production and commercial use of natural resources. Management objectives were often designed to expedite the development, extraction, and/or production of resources on public lands. Other uses and values such as wildlife and fish habitats, some recreational activities, cultural, scenic, and aesthetic resources were often viewed as constraints or mitigation for more intensive uses. These emphases tended to separate BLM programs along functional lines. This lack of internal coordination detracted from the agency's ability to develop coherent and integrated management strategies with other government agencies, user groups, private landowners, and other interested parties.

In January 1994, the BLM introduced a statement of its new "vision" stating that the BLM is:

"...committed to safeguarding the ecological sustainability of the public's lands."¹¹

¹⁰ Cited from FLPMA, 43 U.S.C. 1702(e); Section 103, FLPMA of 1976.

¹¹ *Ecosystem Management in the BLM: From Concept to Commitment*, U.S. Department of the Interior, Bureau of Land Management, Washington, D.C., Jim Baca, Director, December 14, 1993.

The BLM's new vision called for the implementation of management actions that would conserve the diversity and protect the integrity of the land. In so doing, the BLM would hope to ensure that present and future generations would continue to derive economic, recreational, social, cultural, and aesthetic benefits from public lands. The major ingredient of this new vision has been the adoption of ecosystem management principles. The BLM expects that ecosystem management will assist them in coordinating efforts to identify and achieve the desired future condition of public lands at multiple geographic levels. The BLM is now engaging in the development of partnerships, sharing management responsibilities, and when appropriate, establishing common management goals with other federal, state, and private land managers, local communities, and other interested parties. This joint agency planning effort is one example of the new approach.¹²

BLM Wilderness Management Goals (BLM Manual 8561):

1. To provide for the long-term protection and preservation of the area's wilderness character under a principle of non-degradation. The area's natural condition, opportunities for solitude, opportunities for primitive and unconfined types of recreation, and any ecological, geological, or other features of scientific, educational, scenic, or historical value present will be managed so that they will remain unimpaired.
2. To manage the wilderness area for the use and enjoyment of visitors in a manner that will leave the area unimpaired for future use and enjoyment as wilderness. The wilderness resource will be dominant in all management decisions where a choice must be made between preservation of wilderness and visitor use.
3. To manage the area using the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective. The chosen tool, equipment, or structure should be the one that least degrades wilderness values temporarily or permanently. Management will seek to preserve spontaneity of use and as much freedom from regulation as possible.
4. To manage nonconforming but accepted uses permitted by the Wilderness Act and subsequent laws in a manner that will prevent unnecessary or undue degradation of the area's wilderness character.

¹² The new vision outlines the major tenants of ecosystem management including: (1) Sustain the productivity and diversity of ecological systems; (2) Use the best available scientific information as the corner stone for resource allocations and other land management decisions; (3) Involve the public in the planning process and coordinate with other federal, state, and private land owners; (4) Determine desired future ecosystem conditions based on historic, ecologic, economic, and social considerations; (5) Work to minimize and repair impacts to the land; (6) Base planning and management on long-term horizons and goals; (7) Reconnect isolated parts of the landscape; and, (8) Practice adaptive management.

The Policy Role of the Arizona Game and Fish Department

A third agency also has a key interest in the development of this management plan. The Arizona Game and Fish Department (AGFD), acting under the authority of the Arizona Game and Fish Commission, has responsibilities for the protection and management of all wildlife species in the State of Arizona.

Cooperative management guidance for BLM portions of the planning area are guided by BLM Manual 8560.34 and the Master Memorandum of Understanding between the Arizona Game and Fish Commission and Department of the Interior BLM, March 1987 (AGFD-BLM MOU). For wildlife resources on national wildlife refuges within the State of Arizona, the Service and the AGFD have always considered themselves as cooperative wildlife managers. Therefore, the AGFD also plays a major role in the development and implementation of this interagency document.

Kofa NWR and New Water Mountains Wilderness Area Purpose Statements

Kofa NWR and Wilderness -- Refuge Purpose Statements are primary to the management of each refuge within the System. The Purpose Statement is the basis on which primary management activities are determined. Additionally, these statements are the foundation from which "allowed" uses of refuges are determined through a defined "compatibility process." Sometimes Purpose Statements are given in the form of a statute, but in many cases, refuges were established by Executive Order. This is the case for the Kofa.

Executive Order 8038. The order states as follows:

Section 2. This range or preserve, so far as it relates to conservation and development of wildlife, shall be under the joint jurisdiction of the Secretaries of the Interior and Agriculture, and they shall have the power jointly to make such rules and regulations for its protection, administration, regulation, and improvement, and for the removal and disposition of surplus game animals, as they may deem necessary to accomplish its purposes and not inconsistent with State law, and the range or preserve, being within a grazing district duly established pursuant to the act of June 28, 1934, ch. 865, 48 Stat. 1269, as amended by the act of June 26, 1936, 49 Stat. 1976, shall be under the exclusive jurisdiction of the Secretary of the Interior so far as it relates to the public grazing lands and natural forage resources thereof: Provided, however, that all the forage resources in excess of that required to maintain a balanced wildlife population within this range or preserve shall be available for domestic livestock under rules and regulations promulgated by the Secretary of the Interior under the authority of the aforesaid act of June 28 1934, as amended..."

New Water Mountains Wilderness Area -- The established purpose for the New Water Mountain Wilderness is implied under the Arizona Desert Wilderness Act of 1990. Its sole purpose is to protect wilderness values.

5. Land, Jurisdictional, and Special Designation Considerations ¹³

Lands -- The chief stimulus behind the establishment of the Kofa was the concern for dwindling populations of the desert bighorn sheep throughout all of Arizona, New Mexico, and southern California including the New Water Mountains. Because early explorers usually traveled the river bottoms, valleys, and dry washes, sightings of desert bighorn were not frequent. However, Coues indicates as early as 1867 that the desert bighorn "...has a very extensive range, which includes nearly all the elevated mountains and broken regions."¹⁴

Originally, the Kofa was under joint management between the BLM and the Service. Since the Kofa's establishment in 1939 (Executive Order 8039, January 25, 1939), the Service has been assigned a cooperative management responsibility for the Kofa Game Range management. Since 1976, the Service has maintained sole responsibility for management of the Kofa¹⁵ For the New Water Wilderness Area, the BLM continues its joint relationship with the Arizona Game and Fish Department in their efforts to protect all wildlife populations within the designated area. The New Water role in Bighorn sheep management is significant as it contains one of the more critical lambing areas.

Rights-of-Way -- *U.S. West (Formerly, Mountain States Telephone and Telegraph)* -- A 100 foot square microwave repeater tower site is located in the Livingston Hills in the northwest corner of the Refuge. The right-of-way includes a 7-mile, 33 foot-wide access road right-of-way from the western boundary to the microwave tower site.

Arizona Public Service -- This right includes a 6-mile, 20 foot-wide 12 KV transmission line right-of-way from the western boundary to the U.S. West microwave tower.

El Paso Natural Gas Company -- This right includes a 130 foot-wide right-of-way that accommodates four buried natural gas pipelines plus a maintenance road which runs 24 miles (east/west) across the entire northern portion of the Refuge.

¹³ Please refer to PART II, Unit 1, Section 3 for a discussion of the problems related to land status and jurisdictional problems and questions.

¹⁴ Coues, E., The quadrupeds of Arizona. Am. Natural. 1:281-292, 351-363, 393-400, 531-541.

¹⁵ Kofa was jointly managed by the Service and the BLM until February 27, 1976 when the Game Range Bill amendments to the National Wildlife Refuge Administration Act (P.L. 94-223) transferred sole jurisdiction to the Service and changed the name to Kofa National Wildlife Refuge.

Southern California Edison Power Company -- This right includes a 160 foot-wide right-of-way accommodating a 500 KV power transmission line running 24 miles (east/west) across the entire northern portion of the refuge parallel to the El Paso Natural gas pipeline.

United States Army/ Yuma Proving Ground -- Yuma Proving Ground shares a 58-mile common boundary on the southern half of the refuge. The Secretary of the Interior has granted the Army permission to use 171,000 acres of the refuge as a buffer/flyover zone for weapons and associated munitions testing.

Private Lands -- There are two non-mineral private holdings within the refuge. Mrs. J.R. Livingston Holds 160 acres (NE 1/4 S24, T2N, R18W). Another 80 acres (W1/2, NE 1/4, S14, T2N, R18W) is privately held by Mrs. Leila Michaels.

Yuma County Highway Department -- Three county roads within the refuge are maintained by the County: (1) Castle Dome Road (5 miles); (2) King Valley Road (17 miles); and, (3) Vicksburg Road (3 Miles). The MST&T Road (8 miles) is maintained by the refuge.

Patented Mining Claims -- Forty-six patented mining claims (865 acres) are located on the refuge. Most of these are located on the southern edge of the Kofa Mountains in the vicinity of the historic King of Arizona Mine and on the southern edge of the Castle Dome Mountains, just south of the Castle Dome.¹⁶

Adjacent Land Use -- The land areas surrounding the Kofa NWR and the New Water Mountains Wilderness are owned by the State of Arizona, managed by the Bureau of Land management or are under the jurisdiction of the Department of Defense. The surrounding landscape consists primarily of desert range. There are some patented mining claims not included in the New Water Wilderness and some of the surrounding terrain is used for grazing. Like both the Kofa and New Water areas, vegetation is sparse where present consisting mostly of cacti, mesquite, palo verde, and small shrub. The New Water Mountains Wilderness is one part of the La Posa Management Area. The BLM is currently developing a management plan for this area in consideration of its relationship to all surrounding jurisdictions including the Kofa NWR and Wilderness Area.¹⁷

¹⁶ Also see Unit 3 Natural Resource Inventory, Mining and Geology

¹⁷ The New Water Mountain Wilderness is considered a part of the La Posa Management Area. The areas western boundary runs along the eastern boundary of the Colorado River Indian Tribe Reservation, through the Dome Rock Mountains, until intersecting with the Yuma Proving Grounds boundary. It continues down the Yuma Proving Grounds western boundary in a southerly direction until intersecting with the Cibola Lake road. Turning east it follows the Cibola Lake road to the eastern boundary of Yuma Proving Grounds and turns south until intersecting with State highway 95. The eastern boundary starts in the north, runs roughly parallel to Bouse Wash in the Rane grass Plains, staying west of state route 72, until meeting the Vicksburg road. At this point it follows the El Paso Natural Gas pipeline road past New Water pass to Midas Mine. It continues south through the Kofa mountains to De La Ossa Mine to Squaw Peak and through Hidden Valley Hills and attaches to the west boundary of the Kofa NWR, then heads south to the Yuma Proving Grounds boundary. The management area is approximately 67 miles in length.

Special Considerations: Cultural Resources

Kofa NWR and Wilderness -- Both Kofa and the New Waters have cultural resources that fit within three broad categories: prehistoric, historic, and traditional cultural/religious areas.¹⁸ Many of these sites have not been catalogued by either agency. Some, however, have undergone formal evaluation relative to the Archeological Resource Protection Act or the National Historic Preservation Act.¹⁹

Kofa NWR -- The Service files contain variable records of approximately 92 known or recorded archeological and historic sites on the Kofa Refuge. However, the actual number of reliably locatable sites may ultimately prove to be a good deal less, since more than half of the purported 92 site records are in fact little more than site "leads" offering only vague and incomplete locational references. Sources for this site information comes from the field notes of Malcolm J. and Frederick S. Rogers (1929-1941), and from the more contemporary and reliable site records resulting from linear site surveys conducted in 1977 and 1980-81 for pipeline and transmission line right-of-way projects. The linear survey conducted by Westec Services for the Palo Verde to Devers Transmission Line (1980-81) offers the highest specificity of site information on any portion of the Kofa Refuge. Recent site recording efforts by refuge volunteers Connel and Dawn Bergland also offer an unusually high resolution of information for rock art and other sites in the northern extent of the range.

As would be expected of such a marginal environment, all of the sites are indicative of ephemeral uses of the Kofa range. Cleared circles, rock rings and rock alignments, lithic and pottery scatters, small occurrences of ground stone artifacts and bedrock mortars, foot trails, and rock art sites point to highly transitory occupations either for short-term subsistence gathering purposes, or for travel and trade across the range. Purportedly, notations concerning the existence of several ground "intaglios" (geoglyphs), and also observations about a cremated burial, have been attributed to Malcolm Rogers, but to date there has been no verification of either. The San Diego Museum of Man, the repository for Rogers' field records, is unable to verify the existence of a skull fragment which Rogers once reported seeing at Palm Canyon.

There are no independent archeological dates for any of the Kofa sites. However, a small number of temporally diagnostic artifacts recovered at several locations offer clues to the chronology of the prehistoric occupation here. The majority of the sites point to the late prehistoric time period (A.D. 700 to post-1500) and are recognized as ancestral Yuman. Rogers

¹⁸ The definitions are as follows: Prehistoric site: Any location with physical remains or evidence of activity by aboriginal peoples prior to European contact. Historic site: Any location with physical remains or evidence of activity by euro-Asian peoples to modern times. Traditional cultural or religious site: Sites generally Native American in origin, range in age from prehistoric to modern, and are important for their sociocultural and religious values.

¹⁹ What assessments have occurred in this area have been conducted by the BLM and a very generic summary narrative can be found in the BLM Lower Gila South Resource Management Plan and Environmental Impact Statement (1985) pp. 37-39. Although the information in the RMP/EIS is for a much broader geographical region than the planning area, it characterizes in its Appendix 17 (pp. 283-285) the specific types of cultural resource sites which can be found on Kofa and the New Waters.

also reported several dart points attributed to the Archaic period (6000 B.C. to A.D. 300). Further detailed analysis of the rock art imagery, particularly in the eastern part of the range, could shed light on a possible Yuman/Hohokam ethnic boundary during the late prehistoric period.

New Water Mountains Wilderness -- Specifically, not much has been formally catalogued by the BLM within the New Water Mountains specifically. The Lower Gila South Wilderness Environmental Impact Statement (EIS) indicates that no National Register eligible cultural resource sites have been identified in the New Waters. Cultural resources were not an issue in the wilderness EIS. However, prehistoric petroglyph sites are present throughout the entire planning area. For example, there is one petroglyph site in the New Waters that dates from approximately 5 B.C. In addition to petroglyphs on several rock panels, this site contains a cave with the remains of a rock wall near the entrance. No additional sites with the same degree of development as this cultural feature are known within this wilderness area. A general inventory of cultural resources in this area would probably result in the discovery of additional sites. Levels of protection are heightened by the new status of the area as designated wilderness. Most of these sites will be inaccessible to motorized traffic.

6. Relationship to Other Plans

The following is an outline of the most prominent of existing planning efforts and documents that influence the future management of the Kofa NWR and the New Water Wilderness area.

Bureau of Land Management Resource Management Planning -- The BLM is and the Service are sister agencies within the Department of Interior. The BLM is responsible for the management of public lands throughout the Western United States. Lands within the Area of Ecological Concern are managed primarily by the Yuma District and Resource Offices. Each of the BLM land areas including designated wilderness is managed in accordance with the agency's Resource Management Planning process as dictated by the Federal Land Policy Management Act.

La Posa Management Area Planning -- As mentioned earlier, the New Water Mountain Wilderness Area is considered a part of the larger BLM La Posa Management Area. The La Posa Management Area is currently under the jurisdiction of the BLM Yuma Resource Area. The stated goal of the plan is as follows:

"...to carry out resource management decisions of the Final Yuma District Resource Management Plan. The La Posa plan has been developed in an interdisciplinary arena involving BLM staff and other affected federal, state, and local entities. It will be a link between multiple-use allocation of public land and the actions necessary to implement such allocations. Upon completion of this interdisciplinary management plan, the BLM will be able to set management direction for resources and their use, identify specific

management actions, and establish the sequence of implementation for the management actions."

Biological Diversity on Federal Lands (Keystone Report) -- Representatives from the Service, the BLM, and other Federal agencies, Congressional committees, environmental organizations, commodity interests, professional associations, and academia, were active participants in a multi-agency dialogue attempting to address conservation of biological diversity on Federal lands. Efforts focused on formulating consensus recommendations for conserving biological diversity on lands managed by the major Federal land management agencies (Service, BLM, U.S. Forest Service, National Park Service, and Department of Defense).

The dialogues produced a document that recommended the development of a national goal to conserve, protect, and restore biological diversity on Federal lands. The participants determined that, because of its intrinsic value, biological diversity is important to sustain the health of ecological systems and to provide for human well-being. Though the conclusions of the report are only recommendations, the Service is considering implementation.²⁰

Service (Region 2) Biological Diversity Plan Draft -- In 1991, the Southwest Region initiated an effort to formally establish a region wide plan and program for biological diversity. The effort is ongoing for the region and a final draft is forthcoming.

The draft plan set out a purpose of identifying "goals, objectives, and strategies for the conservation of the natural biological diversity of the Southwest Region, with emphasis on those species and habitats which the Fish and Wildlife Service has primary statutory jurisdiction. This group includes Federally listed threatened and endangered species, migratory birds and anadromous or inter-jurisdictional fishes. On national wildlife refuges and fish hatcheries, Service management authority extends to all fish and wildlife species and their habitats, in coordination with respective State governments."²¹

The plan proposes the following objectives for: Monitoring, Research, Management, Education, Training, Partnerships, and International Partnerships.

Arizona State Comprehensive Outdoor Recreation Plans (SCORP) -- The major purpose of the SCORPs are to provide a comprehensive framework for the orderly planning, acquisition, development, and administration of Arizona's outdoor recreation resource. The 1983 SCORP identified recreation needs and implementation strategies. The need for natural resources conservation was one of the major issues identified and many activities in the plans

²⁰ Keystone Center, *Final Consensus Report of the Keystone Policy Dialogue on Biological Diversity on Federal Lands*, Keystone, Colorado, 1991.

²¹ Region 2, U.S. Fish and Wildlife Service, *Biological Diversity Plan Draft*, July 23, 1991.

are aimed at this issue. Priorities relative to wetlands acquisition and protection were included in the Arizona statewide priorities for 1983.

UNIT 3 -- NATURAL RESOURCE INVENTORY

This unit outlines in detail the extensive natural resources currently present within the planning area. Included are current geological, soil, and biological values.

1. Geological Resources

New Water Mountains Geology and Mining -- The northwest trending New Water Mountains, which make up the wilderness area, are in the Basin and Range physiographic province and are composed of Precambrian to Quaternary age rocks. The area is underlain primarily by Quaternary basalt and Cretaceous rhyolite and andesite; smaller amounts of Paleozoic and Mesozoic limestones, shale, sandstone, and quartzite also exist.²² Terrain is typical of the desert southwest and consists of steep mountains and sandy washes; the highest elevation is 3,639 feet on Black Mesa and the lowest elevation is about 1,800 feet along the periphery in the alluvial washes.

A minerals investigation was conducted by the U.S. Bureau of Mines in 1986, during the time the New Water Mountains were a Wilderness Study Area. At the time of the assessment, two pits were found within the study area, located in the New Water mining district. The assessment report indicated the following:

*"Many workings were found within 1 mile of the boundary. Little or no production came from these workings; no recent mining activity has taken place. BLM records indicate few mining claims are in the study area; however, about 200 unpatented mining claims are on the periphery. Twenty-three patented claims, the Moore claims, are adjacent to the northern boundary and cover the Eagle Eye Mine. Keith (1978, p. 165) states that about 518 tons of ore containing 175 tons of copper and 514 ounces of silver was produced from the New Water Mountains."*²³

Kofa NWR Geology and Mining -- The Kofa NWR displays a relief of two major block-faulted mountain ranges (Kofa and Castledome Mountains) typified by extensive exposures of bedrock, sparse vegetative cover, lack of soil development, steep slopes and structurally controlled drainage systems. Elevations range from 680 feet on the desert floor to 4,877 feet atop Signal Peak. Shallow, stony soils and rock outcrops are predominant in the mountainous and steep slope areas. Alluvial fans and valley floors are characterized by deep, gravelly, moderately fine textured soils high in lime concentrations.

²² Wilson, E.D., 1960, Geologic map of Yuma County, Arizona: Arizona Bureau of Mines, University of Arizona, scale 1:375,000. From U.S. Bureau of Mines, Mineral Land Assessment, 57-86, Open File Report/ 1986: Mineral Investigation of a Part of the New Water Mountains Wilderness Study Area (AZ-020-125), La Paz County, Arizona.

²³ Mineral Land Assessment, 57-86 cites S. B. Keith, 1978, Index of mining properties in Yuma County, Arizona: Arizona Bureau of Geology and Mineral Technology Bulletin 192, 185 p.

Refuge records indicate that the Kofa NWR has been closed to mineral entry since February 1974. Nevertheless, the unpatented claims continue to be illegally filed occasionally with the BLM. Legitimate mining claims filed prior to February 1974 continue to operate within the refuge, however, there are no patented claims within the designated wilderness within Kofa NWR.²⁴

Forty-six patented mining claims totaling approximately 865 acres are located in nonwilderness portions of the refuge. Most of these are located on the southern edge of the Kofa Mountains in the vicinity of the historic King of Arizona Mine and on the southern edge of the Castle Dome Mountains, just south of the Castle Dome. The Service has little control over surface disturbances on patented claims and cannot deny access to the claims or prevent legitimate mining activities.

2. Water Developments

Both the Kofa NWR and the New Water Mountains Wilderness have water resource developments available for use by wildlife. Most of these areas are developed as tanks, catchments, or wells. There are some natural springs as well. Development of wildlife water sources has been carried out on the refuge since it was first established. Throughout the years wildlife managers have believed that the development of water on the refuge has been instrumental in helping to restore the bighorn sheep populations. These water catchments are maintained with the assistance of the Arizona Game and Fish Department and the Arizona Desert Bighorn Sheep Society. In the case of the New Water Mountains Wilderness Area the four tanks present in the wilderness area are monitored by AGFD. In the case of Kofa NWR, water catchments are monitored primarily by refuge personnel. In both cases, water is transported to a limited number of these sites during seasons of extensive drought.²⁵

3. Wildlife and Habitat Resources

- **Wildlife Diversity:** Forty-five mammal species, 185 species of birds, and 47 species of reptiles are represented on the planning area.

²⁴ The Kofa volcanic geologic type composes more than 45% of the Castle Dome Mts. and virtually all of the Tank Mts. About 29% of the area is andesite, 14% metamorphosed sedimentary rock, less than 7% schist, and the remaining 5% is Quaternary basalt, rhyolite, and granite. U.S. Fish and Wildlife Service, Kofa NWR Desert Tortoise Survey, Castle Dome and Tank Mountains. Also see: The Geologic Map of Yuma County, AZ by Eldred Wilson, 1960. Also, a discussion of two major calderas (collapsed volcanos) and their ash-flow tuffs is given in a 1987 thesis by Michael J. Grubensky: Structure, Geochemistry, and Volcanic History of Mid-tertiary Rocks in the Kofa Region, Southwestern Arizona.

²⁵ Please see page 30, Wildlife and Habitat Resources of this document for additional details concerning the delivery of water to catchments.

- **Endangered and/or Threatened Species:** Peregrine falcons have been sighted but they are extremely rare. From time to time Brown pelicans are blown into the Yuma area by summer thunderstorms developing over the Gulf of California to the south.
- **Desert Bighorn Sheep --** The Desert Bighorn (*Ovis canadensis mexicana*) population at Kofa NWR is estimated at 800 to 1,000 sheep. Fourteen years of aerial surveys reflect a stable population with the exception of a low count in 1991. Transplants have been conducted for the past 15 years in coordination with Arizona Game and Fish Department. The refuge provides approximately 20% of Arizona's annual bighorn hunting permits.

Table 1. Kofa NWR Bighorn Sheep Survey Results 1980-1994

Year	Hours	Rams	Ewes	Lambs	Uncl.	Total	Est. # Sheep	Lambs/ 100 Ewes
1980	25.0	125	195	31	1	352		16
1981	36.1	143	229	44	1	417		21
1982	46.9	141	234	51	1	427		23
1983	49.5	147	260	50	1	458		19
1984	50.7	175	284	44	0	503		15
1985	51.2	149	264	61	0	474		23
1986	45.3	168	282	44	2	496		16
1987*	27.8	92	122	19	0	233	874	16
1988*	29.9	98	134	19	0	251	881	14
1989*	28.4	89	150	25	0	264	929	17
1990*	28.5	93	106	39	0	238	788	37
1991*	26.6	69	84	21	3	177	638	25
1992	51.4	139	255	46	0	440	739	18
1993	No survey.							
1994	52.8	151	270	36	2	457	887	14
Total	550.1	1779	2869	530	11	5187		Avg: 18

*Abbreviated Surveys

Bighorn Sheep Transplantation Program -- Every year since 1979 the with exception of 1991, the refuge has participated in a capture and transplant program of the Bighorn sheep. Refuge employees assist the Arizona Game and Fish Department in the capture using net guns from helicopters. The transplant results are noted in the table below. The animals are then are transported to various locations within Arizona in an effort to assist in the restoration of populations where they are indigenous. For instance, in 1992 all sheep were transported and released near Canyon Lake (Superstition Mountains) east of Phoenix.

TABLE 2

Kofa¹ (K) & New Waters (NW) Bighorn Sheep Removal
Harvest/Transplants 1979-1995

Year	Harvested Rams		Transplanted				Transplant Location	Grand Total
	(K)	(NW)	Rams (K)	Rams (NW)	Ewes (K)	Ewes (NW)		
1979	9		4		4		Colorado/Devils Canyon (NPS)	20
1979			0.00		2		Texas/Black Gap (TX Game and Fish Dept.)	
1980	8		7		11		Arizona/Goat Mountains (USFS)	33
1980			0.00		6		New Mexico/Peloncillo Mtns. (BLM)	
1981	9		3		8		Arizona/ Red Field Canyon (USFS)	28
1981			2		4		Arizona/ Goat Mountains (USFS)	
1982	9		4		0.00		New Mexico/ Peloncillo Mountains (BLM)	24
1982			0.00		10		New Mexico/ Peloncillo Mountains (BLM)	
1983	11		8		16		Arizona / Horse Mesa (USFS)	35
1984	11		8		22		Arizona/ Coffee Flat (USFS)	43
1985	13		6		15		Arizona/ Black Mountain (BLM)	57
1985			7		13		Arizona/ Lion Mountain (USFS)	
1986	12		9		21		Arizona/ Peloncillo Mountains (BLM)	42
1987	14	4	8	5	22	7	(K) Arizona/ Superstition Mountains (USFS)	45
							(NW) Arizona/ Gila Bend Mountains	17
1988	16	4	6	3	24	9	(K) Arizona/ Galiuro Mountain (USFS)	47
							(NW) Arizona/ Gila Bend Mountains	16
1989	14		5		25		Arizona/ Superstition Mountains (USFS)	44
1990	14	3	2	1	13	8	(K) Arizona/ Peloncillo Mountains (BLM)	29
							(NW) Arizona/ Gila Bend Mountains	12
1991	14		0	0	0			14
1992	13		7		17		Arizona/ Superstition Mountains (USFS)	38
1993	15		5		25		AZ/Saucedo Mtns. (USAF)	46
1994	12		7		23		AZ/Granite Wash Mtns. (BLM)	42
1995	16		6		20		AZ/ Harcuvar	42

1. Unless indicated otherwise, the data is for Kofa.
2. Includes mortalities during capture.

- **Desert Mule Deer** -- The refuge conducts an annual desert mule deer survey. This species is also counted during the aerial sheep survey. The Arizona Game and Fish Department participates in these surveys.²⁶

Table 3

Kofa (K) & New Waters¹ (NW) Annual Aerial Deer Survey Results 1985-1996

Year	Bucks		Does		Fawns		Unclassified		Total	
	(K)	(NW)	(K)	(NW)	(K)	(NW)	(K)	(NW)	(K)	(NW)
1985	42	3	83	19	47	6	12	0	184	28
1986	37	12	102	20	18	12	3	6	160	50
1987	48	9	155	13	48	4	8	1	259	27
1988	29	7	117	9	23	7	5	1	174	24
1989	49	8	121	16	37	5	1	0	208	29
1990	24	6	125	19	17	8	0.00	0.00	166	33
1991	36	4	113	6	62	3	11	0	222	13
1992*	16	0	31	3	10	2	3	0	60	5
1993*	19	1	51	23	25	7	2	0	97	31
1994*	16	2	50	6	21	5	0.00	0.00	87	13
1995	10	2	40	6	14	5	3.00	0	67	13
1996	6	2	19	7	3	1	1.00	0	29	10
TOTAL	290	38	924	100	278	45	37	8	1,529	206

* Modified surveys. Modified surveys in years 1992 through 1994 are a sampling of approximately 16 % of the total surveyable deer habitat.

1. The New Waters has never been independently surveyed for mule deer. The Wilderness has always been included in the aerial surveys for Game Management Unit 44B. In addition to the wilderness, Unit 44B includes the Plomosa Mountains and has a total area of 630 mi.², of which there is an estimated 524 mi.² of mule deer habitat. Because of the mountainous terrain in the wilderness, aerial surveys are difficult to conduct. Unit 44B is considered a low-density deer unit.

- **Sonoran Desert Tortoise** -- Limited knowledge of this subspecies of the tortoise is the reason for recent emphasis on gathering more data. Abundant data on the Mojave subspecies in California can not be extrapolated to Arizona populations because of racial

²⁶ In 1992 only 9.3 hours of actual survey were flown. This is about one-half of 18.9 hours needed to fly all available deer habitat (751.46 square miles) in a fixed-wing aircraft. Flights before were based on one-half mile flight grids while in 1992 one-mile wide grids were flown to reduce survey costs. Areas previously flown but considered to be safety hazards for fixed-wing aircraft were not flown this year. Such areas could be surveyed by helicopter or sampled by foot surveys. In 1992 the buck:doe:fawn ratio (52:100:32) is markedly higher for bucks and slightly higher for fawns than the previous seven-year ratio (32:100:31). In 1993 241 deer were counted with a buck:doe:fawn ratio of 20:100:49.

differences in habitat selections between the two subspecies. The Mojave tortoise may be a derived taxon and by evolution the latest in subgenus *Xerobates*. Ecologically it may be an outlier population in an unfavorable climate while Arizona's populations may reflect a relatively stable existence in a favorable subtropical climate. Long Term field data on Sonoran tortoises should help answer management and disease questions that are now unanswerable and may serve as a comparison population for challenge tests on Mojave and Sonoran tortoises. In 1990 a tortoise survey was conducted between April and August. Twenty-eight variable length reconnaissance-type transects were drawn in the Castle Dome Mountains. One hundred forty-nine miles, requiring 92 transect hours, were completed in the Lower Colorado Valley and Arizona Upland subdivision communities of the Sonoran Desert scrub biome. The study concluded that tortoises occur in the Castle Dome and Tank Mountains in relatively low densities (probably lower densities than in the Kofa Mountains.) Only one live tortoise was seen and no URDS signs were noted. Judging from their sign, tortoises were not as active during this period as the Kofa and Livingston Hills populations were to the north. Only two sites of 44 sites surveyed had remains of eggshell fragments. One juvenile shell was found but no other signs, such as juvenile tracks, were found. The survey concluded that the combination of this survey and surveys in 1979 and 1989 indicates the tortoise population at Kofa NWR is healthy and of low density requiring a stabilized habitat. Cover site potential, highest in the less resistant volcanic base material, is the critical limiting factor resulting in patchy, isolated populations. The density/diversity of vegetation and the aspect seem to be of secondary and tertiary importance to distribution. No apparent changes seem warranted.²⁷

Habitat Resources

The Sonoran Desert ecosystem is comprised of relatively sparse vegetation throughout with the exception of intermittent stream beds that meander from mountains down through alluvial sediments onto low elevation basins. Creosote, ironwood, paloverde, and mesquite comprise much of the vegetation with many types of cacti, most notably the saguaro, dominating the landscape. Another important part of the habitat landscape are the desert flora that spawn only after spring rains deluge the lands following intense thunderstorms. These thunderstorms are very localized, but expel enough moisture to create ribbons of green throughout the desert landscape along drainage ways and cause the germination of dormant grass and forb seeds producing lush carpets of green albeit for very brief periods of time. During the very dominant dry seasons, the soils form a thin crust which harbor seeds for many years in some cases. The hard rains break the crust freeing the seeds for germination. When the short growing cycle is completed, the ground once again forms into a thin crust. These soils are sometimes called crypto biotic soils.

²⁷ In 1992 a radio telemetry research project was initiated on Kofa NWR. Four tortoises were fitted with battery powered radio transmitters which mount on the carapace. All telemetry and map data will be integrated into a computer data analysis system called Map and Image Processing System (MIPS).

Table 4
1990 Kofa NWR Water Tank Replenishment: TOTAL = 32,000 Gallons

Gallons of Water	Location
10,000	Charlie Died Tank
8,000	Black Hawk Tank
4,000	Figueroa Tank
6,000	Modesti Tank
4,000	Dixon Spring

In the extremely dry Sonoran Desert ecosystem, water is the primary habitat component and variable. Over the years, wildlife managers have learned to manipulate the conservation of water in the desert for wildlife management purposes. These water conservation efforts are usually in the form of water catchments and wells but include natural springs as well. Kofa NWR has a long history of water hole development projects aimed at improving wildlife numbers and distribution throughout the refuge. Most development projects involve either improvement of natural existing tanks and springs by installing silt dams, sun shades or water retention dams, or by constructing windmill powered wells. Even with these improvements some tanks occasionally go dry during extended dry periods such as occurred in 1990. To prevent large scale wildlife movement away from these areas, or even worse, wildlife die offs, water is hauled to these drought susceptible tanks when needed. Adequate rainfall occurred in both 1991 and 1992 and kept most tanks supplied with water. Until 1992, the refuge staff continued to collect data on the refuge flora by monitoring vegetation along 242 permanent transects located throughout the refuge. These were initiated in 1983 to document the changes resulting from the cessation of grazing on the refuge. Some improvements have been noted, but growth of desert flora is normally extremely slow, taking many years to recover from past land management practices. Since that time, the refuge has instituted a new program using videography to develop a comprehensive picture of the refuge's vegetation resources. It is expected that this information will be extremely useful in determining habitat suitability, conditions, and wildlife uses in the long term.

The refuge has an active program to prevent the entry of cattle and feral burros through fencing. A part of the monitoring program calls for the checking of the boundary fences periodically throughout the year. This program also deters the trespass of off the road vehicles.

UNIT 4 -- PUBLIC USE INVENTORY

The following inventories outline the general baseline activities of the Service and the BLM regarding public and allowable uses of the Kofa NWR and the New Water Mountains Wilderness.

Public Access to Wilderness Areas

New Water Mountains Wilderness Area -- The western boundary of the wilderness can be accessed via the Gold Nugget Road south of Interstate 10 (exit 26). The north-central part of the wilderness can be reached by the Ramsey Mine Road south of Highway 60. The Kofa Wilderness forms the southern boundary of the New Water Mountains Wilderness.

Kofa NWR -- The Kofa NWR wilderness area includes a total of 516,300 acres within the context of the 665,400 total refuge acres. Access to the designated wilderness areas can be made through any one of several roads that have been excepted from the wilderness designation (cherry-stemmed). From Highway 95, there are several routes which can be taken onto the Kofa NWR and in close proximity to designated wilderness. Most of these roads are not graded so that high-clearance and four wheel drive vehicles are recommended.

Mechanized, vehicular traffic is limited to designated roads. Off road vehicle travel is prohibited. All vehicles, including "all terrain vehicles," quadtrac and motorcycles and all operators must be licensed and insured for highway driving. Speed is limited to 25 miles per hour unless otherwise posted. Mountain bicycles are considered vehicles on the refuge.

Recreational Uses of Refuge and Wilderness Areas

New Water Mountains Wilderness Area -- The BLM manages public lands from a multiple use mandate. Thus, lands in the public domain, even those designated as wilderness, allow for the public to gain access and use these lands for recreational purposes such as hunting, wildlife observation, hiking, and camping. The New Water Mountains as a designated wilderness does allow these activities to occur holding to a "leave no trace" ethic. The BLM asks that visitors leave the area as they found it. For instance, if a fire ring is constructed, the BLM asks the visitor to dismantle it and bury the ashes before leaving the area. Visitors are asked to pack out all litter including those that might be considered biodegradable (i.e., orange peels, organic waste). As mentioned earlier, no mechanized transport are allowed on the wilderness areas.

Kofa NWR and Wilderness -- Kofa NWR allows recreational uses that are compatible with the purposes for which the refuge was established. Those that are allowed to occur within designated wilderness must also conform to fundamental wilderness ethics including no mechanized transport, leave no trace, etc. However, unlike lands managed by the BLM, the

refuge system considers wildlife management the primary function of a refuge and all other uses are considered secondary. These must undergo compatibility analysis and the refuge must certify that funding is available for the management of these activities.²⁸ The Wilderness Act considerations are then overlaid upon the refuge administration legal considerations for those areas of the refuge that are designated as wilderness (i.e., no mechanized transport, leave no trace, minimum tool, etc.).

At Kofa NWR, hunting, camping, hiking, wildlife observation, photography, sightseeing, and environmental education activities would all be allowed and considered compatible with both the purposes of the refuge and the wilderness designation. Part of this planning effort will be to establish monitoring objectives which will assist us in determining the levels of impact that is acceptable relative to uses and degrees of use.

²⁸ Public Law 89-669 (National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) authorized the Secretary of the Interior under regulations, to "permit the use of any area within the System for any purpose, including, but not limited to, hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible with the major purposes for which the areas were established." Additionally, Public Law 87-714, the Refuge Recreation Act of 1962, as amended (76 Stat. 653; 16 U.S.C. 460k), prescribes the same compatibility standard with a focus on recreational uses including those that do "not directly relate to the primary purposes and functions of the individual areas," and that do not interfere with the primary purposes of the refuges." Also under this Act, the refuge must certify that funds are available for their development. [Bean, Michael J., The Evolution of National Wildlife Law, (Praeger, Publishers: New York, 1983)pp. 125-126.

PART II. ISSUE DISCUSSION

Introduction -- The Kofa NWR and the New Water Mountains Wilderness areas each make individual, unique, and significant contributions to the Area of Ecological Concern and the National wilderness system. The potential contribution of each of the areas is strengthened through coordinated and consistent management action. In order to manage resources consistently and efficiently, both the scientific elements of the resource (i.e., biological/natural resource factors) and the policy elements of managing the resource (i.e., overall policy concerns) must be considered in the planning process. Consideration of both results in coordinated management of the refuges, assuring a mix of natural resource gains for wildlife and plant communities within both wilderness areas and the Area of Ecological Concern.

This part of the Kofa NWR/ New Water Mountains Wilderness planning process analyzes the existing information base including agency policy issues, natural resource data, and public access and use data. The analysis, albeit informal, is a series of short discussion points summarizing the problem or opportunity that exists relative to each of the issues outlined earlier in this document. With respect to wildlife and habitat data, much pertains to the management of desert bighorn sheep populations. Other data is more scarce. Part of the purpose of this plan is to set objectives which will call for the collection of needed biological data that reflects the diversity present in these areas.

Issue Analysis -- As indicated earlier, an issue is considered to be a problem or opportunity arising from agency directives, resource conflicts, their resolutions, and public expectations as reflected through their participation. The following narratives attempt to integrate the issue and associated subissues with each agencies' responsibilities relative to those issues. Several of them do not need discussion because policy directives remain clear and subsequent objectives will be set in accordance with those directives.

THE ISSUES

Issue 1: Wildlife and Habitat Management

Cooperative Efforts -- Although habitat management is one of the principle responsibilities of both the BLM and the Service, the BLM has traditionally recognized the States as being the principle manager of wildlife on public domain lands including designated wilderness areas. The Service, on the other hand, considers the State's role with respect to wildlife management on National Wildlife Refuges as concurrent with its own. Both the Service and the BLM have engaged in a continuous and more intense dialogue with the States relative to a myriad of wildlife and habitat management issues including the protection of endangered species. Because of these slightly differing perspectives, it is essential that levels of communication and cooperation between the Service, the BLM, and the Arizona Game and Fish Department remain high concerning a wide array of issues.

Scarcity of Data -- The dominant wildlife and habitat management theme for the Kofa and News Water Mountains for many years has been the preservation of the desert bighorn sheep species. Consequently, information on a wide array of other species and habitats is scarce. As indicated earlier, up to 1992, the refuge staff collected data on the refuge flora by monitoring vegetation along 242 permanent transects located throughout the refuge. But as previously noted, this information is no longer collected because of the tremendous amount of time necessary to physically gather the data. The new aerial videography information will allow for the accurate mapping of the refuge's vegetation resources. This information will be extremely valuable for long term resource and decision making.

There are also surveys conducted, as noted earlier, regarding the status of the Sonoran desert tortoise. Much of the monitoring of this species is currently being done through a radio telemetry research project initiated in 1992. Information collected thus far does not indicate that changes in management are necessary. However, the existing vegetation transects are important sources of information regarding the status of the species on the refuge.

A newer and more recently initiated bat survey will be important in determining the relationship between bat species and the importance of maintaining their accessibility to abandoned mine shafts, even in the context of wilderness. However, in light of the wilderness designation, the refuge must scrutinize more carefully all of its wildlife management activities and their primary and secondary effects upon the wilderness resource. Although the Service has the duty to conduct wildlife management activities, it should do so with a "wilderness ethic" and with a responsibility to determine the minimum tools necessary to accomplish its tasks. If the refuge staff must gain access to an abandoned mine shaft within the wilderness boundaries, then it should document the purpose, the expected duration of the visit, and the minimum tool to be used, all in anticipation of the visit, if possible.

Desert Bighorn Sheep -- The major concentration of wildlife management activities within the project area has been directly related to the management of the desert bighorn sheep. Both the BLM and the Service have participated together since the inception of the Kofa Game Range in the 1930's in efforts to assist the dwindling populations of desert bighorn recover. The Kofa NWR, formerly the Kofa Game Range, was jointly administered by both of these agencies. Only in the 1970's did the Service become the sole manager of the Kofa NWR.²⁹

The New Water Mountains wilderness area has always been a contributing factor to the management of desert bighorn populations as it contains an important lambing area for the species. Both agencies participate with the Arizona Game and Fish Department in a desert bighorn transplantation program which is a key factor toward increasing the viability of the species within its statewide range.

There is no question that management of this species remains as one of the principle missions of the Kofa NWR and certainly the New Water Mountains will continue to play a significant role as well. However, the new considerations relative to the Wilderness designations require the Service and the BLM to review management techniques and their compatibility with wilderness principles.

The two principle management techniques to review are the use of mechanical means to survey, capture, and transplant sheep, and secondly, the management of artificial water catchments, access to them, and the use of mechanical methods of refurbishing and maintaining these systems. Both agencies, in cooperation with the State must continue to use the techniques necessary to carry out wildlife management mandates. However, the Service and the BLM are required to declare what "minimum tool" is to be employed. The predominant question for each agency can be stated as: Are the methods currently employed to manage desert bighorn sheep and habitat the minimum necessary to accomplish the objectives?

³⁰ Both agencies are directed to administer their respective areas designated as wilderness so as to:

²⁹ Lee, Raymond M. Editor, *The Desert Bighorn Sheep in Arizona* (Phoenix, AZ...: State of Arizona, 1993) . This volume contains a good historical outline of the national efforts to assist in the recovery of this species. While their range has been reduced significantly and while much in the way of urban expansion has affected desert bighorn habitat, this volume indicates that the viability of the species is no longer in question as it had been 20 years ago.

³⁰ **BLM Policy:** The principle direction with regard to abiding by the "minimum tool" concept comes from BLM Manual 8560, Section .1, Goals of Wilderness Management. Section .13 states: "Tools, equipment, or structures may be used for management when they are the minimum necessary for protection of the wilderness resource or when necessary in emergency situations for the health and safety of the visitor. Management must use the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective. The chosen tool, equipment, or structure should be the one that least degrades wilderness values temporarily or permanently."

Service Policy: The Service's direction regarding minimum tool is not as explicit in its policy guidelines. The Service defines "minimum tool" as: "The minimum action or instrument necessary to successfully, safely, and economically accomplish wilderness management objectives. The Service policy is explicit enough as to indicate that motorized equipment would not be permitted for wildlife surveys, access by veterinarian to treat sick livestock, inspections by refuge personnel, maintenance activities which can be accomplished on horseback, on foot, or with the use of other non-motorized modes of transportation. [USFWS Wilderness Policy, 8.8. Administrative guidelines].

“...preserve[ing] the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character.”³¹

As mentioned earlier, the management of desert bighorn sheep has been and remains historically central to the purpose for which the Kofa NWR was established. In point of fact, the language of the Wilderness Act eludes to the fact that wilderness designation implies that wilderness purposes are “supplemental” to already existing purposes attached to an area. This does not apply so much to BLM designations as they do to national wildlife refuges which have establishing purposes already in place. Thus, the Service is responsible to carry out a dual, but nonetheless interrelated, role of managing for bighorn sheep within the context of wilderness.

In both agency policies, certain uses existing prior to designation are allowed to continue. The BLM policy indicates that use of aircraft may be permitted to continue in wilderness areas where such uses were established prior to the date the area was designated thus allowing the use of helicopters for the netting and transplanted of bighorn sheep. Both policies allow for excepting existing water resource facilities when explicitly recognized by Congress as being acceptable in specific wilderness areas, as in the case of those areas created by the Arizona Desert Wilderness Act of 1990.³² However, the Service and the BLM have a continuing responsibility to maintain the natural character of the landscape so as to leave the “imprint of man’s work substantially unnoticeable.”³³ The implication here is not so much the question of the existence of water catchments within wilderness, but rather the method each agency chooses to manage and maintain these existing facilities and manage access to them.

Biological Sustainability -- The Bighorn Sheep survey results from 1980 through 1992 as noted in Table 1, indicates the relative stability of the populations. Human encroachment still looms as the one negative influence upon sheep populations in the southwest and few models exist that can predict habitat utilization and animal movements.³⁴ While populations in

³¹ Wilderness Act of 1964, Section 4 (b), Public Law 88-577, (16 U.S.C. 1131-1136). Section 4(a) defines the use of wilderness areas as follows: “The purposes of this Act are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and wildlife refuge systems are established and administered...”

³² The Arizona Desert Wilderness Act of 1990 recognizes these existing water catchments as acceptable for both the Kofa NWR and the New Water Mountains Wilderness.

³³ Wilderness Act of 1964, Section 2(c)(1): An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable...”

³⁴ According to Stan Cunningham: “There have been few habitat models developed for bighorn sheep (*Ovis canadensis*). All have assumed that the quality of a given area can be linked to individual habitat attributes, but the criteria selected for each model varied. The variable were common to all - forage conditions, water availability, and slope (basically food, water, and cover). Other variables considered have been land status, density of canopy (amount of brush), presence or absence of exotic or native ungulates, human disturbance factors, habitat discreteness, and size of area. [Cunningham, Stan, Evaluation of Bighorn Sheep Habitat, in *The Desert Bighorn Sheep in Arizona*, Raymond M. Lee, editor, (Phoenix, AZ.: Arizona Game and Fish Department, 1993)].

protected areas such as Kofa NWR and the New Water Mountains Wilderness, populations in other parts of the State are considered to be under threat due to habitat loss, especially in areas closest to urban expansion. Successes in improving populations at Kofa NWR through intensive water developments have resulted in cooperative arrangements, between the State of Arizona, the Service, and the BLM to transplant sheep to other areas of Arizona as indicated in Table 2. Biologically, there is still concern for the maintenance of current management techniques to foster the continued sustainability of this species. The sustainability has a relationship to potential harvest only in so much as the three agencies assesses population status prior to the allotment of permits for hunters. Surveys and climatic conditions also influence decisions about the number of the species to be hunted as well as transplanted. In short, a key role of the BLM, the Service, and the Arizona Game and Fish Department is to provide conditions for species sustainability and viability in the long run. The BLM, the Service, and the Arizona Game and Fish Department need to develop a long term view of achieving a goal of improving population statuses in transplant destinations so that at some point in the future, the Kofa NWR and the New Water Mountains Wilderness will no longer be the gene pool sources for other potentially sustainable populations in the southwest. The implication here is that as transplant destination populations become wholly sustainable, the natural solitude of these two wilderness areas will no longer be routinely intruded upon by the roaring blades of loud helicopters and the piercing sounds of net guns. Additionally, and more importantly, the sheep themselves will more seldomly experience the strain and stress of an exhausting chase across rugged terrain in hyper thermal conditions. The goal of having self sustaining populations of bighorn sheep throughout their natural and historic range will take continued enhanced cooperative efforts from all three agencies.

Water Developments -- The development of water sources for the bighorn sheep has been an important factor in species recovery since the 1950s. Cooperative efforts between the Arizona Game and Fish Department, the Arizona Desert Bighorn Sheep Society, and various federal agencies have resulted in the development of more than 100 water sources. Werner describes early efforts to involve backpacking materials to the project area limiting the size of developments. More recent efforts have involved the use of helicopters and large crews of volunteer labor resulting in the construction of larger dams that are more likely to provide permanent water sources. Werner states as follows:

*"Most of the efforts to develop water sources for bighorn sheep in Arizona have been improvements of tinajas, or natural scourholes in bedrock, and apron catchment construction. There are also a few wells with windmills which provide water to bighorn sheep. On an opportunistic basis, structures such as old mine cisterns have been improved to provide access and prevent trapping the bighorn sheep. In one case, a mine cistern provides a backup supply of water which can be pumped into an improved natural tinaja nearby."*³⁵

³⁵Werner, Bill, Water Development, in *The Desert Bighorn Sheep in Arizona*, Raymond M. Lee, editor, (Phoenix, Az.: Arizona Game and Fish Department, 1993)].

The literature indicates that although few habitat models have been developed for bighorn sheep, water was among the three major variables common to available models. However the literature indicates that water distribution should not be rated so highly as to overshadow other important variables. Cunningham states that much of the relative importance of water to the species is based upon other variabilities such as elevation, temperature, and rainfall.³⁶ There is little question that good distribution of water in otherwise suitable habitat will result in the reduction of stress and increased disease transmission "brought on by the concentration of bighorn sheep around waters and associated bedding and lambing sites."³⁷ Thus, the agencies should continue to manage and maintain water development areas in such a manner as to ensure that catchments hold permanent sources of water. In seasons of drought, managers should continue to deliver water.

According to Remington, the future of bighorn sheep "is cautiously optimistic." Strategic water development programs and supplemental transplants are key management tools in the restoration of "moribund, low quality populations to historic carrying capacities."³⁸ However, as wildlife managers maintain water sources for the bighorn sheep, they should keep in mind the responsibilities resulting from wilderness designation. While access to many of the sites on the Kofa NWR are on nonwilderness corridor roads, the sites on wilderness areas should be gained access through and maintained by the minimum tool necessary to accomplish the work. For example, the use of electronic devices to monitor water levels might in fact be the minimum tool necessary to check the status of a particular tank. The alternative would be several trips into the wilderness which might have much more impacts on the landscape, especially if mechanical transport is used. It would be essential that placement of new technologies would have to be as unobtrusive as possible so as not to be evidenced by visitors.

The strategies developed in this plan must balance the need to manage for species health and viability while respecting the requirements and intent of the Wilderness Act. The needs of the species and the requirements of the Act are not necessarily in conflict. In fact, the habitat

³⁶ Cunningham states as follows: "Numerous studies have found that bighorn sheep distribution is restricted by water availability during the summer months (Simmons 1969, Bates and Workman 1983, Elenowitz 1984) During the dry June-September period, most bighorn sheep are found within a two-mile radius of permanent water (Blong and Pillard 1968, Leslie and Douglas 1979, Cunningham and Ohmart 1986). Lactating ewes require more water than other bighorn sheep and are nearly always found in close proximity to water sources (Turner and Weaver 1980). Thus, the distribution of available water sources must be considered....Despite these findings, water distribution should not be rated (in point scale) so highly that it overshadows other important areas. Some systems relied so heavily on water distribution that other areas of importance (wintering areas, lambing grounds, summer use areas after monsoons) may have been underscored. Many researchers have pointed out that water distribution has little correlation with bighorn sheep distribution in cooler seasons (McQuivey 1978, Leslie and Douglas 1979, Cunningham and Ohmart 1986. Holl (1982) pointed out that water distribution was a minimal factor in bighorn sheep distribution in an area of higher elevation receiving more rainfall.[Cunningham, Stan, Evaluation of Bighorn Sheep Habitat, in *The Desert Bighorn Sheep in Arizona*, (Phoenix, Az.: Arizona Game and Fish Department, 1993)]

³⁷ Hansen, C.G., 1971. Overpopulation as a factor in reducing desert bighorn populations. Desert Bighorn Council Trans. P. 46-52, as cited by Bill Werner, Water Development, in *The Desert Bighorn Sheep of Arizona*, Raymond E. Lee, editor, (Phoenix, Az.: Arizona Game and Fish Department, 1993)p 164. The inference here is that carrying capacity increases with the reduction of bighorn sheep density and the inhibiting effects of localized overpopulation.

³⁸ Remington, Richard, The Future of Bighorn Sheep in Arizona, in *The Desert Bighorn Sheep of Arizona*, Raymond E. Lee, editor, (Phoenix, Az.: Arizona Game and Fish Department, 1993)p. 262.

management work done to benefit bighorn sheep, including water development, could have a positive influence on the natural cycles of predation and succession for a diversity of life in the desert without detracting of wilderness attributes and values.

Endangered, Threatened, or Candidate Species³⁹ -- The endangered Peregrine falcon occurs on the refuge, although rarely. No other Federally endangered species occur within the project area except for an occasional Brown pelican that is blown in by storms blowing in from the gulf of California. While most of these species are well protected within the boundaries of the Kofa NWR and the New Water Mountains Wilderness areas, the principal concern will continue to be loss of habitat. Wilderness designation has given an added layer of protection within the refuge boundaries. The more BLM and Service land managers can learn about the current trends regarding the full range of habitats in the project area, the better future actions will be toward protecting all species and preempting the need to list any of them as endangered in the future.

Non Native Species -- Only one species has posed difficulty for wildlife managers within the project area. Wild burros have continued to pose the more significant threat to the Kofa and New Water Mountains areas. Burros compete with desert bighorn sheep for water and forage areas. Both the BLM and the Service have made efforts to eliminate burros and devise fencing techniques which prevent the burros from using water sources meant for native wildlife. Other non native threats to the area include salt cedar, and various species of exotic grasses including buffle grass.

As in the case for managing any habitat and wildlife within the project area, both the Service and the BLM must take into account the wilderness context. The method used for non native species elimination should be considered within the backdrop of other alternatives so that the objectives of elimination and respect for the wilderness character can be accomplished together. For instance, the elimination of salt cedar from watering areas and major drainage in the desert calls for aggressive landscape manipulation strategies that need to be considered for their short and long term effects. Both the BLM and the Service should develop strategies that are the minimum tool to accomplish the objectives.

Exotic grasses and weeds will undoubtedly pose difficulties in the conservation of the natural desert landscape. Both agencies will need to develop capabilities which will prevent their spread onto the refuge and wilderness areas. Certainly, improvements in the overall wildlife and habitat data base, and subsequent monitoring and analysis will assist the agencies' managers in better understanding the overall habitat characteristics and suitabilities within the project area. This will lead to the development of better alternative methods of controlling the spread of non native species.

³⁹ The major part of the Service's guidance is contained within applicable sections of 50 CFR 25.11, 50 CFR 35.3, and 6 Refuge Manual 8.8. For the BLM portions of the planning area, sensitive species will be managed under existing policy outlined in BLM Manual 8560.34.

Issue Two: Public Use

Accessibility -- Many of the preexisting roadways within the Kofa NWR and Wilderness and the New Water Mountains Wilderness Area were exempted from designation allowing outstanding opportunities to visit interior portions of the wilderness areas which might otherwise be much too far to hike or access on horse back. These "cherry stemmed" roads criss-cross the Kofa NWR in such a way as to allow for management access to water resources and for mine claimants to gain access to mining sites using motorized vehicles.⁴⁰

The New Water Mountains Wilderness being much smaller, has two cherry stemmed roads in the far western section of the wilderness. The western boundary of the wilderness can be accessed via the Gold Nugget Road south of Interstate 10. The north central part of the wilderness can be reached by the Ramsey Mine Road south of Highway 60. The New Water Mountains Wilderness offers many types of primitive recreation, such as extended backpacking and hiking trips, day hikes, and watching wildlife. Opportunities to photograph and hunt deer and desert bighorn sheep, landscape photography, and rock collecting are plentiful. The BLM should begin a monitoring process to assess the various uses, their intensity over time, and the overall impacts.

As noted earlier, public domain lands managed by the BLM are managed from a "multiple use" perspective. Restrictions resulting from wilderness designation are limited to the prohibition of non motorized transport and the "leave no trace" requirement. Refuge wilderness public uses, on the other hand, are subject to a wider array of guidelines.⁴¹ All recreational uses are considered secondary uses and must undergo annual assessments to determine a uses' compatibility with the purposes for which the refuge was established.⁴² When a use is allowed to occur on a refuge overlain with wilderness responsibilities, the manager must assess how he or she will monitor the use, its intensity overtime, and the overall impacts. Problem areas on the refuge with respect to access are anticipated to be areas where the public is not aware of a border between BLM and Service lands. For example, BLM La Posa area lands to the north of the Refuge and to the west of the New Water Mountains Wilderness are lands wherein off road motorized recreation takes place. The Refuge has had a number of off road recreationers accidentally enter the refuge. These transition areas need to be more closely monitored to prevent damage to refuge resources caused by these uses. Like the BLM the Service can employ "leave no trace" restrictions, and prohibitions of motorized transport. Perhaps, these transition areas could be clearly posted to prevent intrusions.

⁴⁰ A "cherrystem" road is road exempted from wilderness designation. Many times these roads are dead end roads extending up to and surrounded by wilderness. In the case of Kofa NWR and New Water Mountains Wilderness Areas, the wilderness boundary is 100 feet from the edge of the exempted road. Many of these roads may lead to range developments, mines, or inholdings and water resource developments.

⁴¹ The policy governing compatibility of uses on refuges are: Refuge Recreation Act of 1962, as amended ; Public Law 87-714; 76 Stat 653; 16 U.S.C. 460(k); and the National Wildlife Refuge System Administration Act of 1966 ; Public Law 89-699; (16 U.S.C. 66(dd)-668(ee)).

⁴² A use may be determined to be compatible if it will not materially detract from or interfere with the purposes of the refuge unit.

Visitation -- Prior to 1993, it was difficult to estimate visitation on the Kofa NWR. A computer-based remote sensing system which was tested for two years did not render accurate data. Moisture and erratic software performance could not be corrected. In addition, the Kofa NWR headquarters is located in the City of Yuma, and it is difficult for field personnel to monitor ingress and egress from the major refuge access points consistently over time. However, in 1993, the Service purchased six traffic counters and installed them at five entrance points on the west boundary, and one on the north side of the refuge. The new counters have rendered reliable data indicating 1993's visitation to be approximately 50,000. But, the numbers of visitation alone do not assist the refuge in determining future management actions. Understanding the number of visitors along with the type, duration, and intensity of uses will be the data necessary to plan effective management actions in the future.

The predominant visitation area on the Kofa NWR is the Palm Canyon Trail. Visitors are comprised primarily of Yuma residents who travel to the site for an afternoon. The road leading to the Palm Canyon area has been exempted from wilderness designation. A developed parking facility exists with interpretive panels.

Compatibility of Uses -- In 1994, the refuge manager determined 3 recreational uses to be not compatible with the purposes for which the refuge was established: (1) rockhounding; (2) horseback riding; and, (3) rock climbing.⁴³

- *Rockhounding.* "Rock hounding," or the collection of mineral specimens from the surface, had been allowed, primarily in the Crystal Hill area (non wilderness) of the refuge. However, levels of the activity were such that commercial quantities appeared to have been taken from certain areas of the refuge. There may be a level if properly defined, and with certain restrictions that will allow for the activity to be compatible and thus allowable in non wilderness areas. The Service will need to properly define the limits of the use geographically, restrict the methods, and strictly monitor the affects. The collection ought to be restricted to only surface exposed specimens and all digging by hand or otherwise should continue to be prohibited.
- *Horseback Riding.* Horseback riding with no limitations had been allowed until the refuge manager determined that unlimited use resulted in severe soil disturbance, the introduction of exotic plant seeds, and damage to trees by tethering. With some restrictions in place such as the use of feeding containers, use of pellitized feed, and requirement for site restoration, the use of horses and pack animals could be considered compatible.
- *Rock Climbing.* Rock climbing has not been a popular recreational use on the refuge because of the softness of the rock faces. Rock climbers typically prefer harder granitic

⁴³Compatibility Determinations dated May 24, 1994 and approved September 21, 1994, indicated that these uses at that time were not "compatible" with refuge purposes. However, these determinations state: "...As a result of the planning process, modifications of the activity may be identified that would make it compatible." See January 1997 Compatibility Determinations for Rockhounding, Horseback Riding, and Technical Rock Climbing in the Appendix of this document.

surfaces. Nevertheless, the activity has been known to occur. The Service's approach nationally has been to allow the use on national wildlife refuges, provided that permanent anchors and the marking of routes be prohibited. With the establishment of these restrictions, the use can be considered compatible.

Uses determined to be compatible included: (1) Camping; (2) Hiking and Backpacking; (3) Wildlife Photography; (4) Wildlife Observation; (5) Hunting - Big Game; (6) Hunting - Upland Game; (7) Concessions - Guided Sport Hunting; (8) Concessions - Guided Tours.

Wildlife Observation, Camping, Photography, and Opportunities for Solitude⁴⁴ --

Camping. Although camping has been determined to be compatible, in the future, the refuge may need to consider establishing restrictions on the burning of native wood for campfires. Ironwood in particular is a native plant that is popular because of its hardness, and long burning qualities. It is the campfire wood of preference to many campers. Unfortunately, the species does not regenerate easily, and only under certain conditions. Sooner or later populations will dwindle unless steps are taken to restrict its use on the refuge. Camping presents opportunity for the concentration of sites where tradition has sculpted an imprint upon the landscape in the form of "fire rings." Permission to burn native downed wood could present opportunities for use of motorized saws and other modern tools. On the other hand, the importation of firewood from the outside might present the introduction of exotic insects. Again, because of access limitations, these considerations may not be as much concerns in the New Water Mountains Wilderness as in the Kofa NWR.

Wildlife Observation. Although hunting predominates as the recreation of choice in this area, wildlife observation and the so called non consumptive uses are gaining in popularity in all desert regions. More and more "snow birds" visit the desert southwest from northern climates during the winter months purely for the pleasure of observing. Unmonitored, this type of use will result in high concentrations in a limited number of areas of the wilderness resource and will tend to impact the naturalness as well as reduce the "opportunities for solitude." Nevertheless, concentrations of visitors in a few areas could eventually detract from the landscape's "untrammled" features thus showing the imprint of man. Monitoring will be a key activity for both agencies' land managers in efforts to allow for appreciation of the wilderness resources with a minimum of impact. Additionally, the Service must monitor each uses' compatibility with refuge purposes.

Hunting. The dominant hunt program in both wilderness areas is the annual bighorn sheep hunt which is managed by the Arizona Game and Fish Department. The hunt season typically

⁴⁴ The Wilderness Act defines wilderness as: "A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation (emphasis added); (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."

falls within the first two weeks in December. All bighorn populations are managed by hunt units and permits are subsequently drawn by unit. In Arizona the desert bighorn sheep is a once-in-a-lifetime trophy and the odds of drawing a permit for the Kofa NWR are estimated to be about 1:160. Most hunters spend several days scouting during pre-season and plan on spending the entire hunting season afield. Guided hunts are common, especially for non-residents (limited to 10% of the total sheep permits statewide and 50% in any one unit. The average price for a guided hunt runs about \$6,500. The refuge issues a special use permit to guides. Sheep hunting success in the project area is usually high. For instance, the rate for 1993 was 100%. The total number of permits issued for Kofa NWR alone was 15 permits.

Other species hunted in the project area include mule deer, quail, cottontail rabbit, and predators (coyote, and fox). The Kofa NWR deer hunt occurs during the first part of November. The number of deer hunters is considerably more than bighorn sheep. For example, the Arizona Game and Fish Department issued a total of 500 permits (buck only) for the Kofa NWR hunt. Quail season begins around the first week in October during which quail hunters will incidentally take rabbits and predators. Quail availability is determined by the abundance of late winter and early spring rains which produce higher than usual amounts of forage (i.e., grasses).

Summary -- The estimated 50,000 visits for Kofa NWR alone is considerable. Visits to the New Water Mountains Wilderness are probably not as extreme because access by motorized vehicle is not as readily available. However, one hunt permit alone accounts for several visits as hunters scout locations. Depending upon relative concentrations of vehicle visits along the cherry stem roads, wilderness resources could be severely impacted. Even if direct access to the wilderness is achieved through horse or on foot, trails need to be monitored for possible impacts. Both the BLM and the Service should consider the establishment of a visitation monitoring protocol in order to determine if there are impacts to wildlife and habitat resources, and in general, if there are impacts to the general wilderness characteristics. A key question is: At what locations is access occurring, and at what frequency and intensity? Is man's footprint becoming permanent and irreversible? The objectives designed through this planning effort need to direct both agencies to implement strategies that will allow frequent assessments of current conditions, trends and desired conditions.⁴⁵

Any changes proposed in this plan will have to depend upon the relative impacts to any particular area that are tied to one or several secondary uses. Changes in allowable uses will depend upon both compatibility assessments as well as wilderness considerations. Again, a key ingredient is to establish effective monitoring of impacts of any allowed use.

⁴⁵ This planning effort does not rely on any one technique for the development of standards for the determination of desired conditions or limitations upon change from current conditions (i.e., Limits of Acceptable Change). The presumption of both agencies for the Kofa NWR and the New Water Mountains Wilderness Area is that the current conditions are for the most part the desired conditions. Objectives developed later in this plan will dictate the activities necessary to protect the current condition, monitor impacts, and in some instances implement a change. However, key toward determining future changes in management will depend upon each agency's ability to monitor impacts of use and their ability to collect reliable data. Again, from the Service's perspective, monitoring of impacts will be broader than those related to wilderness. Refuge monitoring will necessarily be a part of the overall compatibility assessment process.

Issue 3: Minerals Management and Minimizing Impacts of Patented Mining Claims⁴⁶

As indicated earlier, there are no active mining claims within the New Water Mountains Wilderness. The Kofa NWR, however, has several active claims, eight of which are on the designated wilderness. The Service is concerned with the effects of these activities upon refuge wildlife and habitat resources in addition to surface disturbance concerns. Other than to develop cooperative agreements with claim owners, the only possibility of gaining more control over these "in holdings" is to appraise and purchase them. Otherwise mine activities could continue indefinitely perpetuating the disturbances to wildlife, habitat, and what otherwise might be considered natural landscape of these areas.

Minerals Management in Wilderness⁴⁷ -- As of December 31, 1983, all units of the National Wilderness Preservation System not already withdrawn from the operation of the mineral location and leasing laws were withdrawn. The present status of almost all wilderness areas is that even though no more claims can be filed, validity must be determined for a considerable backlog of claims. Validity will be determined as mining plans of operation are submitted for approval or patent applications are filed. The nature of most mining operations is incompatible with the preservation concept of wilderness. Heavy machinery is often required, and the surface of the earth is usually changed in a substantial way. That an authorized mining operation occurs in wilderness is not license to proceed constrained only by normal policy considerations. The challenge to the Service and the BLM is to work with the private rights involved and minimize or avoid unnecessary impacts, direct and indirect, on the wilderness resource. It is important that wilderness managers be familiar with the private rights involved.

Valid mineral leases and mining claims -- Leases. These leases may continue under the stipulations of the lease to the termination of the lease and have similar rights as mining claims with valid discoveries.

Valid Mining Claims. These claims all have the potential to be patented. Those filed before the effective date of wilderness classification can be patented for both surface and subsurface title. Those filed after wilderness designation can be patented only for the subsurface mineral; in these cases, surface title remains with the government. The rights of claimants at various stages are subject to validity determination by a mineral examiner. Claims can vary from inactive to major extraction without ever going to patent. Because of a variety of tax and private landowner responsibilities that would be imposed on them, some claimants find it to their advantage to extract the mineral without obtaining patent to the land.

⁴⁶ Any future mining activities in the Kofa NWR would be guided by applicable sections of 50 CFR 27.64 and 50 CFR 29.31.

⁴⁷ Much of the following information is directly attributable to: *Management of the Wilderness Resource* (Fort Collins: Colorado State University, 1991), pp. (4-12)-(4-15). This handbook was authored as a collaborative effort among the Bureau of Land Management, National Park Service, Fish and Wildlife Service, Forest Service, College of Forestry and Natural Resources, and Division of Continuing Education at Colorado State University.

Patented mining claims -- Patented claims are of two types. Those resulting from pre-wilderness claims are, plain and simple, private land and are subject to Section 4 of the Wilderness Act. Those from post-wilderness claims and made after December 31, 1983, are split-estates with the mineral estate being private and being superior to the surface ownership, which remains with the government. Surface reclamation after mineral extraction can be the visible difference between the two. Managing the surface title in split-estates is a major challenge for wilderness managers. At the conclusion of any operation, the surface must be restored as "near as practicable" to its original condition.⁴⁸ As difficult as it may be, the wilderness manager's responsibility is to ensure that restoration is accomplished so that the long-term impacts on the naturalness of the wilderness are minimized in scope and duration. That is why it is important to cultivate and develop cooperative relationships with all claim owners.

Summary -- In order to protect and maintain wilderness values, both the BLM and the Service will have to attempt several strategies to mitigate and prevent impacts due to the various minerals related activities which can occur within wilderness.

With respect to valid mining claims, and patented claims, the Service must work to develop cooperative relationships with claim owners that result in excavation strategies that are the least harmful to the surrounding area for aesthetic and safety reasons. Should opportunities arise to purchase these rights, the Service should do so. Finally, for those claims that are on designated wilderness, when mining activities are concluded, the Service needs to enforce the provisions of the Wilderness Act which call for restoration of the site. Any claims on public domain lands in the vicinity of the New Water Mountains Wilderness need to be monitored for potential contaminants and other effects to the adjacent wilderness area.

Issue 4: Surface Disturbances -- In addition to surface disturbances related to mining activities, there are many instances within the planning area where disturbances to the natural landscape will tend to degrade the visitor's wilderness experience. Some examples of these disturbances include: developed water catchments, windmills, cabins, utility easements.

The New Water Mountains Wilderness area is small enough that areas where surface disturbances have occurred can readily be corrected. Most of these disturbances are related to the four water developments present within the wilderness. Access to these water developments for maintenance or refurbishment needs to be monitored to prevent the unnecessary compacting of ground. In addition, the BLM should consider in cooperation with the Arizona Game and Fish Department ways to make these developments less obtrusive to the natural landscape.

The Kofa NWR has many water developments in and out of wilderness. The Service needs to give strong consideration to the development of less intrusive strategies for monitoring water

⁴⁸ The Wilderness Act of 1964, Section 4(d)(3).

catchment status and condition. Radio telemetry is a method which would eliminate the need to physically check water tanks and catchments. However, should modern technology be imposed, both agencies must properly declare its use of the minimum tool, and it should be installed in a nonobtrusive manner. If windmills are in need of repair or replacement, care should be taken so as not to upgrade one technology with a more modern one. The more primitive tool needs to take precedent. If a windmill is constructed from wood, it should not be replaced with metal.

All cabins and artificial structures on either wilderness should undergo assessment for historical significance. If any such structure is not historically significant, it should be eliminated from the landscape unless it provides shelter for safety and health purposes.

It is important to properly map utility easements so as to better understand their relationship to the wilderness resource. The Kofa NWR contains six easements in addition to two private non-mineral in holdings, and 46 mining claims. All of these uses present the Service and the BLM with potential conflicts to both the wildlife and wilderness resources. Both agencies must develop cooperative management strategies with the owners of these rights to minimize impacts of their uses upon refuge and wilderness resources.

Issue Five: Cultural Resource Management

It is clear that the most important element of this issue is the fact that the greater portion of the project area has not been effectively assessed for the full range of cultural resources. Site investigations have been at best spotty on the Kofa NWR and almost non-existent within the New Water Mountains Wilderness. Objectives need to spell out cultural resource assessment priorities in terms of locations of focus. Research can play a critical role here, however, the caveat being that even this activity must abide by wilderness guidelines.

Issues To Be Resolved Through Existing Policy

Both agencies will appeal to existing policy directives to set objectives for the following issues. Guidance for managing these issues is clear and not much is offered in the way of flexibility. When it is anticipated that management of these issues will conflict with Wilderness Act driven goals and objectives, then the land managers of both agencies will have to determine special strategies that will result in the protection of the wilderness resource. Objectives for the following issues will be set based upon existing policy direction as noted.

Management of Utility Corridors -- Guidance for the management of utility easements in non-wilderness portions of the Kofa NWR can be found in 50 CFR 29.21. This guidance is a good framework from which to develop objectives regarding the management of these corridors by the easement owners. Objectives will be related to the monitoring of corridor use and potential impacts upon native plants including species of concern within wilderness.

In addition to monitoring, the refuge will develop cooperative efforts with easement users to ensure the protection of wilderness values where possible.

Scientific Research -- Studies for management, scientific, educational, or historical/cultural purposes will be guided by applicable BLM Manual sections 8560.18 and 8560.32 for the BLM portions of the planning area. The minimum tool considerations will be applicable.

Studies on the Refuge will be guided by 6 Refuge Manual 8.9(h), 50 CFR 27.63, and 50 CFR 35.11. Cultural resource studies will be authorized on a case by case basis and are subject to compliance with section 106 of the National Historic Preservation Act of 1966. This guidance provides an adequate framework to develop research-related objectives for both wilderness and non wilderness areas of the refuge. However, this plan will set refuge objectives for research with respect to its relative contributions to enhancement of the refuge's baseline wildlife and habitat management data. The minimum tool considerations will be applicable.

Law Enforcement and Emergency Services -- There are established wilderness management policies and regulations in BLM Manual 8560.39 and 43 CFR 8560.3, and 6 Refuge Manual 8.8 and 50 CFR 35.5, that provide for law enforcement and emergency access and equipment uses in incidents involving public health and safety and violations of civil and criminal law. This plan establishes that the guidance set out in these documents is appropriate and adequate for the refuge lands and the New Water area.

Military Ordnance Contamination -- A possibility of ordnance contamination exists on the Refuge portion of the planning area due to past military activities. Ordnance has previously been recovered from the Refuge. In the event that unexploded ordnance is discovered, the Department of Defense will be contacted for its removal using the minimum tool required for safe removal in accordance with 6 Refuge Manual 8.8 - A. This concern is not an issue for the New Water Mountains Wilderness.

Native American Religious Access -- There have been no instances in which the Service or the BLM has been contacted by Native American tribes for arrangements to access spiritual sites. However, both agencies acknowledge that certain sites within the planning area are considered to be sacred. Both agencies will consider any requests by the Native American tribes in consideration of the Native American Religious Freedom Act.

Military Overflights -- The Arizona Desert Wilderness Act of 1990 addresses military overflights. The Act states the following: "Nothing in this title shall preclude low level overflights of military aircraft, the designation of new units of special airspace, or the use or establishment of military flight training routes over wilderness areas designated by this title." Nevertheless, the Service and BLM will continue to cooperate with the military in pursuing mutually beneficial opportunities to protect the integrity of wilderness airspace and the

protection of natural resources within the planning area. This plan hopes to establish objectives for this kind of continuing outreach and cooperation.

PART IV. MANAGEMENT PROGRAM

Management Strategy

The management program is designed to protect natural resources and values of the planning area for the long-term, and to provide for public appreciation of the refuge as appropriate and compatible with the purposes for which it was established. In addition, the management program addresses national goals established for the National Wildlife Refuge System and the National Wilderness Preservation System.

This plan is issue driven. Within the framework of the legal mandates and policy guidelines outlined earlier, plan objectives are established to address planning area issues. Management actions are designed to meet the objectives. With the exception of administering two potentially shared law enforcement positions, each agency is responsible for accomplishing management actions specified for the areas within their respective jurisdiction.

Where possible, target dates to accomplish proposed actions are assigned. Monitoring will be conducted to gauge the effectiveness of management actions and determine if plan objectives are being met. In cases where motorized or mechanized equipment and vehicles are authorized in wilderness, activities should be scheduled for weekday periods instead of weekends to minimize potential impacts to visitors. During maintenance or repair of existing developments, every effort should be made to reduce visual impacts and minimize the need for maintenance that requires the use of motorized or mechanized equipment and vehicles in wilderness.

A rationale is included immediately below several items in this section to provide additional clarification.

Objective 1: Preservation of Wilderness Values:

Maintain or enhance the wilderness values of naturalness, outstanding opportunities for solitude and primitive recreation, and special features of the planning area by:

- Minimizing impacts of recreational use and visual impacts of authorized developments.
- Reducing or eliminating unauthorized vehicle/mechanized use
- Minimizing low level non-military administrative aircraft use through cooperation in scheduling with involved agencies.
- Reducing the frequency and need for administratively authorized motorized travel into wilderness.
- Preventing the establishment of a resident burro population in the New Waters. -Preventing the establishment of exotic plant species, particularly salt cedar. -Providing public education/information to prevent impacts to wilderness from recreational uses by 1997.
- Minimizing visual impacts from mining scars and former vehicle routes.

Rationale: the elements of objective #1 are important aspects of both agencies' responsibilities to carry out mandates of the Wilderness Act of 1964 and the Arizona Desert Wilderness Act of 1990. Meeting this objective will provide long-term preservation of the planning area's wilderness values by addressing aspects of issues 1,2,3,4,5,and 6 (in Part III of this document), and portions of each respective agency's own wilderness management policies.

Management Actions

1. New Waters -- Allow rockhounding as a use on the New Waters but limit use to hand methods that do not cause surface disturbances.

Kofa --Restrict rockhounding as a use on the Kofa NWR to the Crystal Hill area (as delineated on Map 1). Boundaries will be posted as per the following legal description: Township 2 N, Range 18 W, E 1/2 of Section 9; and all of Section 10. No detection equipment or hand tools will be allowed. Only the taking of surface occurring rocks will be permitted. If it is determined in the future that rockhounding activities are degrading the landscape, the Service may determine that rockhounding at any level "materially detracts and/or interferes with the purpose for which the refuge was established" and thus, may determine the use to be not compatible. Rockhounding is eliminated from the remainder of the Kofa NWR. Incorporate information regarding not leaving surface disturbances into agency outreach materials by 1997.

Rationale: Surface disturbances have routinely been left unreclaimed in the New Waters. In reference to rockhounding, BLM Manual 8560.31.E states: "Limit such use to hand methods or detection equipment that does not cause surface disturbance, such as metal detector or Geiger counter. In addition, methods must not be permitted that in any way adversely affect or degrade the wilderness resource or the experiences of visitors in the area."

In reference to rockhounding on the Kofa NWR, restrictions are set in place in accordance with 50 CFR 25.31. Past unrestricted rockhounding has resulted in the removal of large quantities of nonrenewable refuge resources. A compatibility determination was made that this use at past levels is not compatible so as to "materially detract from and/or interferes with the purposes for which the refuge was established." [Refuge Manual 5 RM 20.60] By restricting the use to the Crystal Hill area only, and limiting the activity to hand methods, the use is determined to be compatible. These restrictions are also implemented because it is not lawful to convert national public resources to private/commercial uses depleting resources that are not sustainable or renewable.

2. Continue adequate signing and distribution of information concerning restrictions (Information Displays, Map 1) to unauthorized vehicular/mechanized transport within wilderness areas. Emphasize practices that minimize surface disturbances.

3. Install barriers at the wilderness boundaries where signing alone is not effective in controlling unauthorized vehicle entry. Boulders, berms, plants or other natural materials will be preferred for use as barriers. However, if these prove ineffective, post and cable barriers will be constructed.

Rationale for Actions 2 and 3: Most of the potential for unauthorized mechanical/vehicle use is on the refuge portion of the planning area. These actions will improve opportunities for solitude, provide for the re-establishment of vegetation on existing surface disturbances, and prevent additional adverse impacts from unauthorized vehicle/mechanical use in wilderness.

4. Control the establishment of salt cedar (Tamarisk) or other exotic plant species at wildlife waters and remove discovered plants physically or with authorized chemicals.

5. Maintain existing burro fences and remove any nuisance burros that expand their range to include the planning area. The use of helicopters for burro removal will be allowed.

Rationale for Actions 4 and 5: By refuge policy, nonindigenous species are to be controlled and if possible removed from refuge lands. Burros are extremely competitive for scarce vegetative and watering resources with native wildlife. Tamarisk is a very aggressive exotic plant species that eventually displaces native vegetation.

6. Education and outreach will include: work with the Arizona Game and Fish Department to include visitor use impacts information in the annual hunting regulations by 1998; develop a joint agency brochure/map by 1998; participate in annual Quartzsite pow wow public information booth.

Rationale: Both agencies recognize the need to improve on efforts that provide public information for promoting practices that minimize adverse impacts to our natural resources and allow greater enjoyment of appropriate recreational and other opportunities. National Wildlife Refuge System goals call for management actions that foster public appreciation for wildlife and habitat resources and that are compatible with refuge purposes.

7. Clean up debris at 6 abandoned unpatented mining sites within Kofa and 1 site within the New Waters (Map 3) by the year 2001.

8. Reclaim 2 former vehicle routes (3.5 miles) in the refuge and 4 former vehicle routes (4.5 miles - Map 3) in the New Waters using hand tools and other non mechanized methods to minimize visual impacts and enhance wilderness values and opportunities.

Rationale for Actions 7 and 8: Past (within the last 40 years) mining activities and former vehicle routes have resulted in disturbances to natural features of the planning area and in some cases could affect public safety. Implementing these actions will provide for the restoration of natural features and enhance wilderness values and opportunities. Wildlife habitat will be enhanced by the revegetation of surface disturbances. There will

also be less potential for adverse impacts to wildlife from continued vehicle use in wilderness.

9. The Service will coordinate with the military to remove military debris as warranted.
10. Pursue options to establish 2 field positions by 1998 for the purpose of implementing resource protection, monitoring, and public outreach provisions of this management plan for the entire planning area.

Rationale: This action will provide for the attainment of resource protection plan provisions and the acquisition of needed data concerning potential conflicts between wildlife and recreation objectives. Issues 1, 2, 3, and 10, and components of objectives 2 and 3, are addressed by this action. Additionally, this proposal falls within the guidelines of current Departmental goals to shift more existing positions to the field level.

Monitoring for Objective 1.

1. Inspect wildlife water sites during routine inspections to check for the establishment of Tamarisk or other exotic plant species and implement action 4 as necessary.
2. During routine patrols of the planning area, monitor existing burro fences for impacts and presence of nuisance burros that expand their range to include the planning area. Implement action 5 as needed.
3. Monitor and document unauthorized uses of the planning area. Implement action 3 if warranted.
4. Monitor and document impacts of all authorized visitor uses within the planning area and recommend needed mitigation during yearly plan evaluations.
5. The Service will monitor rockhounding activity on Crystal Hill.

Objective 2. Wildlife and Habitat Management:

Within a dominant wilderness context, both agencies will maintain and enhance the natural diversity of flora and fauna within the Kofa/New Waters planning area by:

- Managing fire to maintain the areas natural values.
- Preventing the introduction of new exotic pathogens into the area that could adversely impact wildlife.
- Managing the planning area using the minimum tools needed for maintaining an optimal desert bighorn sheep population while providing for maximum viable species diversity.
- Providing for allowable resource uses within an ecologically compatible and sustainable framework while minimizing impacts to wilderness values.

- Identifying sensitive wildlife areas and minimizing visitor use conflicts.
- Eliminating potential impacts to wildlife habitat from probable mining activity on nonfederal lands within the planning area.

Management Actions

1. Reported fires will be monitored by air with minimum altitudes of 1000 feet above ground level, or by foot access. In the New Waters, fires that exceed or are expected to exceed a 5 chain per hour rate of spread will be suppressed. Kofa fires that threaten private property, have other than a low potential for spreading beyond the planning area, or present a significant threat to unique natural resources (i.e., native palms), or health and safety for the public, will be suppressed. Use non-motorized hand tools for suppression activities within wilderness portions of the planning area. Complete the rehabilitation of disturbances caused by fire suppression activities in accordance with BLM Manual 8560.35 and Refuge Manual 6 RM 8.8C, before suppression forces are released.

Rationale: There has been no recorded history of fires in the New Waters. Plant communities within the planning area are not fire adapted and suppressing fires that exceed a 5 chain per hour rate of spread will protect the area's natural values. Fires that have occurred on the refuge have been caused by human activity. These fires have burned themselves out with minimal intervention during the first burning period. There have been no long-term adverse impacts to wildlife or habitat from fire occurrence in the planning area.

2. Bighorn sheep capture and transplant work in the planning area will be considered annually in joint consultations between the AGFD and Kofa staff.

Rationale: Sheep capture within the New Waters is governed by the AGFD-BLM MOU. On the Kofa, the quantity of sheep designated for capture is dependent upon sheep surveys and habitat evaluations conducted on the refuge. The AGFD and the Kofa staff meet and agree upon the number of bighorn to be removed and time periods for capture. Factors to be considered are:

- Estimated population and trends.
- Minimum estimated population of 120 in the New Waters.
- Minimum estimated population of 800 on the refuge.
- Herd demographics (minimum of 50% ewes, 14 lambs:100 ewes).

The preceding factors will be considered but they will not mandate a permit denial or a removal of bighorn sheep.

The Service and AGFD will continue to track the overall level of achievement (i.e., attainment of long range goals) of the efforts to repopulate the desert bighorn in their

natural range. Transplant goals are to reestablish bighorn sheep throughout all suitable historic habitat. To achieve that, the following factors are considered:

- Suitable historic habitat (sufficient area, quality etc.).
- Conflicts with the success of the release (e.g. domestic sheep, human disturbance, etc.).
- Viability of current population in the transplant site.
 - Genetic viability (minimum sheep population of 50).
 - Predator threshold viability (dependent upon local influences).

3. Allow helicopter use as the minimum tool necessary for bighorn sheep capture operations.

Rationale: The use of helicopters to capture sheep for eventual transplantation has aided efforts to recover the desert bighorn in its natural range. Desert bighorn sheep recovery is a primary component of the Kofa's defined purpose. Other methods may incur extended intrusions into the wilderness with means that could be more harmful. For the BLM, this method of capture is defined in the AGFD-BLM MOU.

4. Accomplish routine inspections of all wildlife waters , with the exception of Charlie Died Tank, by non-mechanical means. Maintenance of wildlife waters in wilderness will also be conducted by non-mechanical means with the exception of those listed below:

-At Kofa #1 and Kofa #2, Adam's Well, King Well, and Charlie Died Tank, maintenance, and water supplementation will be allowed by vehicle.

-If needed during drought periods, water will be supplemented at Nugget Tank using motorized equipment or vehicles .

-The access method for emergency situations at wildlife waters will be determined by the Field Manager and/or Refuge Manager on a case-by-case basis, and where applicable, in consultation with AGFD. Maintenance, modification, and/or repair by motorized/mechanical means may be considered on a case by case basis.

5. The Service, BLM, and AGFD will evaluate options to install buried water systems at Charlie Died Tank and Modesti Tank, and improve the visual characteristics and/or reliability of Kofa #1 and #2 by redeveloping or relocating the wildlife waters.

6. Improve, redevelop, or enhance Nugget Tank to minimize visual impacts and reduce the need for water supplementation by 1998. The use of mechanized equipment will be allowed.

Rationale for Actions 4, 5, and 6 : Traditionally, these have been inspected using vehicle transport. Wildlife water sources on the Kofa are important components of wildlife management for the refuge. The Service recognizes the newer context created by wilderness designation. The options to be evaluated will assist in lessening the frequency of administrative use of vehicles and mechanical equipment, still allow for fulfillment of Kofa's important role in the recovery of bighorn sheep.

Inspection of waters by aerial means is not precluded by the wilderness act or by this plan. If aircraft landings are required within designated wilderness, advance approval by the Service or the BLM is necessary unless otherwise stated in this plan. Emergency and safety reasons are the exception.

7. Provide for the following flight operations. A 2 week advance notification of planned flights by AGFD to the appropriate agency is desirable.

- One low level bighorn sheep survey, averaging 8 hours of flight time in the New Waters and 60 hours on the refuge during the period of October 1 through November 30.
- One low-level javelina and mule deer survey, averaging 8 hours of flight time in the New Waters and 15 hours on the refuge during the period from January 1 through March 31.
- In addition, flights for monitoring water levels, supplemental wildlife surveys, or in response to emergency situations may occur if necessary.
- Helicopter landings will be allowed for the retrieval of telemetry equipment from a sick or dead animal.

Rationale: Implementing these provisions will minimize the number of flights over designated wilderness and improve efficiencies in time and money to acquire needed biological information throughout the planning area. Advance approval by the Service or BLM is necessary for aircraft landings within wilderness that are not provided for in this plan. Emergency and safety reasons are the exception.

8. Continue cooperative effort to identify needs and collect baseline data. The Service will complete all phases of the already established aerial videography project by the year 1999.

Rationale: All agencies recognize the need to collect as much relevant scientific data as possible to assist in efforts to manage habitat and wildlife in the planning area for its biologically diverse suitability and capability. The aerial videography project will provide fundamental vegetation baseline data once digitized.

9. Appropriate agencies will coordinate to establish seasonal closures of sensitive habitat to protect wildlife and plant species when needed. Such areas may include drought period water sources, lambing sites (Map 4), abandoned mine shafts and other sensitive habitats.

10. By 1998, inventory abandoned mine sites, the majority of which are outside the wilderness, and install gates in such a way as to allow for continued use of bats and other wildlife. If appropriate, the mine opening may be closed. For those mine openings that are found to be within wilderness, and present a safety hazard to the public, the manager will install the appropriate wildlife amenable gates using the minimum tool. Mechanized/motorized equipment will be allowed for installing gates or closing mine sites.

Rationale for Actions 9 and 10 : These actions will minimize the potential for adverse impacts from visitors on wildlife during crucial periods. The agencies must

be able to maintain the integrity of natural and appropriate manipulative processes so that wildlife, habitat, and wilderness mandates are met. In the case of abandoned mine shafts, closure will minimize risks to human safety.

11. Purchase from willing sellers, private inholdings (Map 3) within the Kofa portion of the planning area. There will be a purchase target of at least 1 inholding per year.

Rationale: This action will provide for the protection of wildlife habitat and visual values of the planning area.

Monitoring for Objective 2

1. Maintain monitoring logs of the administrative use of vehicles and/or mechanized equipment. Evaluate the logs annually and explore options to reduce the need for these type of administrative uses.
2. Monitor burn areas for the establishment of exotic plant species.
3. Monitor visitor uses and intensities of uses as to their effects and/or impacts on natural resources within the planning area. Recommend and implement mitigation to minimize adverse impacts as needed.

Objective 3: Recreation, Legal Access and Public Information:

Maintain high quality opportunities for recreation within the planning area, and where applicable, wildlife dependent , and/or primitive recreation that is compatible with the purposes for which the Kofa NWR and New Water Mountains Wilderness were established. These uses include wildlife observation, hiking, hunting, camping, photography, and solitude. This objective will be accomplished by:

- Providing public information that allows for public enjoyment of recreational opportunities in the planning area while promoting low impact use ethics for visitors.
- Establishing methods that will allow for the public to continually assess the quality of their recreational opportunities and thereby assist in determining appropriate future management decisions.
- Providing legal public access routes that promote dispersed use.
- Acquiring private lands that provide added recreational opportunities.
- Enhancing the quality of recreational opportunities by establishing special programs.
- Maintain environmental standards (air and water quality) to provide for enhanced visitor experience.

Rationale: All recreational activities on National Wildlife Refuges are secondary uses and are allowed when compatible with the primary purposes for which the refuges were established. Any existing recreational use must undergo annual review and any proposed use must undergo compatibility analysis. The above listed uses are those that have been determined to be compatible with the Kofa.

Management Actions

1. Establish (I-8 on Map 1 by 1998) and maintain information and interpretive displays at access points (Map 1) to the planning area as funding and staff levels permit.
2. As staffing and funding allow, conduct routine patrols of the planning area at least once per month.
3. Promote "Leave No Trace!" land use ethics by making appropriate information available at information displays and administrative sites.
4. By the end of 1998, include visitor registers at information displays (Map 1) to provide for public assessment and comment about the quality of their recreational and wildlife appreciation opportunities. Develop an appropriate register form to assist in providing needed monitoring information.
5. Keep existing authorized public access routes (Map 1) open to promote dispersed visitor use and maintain opportunities for solitude.
6. The BLM will pursue options to acquire a public easement through or purchase the entire land parcel described by Mineral Entry Patent 546603, adjacent to the New Waters in the northeast portion of the planning area (Map 3) by 1999.

Rationale: Providing legal public access would assist in meeting Objective 3 through more dispersed visitor use that would be allowed by making a larger portion of the New Waters legally accessible to the public. This property currently provides some of the more popular camping sites in the BLM portion of the planning area. Also, this action will provide for the protection of wildlife habitat and visual resources of the planning area, and therefore assist in meeting Objective 2.

7. The Service will continue to work with AGFD to manage the Alternate hunt (mule deer) Program on the Kofa portion of the planning area (State Game Management Unit 45).

Rationale: This action will allow for continuation of a quality deer hunt on the Kofa portion of the planning area. The objective is to reduce potential hunter crowding and increase hunter success rates. This action also contributes to the achievement of Objective #2.

8. Prohibit the use of permanent anchors and the marking of routes in support of technical rock climbing and rappelling in the planning area as authorized by 43 CFR 8560.1-2 and 50 CFR 25.21.
9. Allow horses, mules, burros, and llamas as recreational livestock in the planning area under these conditions: The use of feeding containers is required, water is to be packed in for

livestock, and surface disturbances at campsites are to be restored. Use of pelletized feed is recommended.

Rationale: The use of feeding containers will assist in preventing the introduction of exotic plants and pathogens from domestic livestock. Packing in water will eliminate any need for livestock to use water resources developed specifically for wildlife within the planning area. Cumulative habitat/resource degradation will be prevented from continued recreational livestock use. It is recognized that the use of recreational livestock by hunters and other users is one method of transporting game across long distances or as an alternative recreational opportunity. This action contributes to the achievement of Objective 2 and is authorized by 50 CFR 26.33 and 27.52 on Kofa and 43 CFR 8560.1-1 on the New Waters.

10. Allow campfires in the New Waters using dead, down and detached wood. Provide information at wilderness access displays to minimize use of campfires. Visitors to the New Waters will be encouraged to bring their own firewood. The BLM will consider campfire restrictions as a last resort.

11. Allow the use of dead, down, and detached wood for campfires in the nonwilderness corridors and other non wilderness areas within the Kofa NWR. Prohibit wood gathering and the possession of ironwood on Kofa NWR wilderness areas as authorized by 50 CFR 25.21 and 25.31. The Service will require visitors to Kofa NWR designated wilderness areas to bring their campfire wood as authorized by 50 CFR 26.33 or to bring charcoal or propane stoves. No native wood will be removed from the refuge.

Rationale for actions 10 and 11: Generally, campfires are used along nonwilderness corridors and throughout wilderness boundary perimeters where visitor use occurs more often. No data exists that compels the Service to completely disallow the use of dead, down and detached wood for campfires. However, the Service is compelled to conserve wilderness values until additional research can confirm that the resources' sustainability. This action also contributes to the achievement of Objective 2.

12. Enforce 25 mi/hr speed limit on all refuge maintained roads. Recommend to Yuma and La Paz County officials the implementation and enforcement of a 25 mi/hr speed limit on all county maintained roads within the Kofa NWR.

Rationale: The lower speeds on these dirt roads will reduce the number of dust particulates in the air to provide for maintaining air quality and will reduce mortalities to all wildlife, especially reptiles.

Monitoring for Objective 3

1. Inspect campsites where livestock use has occurred. Compile data on adverse impacts and assess the need to establish a special recreation use permit system for livestock on a yearly basis in the Kofa portion of the planning area.
2. Monitor for potential adverse impacts in the vicinity of frequently used campsites throughout the planning area and evaluate to determine if mitigation is needed.
3. Monitor visitor uses and intensities of uses as to their effects and/or impacts on natural resources within the planning area. Recommend and implement mitigation to minimize adverse impacts as needed.
4. Monitor data from public assessments of recreational opportunities in the planning area to assist in determining whether group size limits are warranted.
5. Compile visitor non-compliance data; evaluate annually and implement needed mitigation that will include appropriate interpretive messages at information displays.

Objective 4: Minerals Management

Minimize the environmental impacts of mining activities on all lands and resources within the planning area especially those directly related to wilderness by:

- Acquiring unpatented mining claims within the planning area.
- Monitoring activities on unpatented claims and performing mineral validity examinations if mining operations are proposed..

Management Actions

1. Encourage non-government entities to purchase unpatented claims on the Kofa NWR and allow claims to lapse. Contact at least 2 non-governmental entities by end of 1998.
2. By 1999, the Service will develop a Memorandum of Understanding with the BLM for mining claim validity examinations that would be performed if mining operations are proposed on active claims within Kofa wilderness. Provisions are to be made for project funding.

Rationale for Actions 1 and 2: Implementation of these actions will assist in the resolution of issue 4, and achieve BLM Wilderness Management Goals, and Service Wilderness Management Policy Objectives. Achievement of the objective will result in long-term preservation of the area's wilderness values while allowing both agencies to accomplish wildlife and habitat management mandates.

Monitoring for Objective 4:

Monitoring for the fulfillment of Objective 4 will be accomplished during annual plan evaluations.

PART V. PLAN EVALUATION

In coordination with AGFD, the Yuma Resource Area Manager and the Kofa NWR project leader (refuge manager) will conduct annual evaluations of the plan to:

1. Document completed management actions and adjust schedules for the following year if necessary.
2. Monitor to determine if the plan objectives are being met.
3. Recommend new management actions if needed.
4. Determine if the plan needs to be revised.

Needed revisions will amend the plan and be available for public review before being implemented.

PART VI: IMPLEMENTATION SCHEDULE AND COST ESTIMATES

TABLE 5 - RECURRING TASKS

TASK/ACTIVITY	WORKMONT HS (\$3500/MO.)	TASK ASSIGNMENT
Monthly Wilderness Patrols, Facilities Maintenance, Information Displays, Signs	6	Park/Law Enforcement Rangers/ Wilderness Specialist
Participate in annual Quartzsite Pow Wow public information booth	.5	Refuge/Resource Area Staff
Monitoring - Visitor Use, establishment of exotic species	3	Park/Law Enforcement Ranger/ Wilderness Specialist/ Biologists
Plan Evaluation	.5	Area/Refuge Managers/ Interdisciplinary Team/AGFD

TABLE 6 - NON-RECURRING TASKS

TASK/ACTIVITY	TARGET DATE	COSTS	TASK ASSIGNMENT
1. Implement restrictions on: rockhounding; fuel wood gathering; rock climbing; and use of recreational livestock. Develop educational materials for posting at locations I-1 to I-10 on Map 1 to promote low impact uses and inform the public of restrictions .	1998	\$ 2,500	Wilderness Specialist/ Refuge and Area Managers
2. Work with AGFD to provide information about fuel wood gathering restrictions on Kofa and requirements for livestock use in planning area for inclusion on yearly hunting regulations.	1998	\$ 1,000	State Office/Res. Area Wilderness Specialists/ Area/Refuge Managers
3. Construct information display at location I-8 on Map 1 in New Waters.	1998	\$ 400	Park Ranger/Wilderness Specialist
4. Establish visitor registers at locations I-1 to I-10 on Map 1.	1998	\$ 900	Refuge Mgr/ Wilderness Specialist
5. Develop BLM/Service MOU for mining validity examinations.	1999	¹	Refuge/Area Managers
6. Clean up debris at abandoned mining sites on Map 3 as follows: *1 to *6 *7	1996 to 2001 1997	\$ 15,000 \$ 1,000	Refuge Manager Pk. Ranger/W. Specialist
7. Reclaim former routes K-1 and K-2 and NW-1 to NW-4 on Map 3 as follows: K-1 & K-2 NW-1 to NW-4	1997 & 1998 1997 to 2000	\$ 5,000 \$ 10,000	Refuge Manager Pk. Ranger/W. Specialist
8. Pursue options to establish 2 field positions on Kofa.	1998	\$ 60,000	Refuge Manager
9. Inventory and gate or close abandoned mines on Kofa as appropriate.	1998	\$ 25,000	Refuge Manager
10. Improve wildlife waters at Nugget Tank.	1998	\$ 5,000	AGFD/BLM
.11. Improve wildlife waters at: Charlie Died Tank Modesti Tank	1998 2000	\$ 30,000 \$ 30,000	Refuge Manager
12. Improve wildlife waters : Kofa #1 and #2.	To be determined	\$ 30,000 \$ 30,000	AGFD/ BLM/Service- Wildlife Biologists
.13. Complete Kofa aerial videography project.	1999	\$ 5,000	Refuge Manager
. 14. Acquire public easement through or all property on Mineral Entry Patent 546603.	1999	\$100,000	State Office Realty Specialist/ Area Manager
15. Acquire private inholdings from willing sellers on Kofa.	2010	²	Refuge Manager
16. Acquire active mining claims from willing sellers on Kofa.	2010	²	Refuge Manager

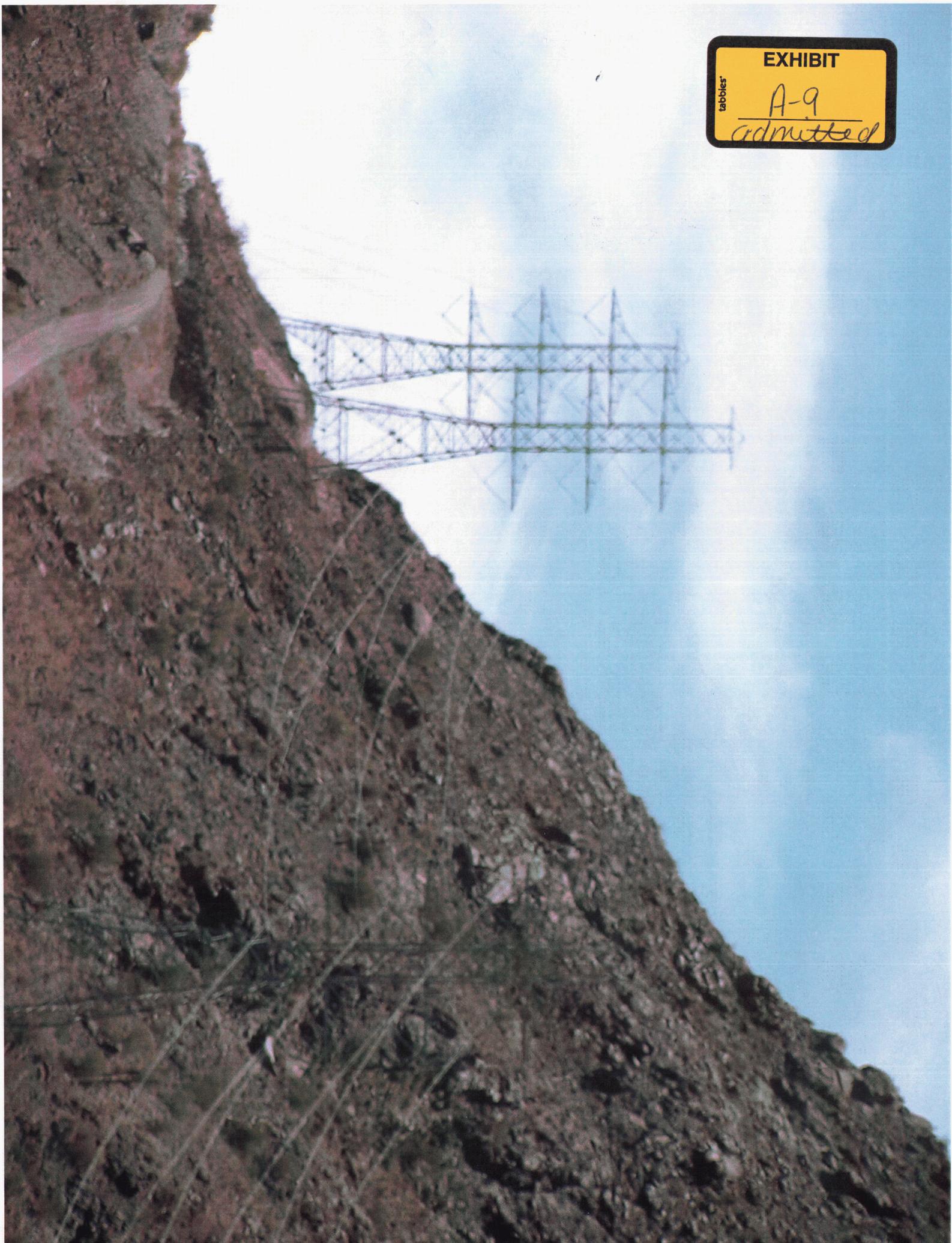
1. No operational funding is needed; approximately 1 workmonth will be needed for Tasks 5 and 6.

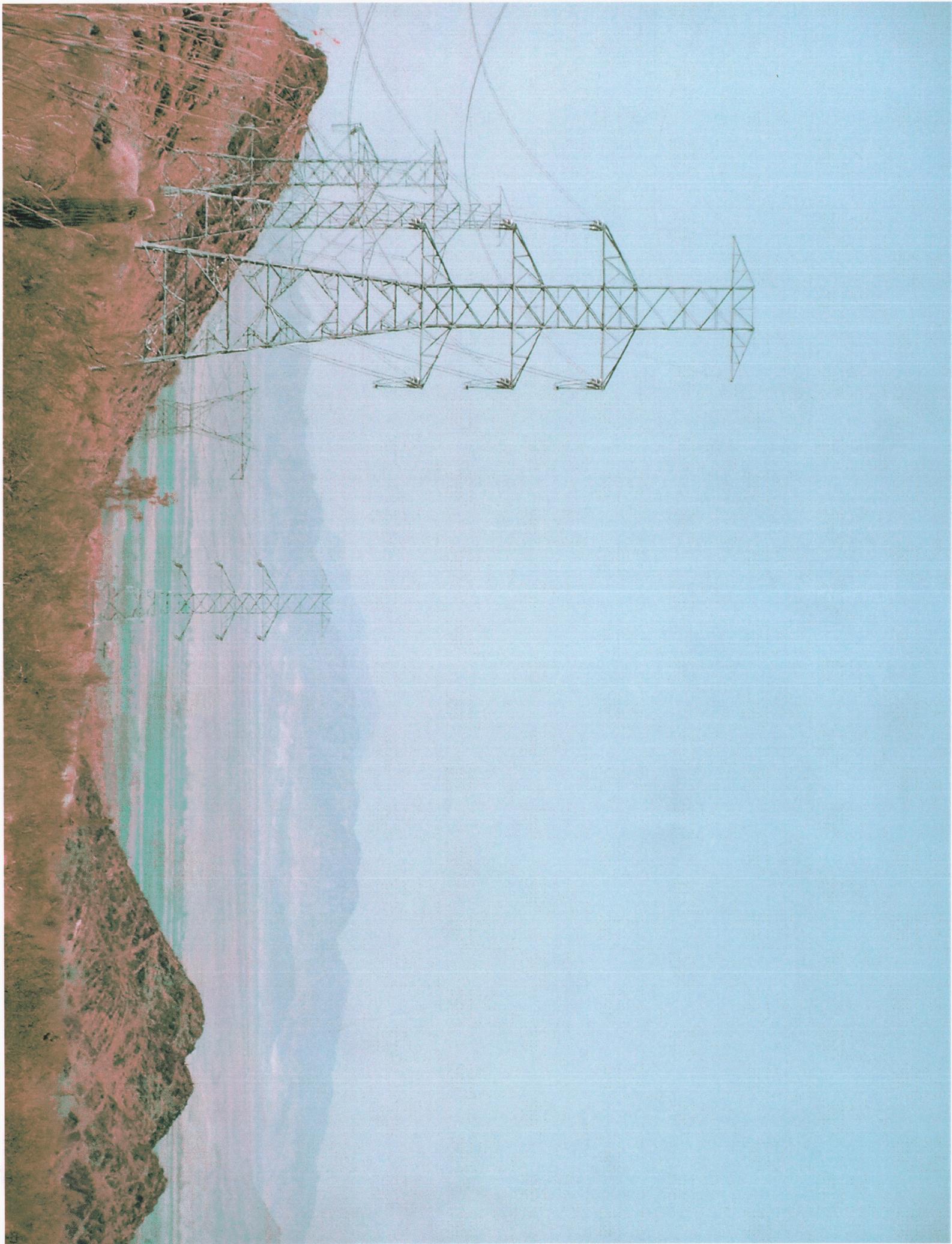
2. Tasks 16 and 17 are long-term goals and acquisition estimates were not readily available.

PART VII: APPENDICES

included in the
*Kofa National Wildlife Refuge & Wilderness and New Water Mountains Wilderness
Interagency Management Plan and Environmental Assessment*
(October 1996)

EXHIBIT
A-9
admitted







United States Department of the Interior

BUREAU OF LAND MANAGEMENT
 ARIZONA STATE OFFICE
 2400 VALLEY BANK CENTER
 PHOENIX, ARIZONA 85073
 (602) 261-4774

A 9878 (PAS)
 R/W (943)

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

July 22, 1981

DECISION

Southern California
 Edison Company

Palo Verde-Devers 500 KV
 Transmission Line R/W
 A 9878

Right-of-way Amended for Segment I

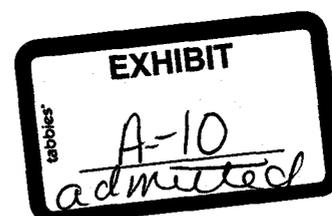
On February 1, 1980, an easement for a right-of-way was issued to Southern California Edison Company (SCE) crossing public lands in Arizona within the Palo Verde-Devers transmission corridor, excepting that segment of the easement crossing the Kofa National Wildlife Refuge.

Discussions were held between representatives of SCE and BLM District personnel concerning double-circuit towers through the Copper Bottom Pass area. It has been determined, based upon field examination of the terrain through this Pass, towers B-337 through B-849 require double-circuits.

The subject transmission line will cross the Granite Reef Aqueduct of the Central Arizona Project in the SE $\frac{1}{4}$ sec. 2, T. 2 N., R. 8 W., and the SE $\frac{1}{4}$ sec. 30 T. 3 N., R. 8 W. The land is currently included in Reclamation Withdrawal Application A 997. Water and Power Resources Service has no objections to the proposed crossing by the transmission line provided the right-of-way is made subject to the following stipulation:

There is reserved to the United States, its successors, and assigns, the prior right to use any of the land herein described to construct, reconstruct, operate and maintain dams, dikes, levees, reservoirs, canals, wasteways, laterals, ditches, drainage works, flood channels, telephone and telegraph lines, electric transmission lines, roadways and appurtenant irrigation structures, without any payment made by the United States, its successors or assigns, for such right, with the agreement on the part of the applicant that if the construction or reconstruction of any or all of such dams, dikes, levees, reservoirs, canals, wasteways, laterals, ditches, telephone and telegraph lines, electric transmission lines, roadways or appurtenant irrigation structures across, over or upon said lands should be made more expensive by reason of the existence of improvements or work of the applicant thereon, such additional expense may be estimated by the Secretary of the Interior whose estimate shall be final and binding upon the parties hereto after the applicant has been

VAULT COPY



given thirty (30) days during which to review the estimate and submit comments thereon to the Secretary of the Interior. Within thirty (30) days after demand is made upon the applicant for payment of the amount of the final and binding estimate, applicant will make payment thereof to the United States, its successors or assigns, constructing such works, across, or upon said rights-of-way, Provided, that nothing herein shall be construed as prohibiting the Company from removing or relocating its facilities at other locations to be approved in writing by the Contracting Officer so as not to interfere with such works of the United States, all at the Company's sole cost and expense: And provided further, That any such removal or relocation shall be completed within six (6) months from the date of notice from the United States, its successors or assigns of its intention to construct such works.

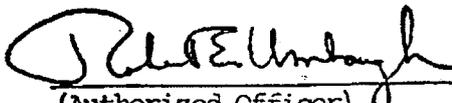
There is also reserved to the United States the right of its officers, agents, employees, licensees and permittees, at all proper times and places freely to have ingress to, passage over, and egress from all of said lands for the purpose of exercising, enforcing and protecting the rights reserved herein.

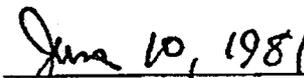
Applicant further agrees that the United States, its officers, agents, employees and assigns, shall not be liable for any damage to the improvements or works of the applicant resulting from the construction, reconstruction, operation or maintenance of any of the works hereinabove enumerated. Provided, however, That nothing contained in this clause shall be deemed to modify or limit any liability which may be imposed by the Federal Tort Claims Act, 28 U.S.C. Section 2671 et seq. (1970).

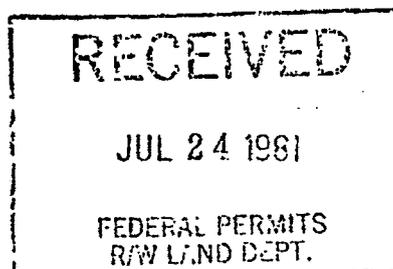
Therefore, easement for right-of-way A 9878, Segment I, is hereby amended to include the requirement of installation of double-circuits on towers numbered B-837 through B-849 and SCE's agreement to the above reclamation stipulation.


Chief, Branch of Lands and
Minerals Operations

Southern California Edison Company hereby accepts Right-of-way A 9878, as amended.


(Authorized Officer)
Vice President


(Date)



VAULT COPY

EXCERPTS FROM THE MINUTES OF THE BOARD OF
DIRECTORS MEETING HELD ON APRIL 1, 1921

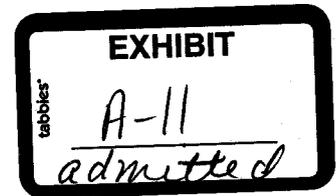
RESOLVED, that the President and any Vice-President be and each of them hereby is authorized and empowered to make, sign, execute and deliver, for and on behalf of this Company and as its act and deed, any and all options, deeds, permits, licenses, stipulations, contracts, bonds and other instruments between this Company and the Federal Power Commission or any duly authorized officer or representative thereof, and between this Company and the Secretary of Agriculture, or any duly authorized representative of such Secretary, and between this Company and the Secretary of the Interior, or any duly authorized representative of such Secretary.

I, H. L. Mortensen, Assistant Secretary of SOUTHERN CALIFORNIA EDISON COMPANY, a corporation, do hereby certify that the foregoing is a full, true and correct copy of a resolution of the Board of Directors of said corporation, duly adopted at a meeting of said Board of Directors held on the 1st day of April, 1921; that said resolution has never been repealed or rescinded, and the same is now in full force and effect.

WITNESS my hand and the seal of said corporation this 10th day of June, 19 21.


Assistant Secretary
SOUTHERN CALIFORNIA EDISON COMPANY

**SUMMARY OF DEIR/DEIS AND PEA
CUMULATIVE AND INDIRECT EFFECTS**



Following is a summary of the cumulative and indirect effects associated with the proposed DPV2 transmission project in Arizona as described in the Draft EIR/EIS prepared by Aspen Environmental Group (Hearing Exhibit A-3, California Public Utilities Commission and Bureau of Land Management, May 2006, v.2, Section F, pages F-1 through F-74) and PEA (Hearing Exhibit A-1/B-2, Chapter 7.0, pages 7-1 through 7-11).

There are three types of effects, or impacts, identified under California Environmental Quality Act and the National Environmental Policy Act: direct, indirect, and cumulative. Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. They can result from individually minor but collectively significant actions taking place over a period of time.

Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable. They may include growth inducing effects or other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Draft EIR/EIS

Cumulative Impacts

Aspen, the BLM and the CPUC found two projects within a geographic area within the Arizona portion of the proposed project area sufficiently large to provide a reasonable basis for evaluating cumulative impacts, as described in the Draft EIR/EIS.

The first is the APS Palo Verde Hub to TS-5 500kV Transmission Project. That project includes construction of the proposed 500kV transmission line, two switchyards, and related facilities, including the possible consolidation of a portion of the Bureau of Reclamation 230kV line. This project is in unincorporated Maricopa County and originates at the PVNGS and terminates at the TS-5 Substation, approximately 20 miles northeast of the PVNGS. A Certificate of Environmental Compatibility was granted June 15, 2005 (Case 128).

The second project, the EOR9000 Project, is the upgrade of transmission facilities along the northern portions of the Arizona-Nevada border including the Navajo-Crystal and Perkins-Mead 500kV series capacitor upgrades, thermal upgrades to the Westwing-Perkins 500kV line, and upgrades to various 500 and 230kV stations within Arizona (SRP). The location of these upgrades is north of I-10 and greater than 40 miles north and northeast of the proposed project. The anticipated in-service date is June 2008.

SUMMARY OF DEIR/DEIS AND PEA CUMULATIVE AND INDIRECT EFFECTS

The Draft EIR/EIS addressed various resource areas in the cumulative impacts section, as follows. Two resource areas were identified as having potential significant cumulative impacts: agricultural lands and visual resources. In order to determine what would constitute a significant cumulative impact to the resources, significance criteria were defined for each resource area in the Draft EIR/EIS.

Agriculture - the Draft EIR/EIS describes significant cumulative impacts to agricultural resources in Arizona as those impacts that would occur if the incremental effect of the proposed project in combination with other projects would 1) convert prime or unique farmland or farmland of statewide importance to non-agricultural use and 2) interfere with agricultural operations. The Harquahala Valley/Harquahala Plain in Maricopa County is an area of prime and unique farmland and agricultural operations that would be crossed by the proposed project and the proposed Palo Verde Hub to TS-5 500kV project. Agricultural lands were defined in the Draft EIR/EIS as lands shown on the maps as "prime farmland" although they may not be used for farming. According to the Draft EIR/EIS, cumulative impacts will be significant but to a lesser degree than without the implementation of the mitigation measures.

Visual Resources - for visual resources, a cumulative impact is described in the Draft EIR/EIS as an impact that would occur if a viewer perceives that the general visual quality of an area is diminished by the proliferation of visible structures or construction effects, even if the changes are not within the same field of view as existing structures or facilities. Four criteria were identified as 1) the viewshed is altered significantly, 2) visual access to scenic resources is impaired significantly, 3) scenic character or visual quality is diminished significantly, and 4) the project's visual contrast is increased significantly. According to the Draft EIR/EIS, the combined or cumulative impacts resulting from the proposed project along with the Palo Verde Hub to TS-5 500kV Transmission Project would be substantially greater than those that would occur with the proposed project alone. In this case, the location where a perceived increase in industrialization of the landscape, diminution of visual quality, and increase in visual contrast along with the appearance of multiple corridors is the Palo Verde Hub in the vicinity of Salome Highway and the I-10 crossing. Note, SCE found no explanation in the Draft EIR/EIS to define "multiple corridors" or the process used to identify critical viewpoints.

The Draft EIR/EIS also addressed biological resources, land use, wilderness and recreation, cultural and paleontological resources, noise, transportation and traffic, public health and safety, air quality, water resource, geology/mineral resources/soils, and socioeconomics associated with the proposed route and alternatives (pages F-28 through F-66). Examples of other types of cumulative impacts noted for Arizona in the Draft EIR/EIS for these resources are as follows.

Biological Resources - impacts are considered to be minor and associated with the Palo Verde Hub to TS-5 500kV project and include impacts to Sonoran Desert tortoise habitat (small portions of their alignments and temporary during construction), loss of

SUMMARY OF DEIR/DEIS AND PEA CUMULATIVE AND INDIRECT EFFECTS

cacti (due to grading activities), and disturbances to migratory birds and other sensitive wildlife during construction.

Land Use – an incremental contribution to existing cumulative effects on land uses is anticipated, though no cumulative impact from operation.

Wilderness and Recreation – an incremental contribution to existing cumulative effects on recreational resources is anticipated.

Cultural and Paleontological Resources – no cultural resource sites are known to exist within the geographic scope for cumulative analysis. Should resources be discovered, they would be subject to legal requirements designed to protect them resulting in no cumulative impact to cultural or paleontology resources in this area.

Noise – in areas where project construction may occur simultaneously with other development, the combined effects of noise generated by the project and other development would impact sensitive receptors cumulatively. With mitigation – implementing best management practices for construction noise – the noise impacts would be limited.

Transportation and Traffic – few impacts associated with the proposed project have the potential to combine with impacts of other projects to create a cumulatively considerable impact. The use of roads for delivery of labor and material has potential for combined cumulative impacts; however, the traffic volumes are low and would not result in a significant impact.

Public Health and Safety – implementation of the mitigation measures would ensure that the cumulative effect of the proposed project and other projects would be less than significant.

Air Quality – cumulative impacts are not anticipated since even if the planned Palo Verde Hub to TS-5 500kV project were to be built at the same time as the proposed project, the distance between them would not result in a discernible cumulative effect. Also, operational emissions would not have the potential to significantly increase regional cumulative emissions, as they are the result of vehicle use for limited routine maintenance and inspection.

Water Resources – no impact to water resources including groundwater supplies or from watercourse encroachment (with the implementation of mitigation) is expected.

Geology, Minerals, and Soils – construction and operation of the proposed project would contribute a less than significant increase to potential cumulative impacts.

Socioeconomics – an incremental contribution to existing cumulative effects would not be significant.

SUMMARY OF DEIR/DEIS AND PEA CUMULATIVE AND INDIRECT EFFECTS

Indirect Impacts

Aspen, the BLM and the CPUC identified indirect impacts in the Draft EIR/EIS for biological, cultural, air quality, and socioeconomic resources. For biological resources, the indirect impacts were primarily associated with construction activities (pages D.2-104 through 108) including such impacts as those associated with the removal of vegetation off of the right-of-way (page D.2-103), impacts to nesting birds that may occur in the right-of-way (page D.2-119), and activities in or along the Colorado River that may affect the razorback sucker, among others. Indirect impacts for cultural resources were identified (pages D.7-5 through 135) for such impacts as the area of potential effect for the telecommunications tower (page D.7-39), increased erosion during operation (page D.7-48). For air quality, operational indirect impacts could include a small potential increase in power plant emissions – 0.05 percent increase above the Arizona statewide 2001 NO_x emissions (page D.11-38). Indirect effects associated with socioeconomics could include those that are growth inducing such that the project could facilitate growth directly in the project area through additional increased capacity of electric power that it would make available (page G-32).

PEA

Cumulative Impacts

No significant cumulative impacts on the environment were identified in the PEA. The resources addressed in the cumulative impacts section of the PEA include land use, socioeconomics, geology/soils/hydrology/minerals, air quality, traffic and transportation, biology, noise, visual, and cultural resources (page 7-1 through 7-11).

Resources

Land Use – small areas of rangeland used for grazing and forage and agricultural land would be permanently removed from production.

Socioeconomics – construction and operation of the proposed project would be a beneficial cumulative impact including construction activity and potential property tax revenues.

Geology, Soils, Hydrology, and Minerals – the cumulative effects of two or three transmission lines would likely be somewhat more than any single project for soil erosion, stream bank degradation, and sedimentation in water bodies.

Air Quality – a potential indirect cumulative impact associated with the transmission line is increasing emissions from natural gas-fueled power generation. However, regional emissions would decrease. Impacts also would result from construction activities if concurrent construction of more than one of the proposed/planned transmission lines projects was to occur.

SUMMARY OF DEIR/DEIS AND PEA CUMULATIVE AND INDIRECT EFFECTS

Traffic and Transportation – cumulative impacts are anticipated to be temporary, occurring during construction assuming construction of more than one of the proposed/planned transmission lines at the same time.

Biology – cumulative impacts would be generally additive and usually directly proportional to the amount of ground disturbed, partially dependent on overlapping activities. Potentially, a higher degree and possibly longer duration of impacts would occur.

Noise – cumulative impacts associated with corona-generated audible noise would be additive. The increased noise level at the edge of the right-of-way may be discernible or audible during wet-weather conditions, although most often would be masked by naturally occurring sounds at locations beyond the right-of-way.

Visual – cumulative impacts would occur due to views from highways, residences, recreational areas, and on natural scenic quality. With the addition of more than one transmission line within a corridor, the change would be more evident, but not cumulatively significant.

Cultural Resources – cumulative impacts could occur over time from repeated incremental damage caused by motorized vehicles.

Indirect Impacts

Potential indirect impacts were identified in the PEA for biological and cultural resources. For biological resources, potential indirect impacts could result from the effect of increased noise levels on wildlife and non-native weed establishment (page 5-23). Indirect impacts to paleontological and traditional cultural properties could occur though are considered to be negligible for traditional cultural properties (pages 5-43 and 5-44). Additional examples of potential indirect impacts are traffic, air quality, and noise from automobiles traveling to and from the project construction site for which no significant impact would result (page 9-1).

**DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION**

Biological Resources - Vegetation		Arizona / California
BLM Right-of-Way (Exhibit A-1, Exhibit B-2, Appendix B)	Applicant Proposed Mitigation Measures (Exhibit A-3, EIR/EIS) Note: SCE modifications shown in <i>italics</i>	
1. Avoid direct disturbance of highly sensitive features (as identified in E. Linwood Smith's (1985) Impact Assessment/Mitigation Planning Chart; see Appendix E) with spanning and careful local adjustment in tower footing placement.	B-1 Avoid direct disturbance of highly sensitive features (as identified in E. Linwood Smith's (1985) Impact Assessment/Mitigation Planning Chart; see Appendix E) with spanning and careful local adjustment in tower footing placement. (BLM B-5.1 Vegetation)	AZ and CA
2. Provide additional detailed surveys and tower-specific adjustments as needed prior to construction for major sensitive feature sites (e.g., concentrations of sensitive plants, individual palm trees, woody dune or wash communities) which cannot be easily avoided by spanning. (See Appendix B of the Devers-Palo Verde #2 EIR and Appendix E of the SEIS.) The methodologies and results of these surveys must be submitted to and approved in writing by the BLM Authorized Officer.	B-8 Provide additional detailed surveys and tower-specific adjustments as needed prior to construction for major sensitive feature sites (e.g., concentrations of sensitive plants, individual palm trees, woody dune or wash communities) which cannot be easily avoided by spanning. (See Appendix B of the Devers-Palo Verde No. 2 EIR [1987] and Appendix E of the SEIS [1988].) The methodologies and results of these surveys must be submitted to and approved in writing by the BLM Authorized Officer.	AZ and CA
3. Minimize the area needed for equipment operation and material storage and assembly.	B-14 Minimize the area needed for equipment operation and material storage and assembly. <i>SCE will flag work areas and will confine work activities to these areas to the greatest extent practical.</i>	AZ and CA
4. Initiate transplant efforts for <i>Ferocactus</i> and <i>Coryphantha</i> as soon as probable losses can be determined. Any plans for transplanting must be developed in consultation with a BLM botanist and approved in writing by the BLM Authorized Officer.	B-9 Initiate transplant efforts for <i>Ferocactus</i> and <i>Coryphantha</i> as soon as probable losses can be determined. Any plans for transplanting must be developed in consultation with a BLM botanist and approved in writing by the BLM Authorized Officer.	AZ and CA
5. The right-of-way Holder will have the Arizona State Department of Agriculture and Horticulture identify native plants that would otherwise be destroyed by construction and sell them to the Holder.	B-10 The right-of-way Holder will have the Arizona State Department of Agriculture and Horticulture identify native plants that would otherwise be destroyed by construction and sell them to the Holder.	AZ
6. The Authorized Officer may require vegetation in certain areas be cleared by hand tools. Scalping of top soil and removal of low growing vegetation will not be allowed unless authorized by the Authorized Officer.	B-11 The Authorized Officer may require vegetation in certain areas to be cleared by hand tools. Scalping of top soil and removal of low growing vegetation will not be allowed unless authorized by the Authorized Officer.	AZ and CA
7. Where possible, towers or access roads will be located so as to avoid sensitive plants or plant communities. Where this is not feasible, affected individual plants will be	B-12 Where possible, towers or access roads will be located so as to avoid sensitive plants or plant communities. Where this is not feasible, affected individual plants will be transplanted. Towers	AZ and CA

EXHIBIT
A-12
admitted

**DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION**

transplanted. Towers will also be placed so that the lines will span critical wildlife habitat.	will also be placed so that lines will span critical wildlife habitat.	
8. Tower sites will be selected to allow maximum spanning of sensitive features.	B-13 To the greatest extent feasible, tower sites will be selected to allow maximum spanning of sensitive features.	AZ and CA
Mitigation Measures Recommended in EIR/EIS	Applicant Proposed Modifications	
B-1a. Prepare and implement a Habitat Restoration/Compensation Plan	B-1a. Plans will include restoration of contours and provisions for overland travel, but hydroseeding will not be implemented in areas where it is not feasible.	AZ and CA
B-1b. Coordinate tower placement with USFWS/BLM	B-2a. Limit the buffer area to appropriate limits.	AZ and CA
B-2a. Conduct invasive and noxious weed inventory	B-2b. Include reasonable limitations to reduce water use and hauling trips.	
B-2b. Implement control measures for invasive and noxious weeds.	B-5. Not feasible or necessary.	Not Applicable
B-5a. Conduct pre-construction surveys and monitoring for breeding birds.	B-6a. Revise to limit this measure to protected native plants subject to protection under state laws that can be transplanted successfully.	AZ and CA
B-6a. Develop a transplanting plan		
Biological Resources – Wildlife		
BLM Right-of-Way Grant (Exhibit B-2, Appendix B)	Applicant Proposed Mitigation Measures (Exhibit A-3, EIR/EIS as Modified (italics))	Arizona / California
1. In the vicinity of the Colorado River, existing tower spacings and conductor heights will be matched to the extent practical. This would reduce the potential for bird collisions with the powerline.	B-15 In the vicinity of the Colorado River, existing tower spacings and conductor heights will be matched to the greatest extent practical. This would reduce the potential for bird collisions with the power line.	AZ and CA
2. Wash communities along the entire route and sand dune communities in the Coachella Valley (see Map 10-AZ in the Draft SEIS and Figure 4.5-1 in the CPUC Draft EIR)	B-26 Wash communities along the entire route and sand dune communities in the Coachella Valley (see Map 10-AZ in the Draft SEIS and Figure 4.5-1 in the CPUC Draft EIR, 1987) will be spanned to the extent possible.	AZ and CA
3. The Holder will be required to purchase lands to compensate or enhance lands or conduct studies for the disturbance of public lands that are within areas of moderate to high value desert tortoise habitat. This will include disturbance caused by tower pad clearance and new access roads. Acquired lands will be in a nearby area	The method of and mechanism for compensation will be determined. Modify second sentence to refer to "spur roads" instead of "access roads."	CA

DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION

<p>of good tortoise density, within tortoise crucial habitat, and within an area where tortoise conservation is a priority (e.g., Chuchwalla Bench ACEC). Compensation utilizing land acquisition will be for disturbance of desert tortoise habitat in California only. The land to be acquired is estimated to be between 92 acres and 197 acres based upon a pre-construction review. BLM and the Holder will conduct a field inspection of the disturbed areas after completion of construction of the transmission line to determine the exact acreage. The Department of Fish and game and the Desert Tortoise Council must also be consulted. The lands purchased will be transferred to the United States and be administered by the BLM.</p>	
<p>4. Prior to construction activities, the Holder shall have a qualified tortoise biologist present a class or briefing to construction workers. Subjects addressed shall include tortoise sensitivity to human disturbance, daily and seasonal activity patterns, and proper handling for removal from roadways.</p>	<p>B-27 Prior to construction activities, the Holder shall have a qualified tortoise biologist present a class or briefing to construction workers. Subjects addressed shall include tortoise sensitivity to human disturbance, daily and seasonal activity patterns, and proper handling for removal from roadways.</p> <p>AZ and CA</p>
<p>5. The Holder shall hire a qualified tortoise biologist to conduct daily inspections of roads and work areas within tortoise habitat during the tortoise season of activity (February 15 to June 15, July 15 to October 15). Tortoises found to be in jeopardy will be removed to a nearby site. Tortoises may be held for short periods, if judged necessary, to allow construction crews to pass through an area. The Holder will provide proper facilities for such temporary holding.</p>	<p>B-28 The Holder shall hire a qualified tortoise biologist to conduct daily inspections of roads and work areas within tortoise habitat during the tortoise season of activity (February 15 to June 15, July 15 to October 15). Tortoises found to be in jeopardy will be removed to a nearby site. Tortoises may be held for short periods, if judged necessary, to allow construction crews to pass through an area. The Holder will provide proper facilities for such temporary holding. (<i>Game & Fish Department tortoise handling guidelines in Arizona.</i>)</p> <p>AZ and CA</p>
<p>6. The Holder shall restrict the speed on all roads within tortoise habitat to a maximum of 25 miles per hour. The Holder is responsible for ensuring compliance with this limit by its employees.</p>	<p>B-29 The Holder shall restrict the speed on all roads within tortoise habitat to a maximum of 25 miles per hour. The Holder is responsible for ensuring compliance with this limit by its employees.</p> <p>AZ and CA</p>
<p>7. Within tortoise habitat in California, spur roads shall not be bladed except where necessary to allow access for construction vehicles. Required vehicles shall enter on one pathway which is flagged and developed only by the passage of vehicles crushing vegetation. The spur shall be flagged by a qualified tortoise biologist prior to use. The spur shall avoid tortoise burrows and large perennial</p>	<p>B-30 Within tortoise habitat in California, spur roads shall not be bladed except where necessary to allow access for construction vehicles. Required vehicles shall enter on one pathway which is flagged and developed only by the passage of vehicles crushing vegetation. The spur shall be flagged by a qualified tortoise biologist prior to use. The spur shall avoid tortoise burrows and large perennial plants, yet be as short as possible within these</p> <p>CA</p>

DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION

<p>plants, yet be as short as possible within these requirements. Due to the presence of silty soils in Arizona, blading may occur.</p>	<p>requirements. Due to the presence of silty soils in Arizona, blading may occur. <i>SCE requests that this measure be revised because it is contrary to CAISO requirements that SCE have access to each tower in an emergency.</i></p>
<p>8. Any desert tortoise observed on access roads or work areas will be moved immediately 100 yards away from the roadway into safe areas.</p>	<p>B-31 Any desert tortoise observed on access roads or work areas will be moved immediately away from the roadway into safe areas. <i>Specific distance would not be limited to 100 yards; instead, to determined to be moved to be determined depending on terrain, vegetation, shade, and other factors</i></p> <p>AZ and CA</p>
<p>9. In areas considered to comprise suitable tortoise habitat, or other areas where tortoise are observed, all access roads and tower construction sites will be surveyed by a qualified biologist to delineate burrows or individuals for protection. Burrows near construction sites will be clearly delineated on the ground. Road, footing, and work area alignments should be modified to the extent possible to avoid adversely affecting any tortoise burrows encountered during these surveys. Where tortoise burrows will be unavoidably destroyed, they should be excavated carefully using hand tools, under the supervision of a field biologist with demonstrated prior experience with this species. See Map 11-AZ in Appendix F in the Draft EIS and Figure 4.5-2 in the Devers-Palo Verde #2 EIR. Also see Appendix E for link and milepost descriptions and mitigation measures.</p>	<p>B-32 In areas considered to comprise suitable tortoise habitat, or other areas where tortoise are observed, all access roads and tower construction sites will be surveyed by a qualified biologist to delineate burrows or individuals for protection. Burrows near construction sites will be clearly delineated on the ground. Road, footing, and work area alignments should be modified to the extent possible to avoid adversely affecting any tortoise burrows encountered during these surveys. Where tortoise burrows will be unavoidably destroyed, they should be excavated carefully using hand tools, under the supervision of a field biologist with demonstrated prior experience with this species. See Map 11-AZ in Appendix F in the Draft EIS (1988) and Figure 4.5-2 in the Devers-Palo Verde No. 2 EIR (1987). Also see Appendix E for link and milepost descriptions and mitigation measures.</p> <p>AZ and CA</p>
<p>10. If possible, no new roads, tower sitings, or spur roads will be built in blow sand areas. However, if new spur roads are required through wind-blown sand habitat, the road will be returned to natural conditions and effectively closed (gated or bermed) following construction. Pre-construction surveys will identify wind-blown sand dune habitats.</p>	<p>B-33 If possible, no new roads, tower sitings, or spur roads will be built in blow sand areas. However, if new spur roads are required through wind-blown sand habitat, the road will be returned to natural conditions and effectively closed (gated or bermed) following construction. Pre-construction surveys will identify wind-blown sand dune habitats.</p> <p>CA</p>
<p>11. Where the project crosses through the Coachella Valley Preserve, the Holder will cooperate with the preserve in closing (gating) existing access roads. (a) A qualified biologist will also be present with work crews to survey and clear work areas daily for Coachella Valley fringe-toed lizard (CVFTL), flat-tailed horned lizard (FTHL), and other sensitive species in the Preserve and sand dune communities from Link 14 (milepost 7.6) to Link 16</p>	<p>B-34 <i>SCE requests that this mitigation measure be modified. New gates have already been installed. Based on discussions with the Preserve Manager, the area of construction of the transmission line does not constitute habitat for the CVFTL, and it is considered unlikely habitat for the FTHL.</i></p> <p>CA</p>

**DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION**

<p>(milepost 5.0) to identify if any additional areas of occupied CVFTL or FTHL habitat are present along the route or at construction staging areas. (b) This survey will be conducted during appropriate seasons (March 15 to May 15) and conditions for species identification. For any areas of suitable habitat, mitigation measure number 11 will apply.</p> <p>In the Coachella Valley, compacted soils should be scarified and seeded with a mix of native plant seeds, including bugseed (<i>Dicoria canescens</i>), to promote revegetation of plant species valuable to the lizard.</p>	<p>In the Coachella Valley, compacted soils should be scarified and seeded with a mix of native plant seeds, including bugseed (<i>Dicoria canescens</i>), to promote revegetation of plant species valuable to the lizard.</p>	<p>CA</p>
<p>Construction activity and surface disturbance will be prohibited during the period from January 1 to March 31 for the protection of the bighorn sheep lambing areas. These areas along the proposed route include link 2 (milepost 29.0 to 34.0) and link 6 (milepost 0.0 to 6.0).</p> <p>15. Holder shall take all necessary precautions to protect wildlife species. By advance written notice from the Authorized Officer, key wildlife areas may be closed to construction activities for specified periods of time to protect designated wildlife species. No firearms shall be allowed on the project under any circumstance(s), and employees shall be instructed to refrain from needlessly harming wildlife. The advance written notice to the Holder shall be within 30 days after submittal by the Holder of the final preconstruction wildlife surveys.</p>		<p>AZ and CA</p>
<p>16. The Holder, its contractors or employees are requested to report to the District Biologist observations of any threatened or endangered animals, through the Holder's biologist.</p>		<p>AZ and CA</p>
<p>17. Avoid upland areas where desert tortoises might occur and/or have a biologist present during construction activities that involve earth moving in order to move any tortoises (in burrows or cover-sites, or on the surface) that would likely be impacted.</p>	<p>B-35 Avoid upland areas where desert tortoises might occur and/or have a biologist present during construction activities that involve earth moving in order to move any tortoises (in burrows or cover-sites, or on the surface) that would likely be impacted.</p>	<p>AZ and CA</p>
<p>18. Avoid construction activities that would tend to create wind barriers that might result in sand stabilization in order</p>	<p>B-36 Avoid construction activities that would tend to create wind barriers that might result in sand stabilization in order to minimize</p>	<p>CA</p>

**DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION**

to minimize impacts to populations of the Coachella Valley fringe-toed lizard.	impacts to populations of the Coachella Valley fringe-toed lizard.	EIR/EIS	Applicant Proposed Mitigation Measures	Comment
B-5a. Conduct pre-construction surveys and monitoring for breeding birds		B-5a SCE believes that this measure is not necessary. Please refer to SCE's earlier comments about this mitigation measure under Biological Resources-Wildlife, BLM ROW Grant Item #B-5.		AZ and CA
B-1a. Prepare and implement a Habitat Restoration/Compensation Plan				AZ and CA
B-7a. Avoid Colorado River		B-7a. Structures will be placed to completely span the river.		AZ and CA
B-7b. Conduct pre-construction tortoise surveys		B-7b. SCE believes that there are aspects of this mitigation measure that cannot be complied with or are excessive.		AZ and CA
B-7c. Purchase mitigation lands for impacts to tortoise habitat.				CA
B-7d. Purchase mitigation lands for impacts to fringe-toed lizard habitat		B-7d. SCE requests modification of this measure.		CA
B-7e. Conduct focused surveys for California gnatcatchers				CA
B-7f. Conduct focused surveys for Stephens' kangaroo rat and San Bernardino kangaroo rat				CA
B-8a. Conduct surveys for listed plant species.				AZ and CA
B-9a. Conduct pre-construction surveys				AZ and CA
B-9b. Conduct biological monitoring				AZ and CA
B-9c. Implement a Worker Environmental Awareness Program				AZ and CA
B-9d. Conduct pre-construction reptile surveys		B-9d. To be conducted as part of B-9a.		AZ and CA
B-9e. Conduct pre-construction surveys and owl relocation				AZ and CA
B-9f. Perform construction outside of breeding and lambing period		B-9f. The avoidance period seems to be in excess of what AG&FD or USFWS recommends		AZ
B-9g. Conduct pre-construction surveys and relocation for American badger		B-9g. SCE recommends not relocating badgers because of potential danger.		AZ and CA

**DEVERS-PALO VERDE NO. 2 TRANSMISSION PROJECT
SUMMARY: BIOLOGICAL RESOURCES MITIGATION**

<p>B-9h. Conduct pre-construction surveys for roosting bats</p>	<p>B-9h. <i>SCE is unaware of regulatory authority for this condition.</i></p>	<p>AZ and CA</p>
<p>B-9i. Schedule construction when the Coachella Valley round-tailed squirrel is dormant</p>	<p>B-9i. <i>SCE is unaware of regulatory authority for this condition.</i></p>	<p>CA</p>
<p>B-13a. Demonstrate compliance with the Western Riverside County MSHCP. SCE shall provide documentation that it has complied with the provisions of the MSHCP</p>		<p>CA</p>
<p>B-13b. Implement the Best Management Practices required by the Western Riverside County MSHCP</p>		
<p>B-15a Utilize collision-reducing techniques in installation of transmission lines</p>		<p>AZ and CA</p>
<p>B-16a. Prepare and implement a raven control plan</p>	<p>B-16a. <i>SCE believes this measure is not feasible to implement.</i></p>	<p>CA</p>

Palo Verde Hub Transmission System With Harquahala Junction Substation

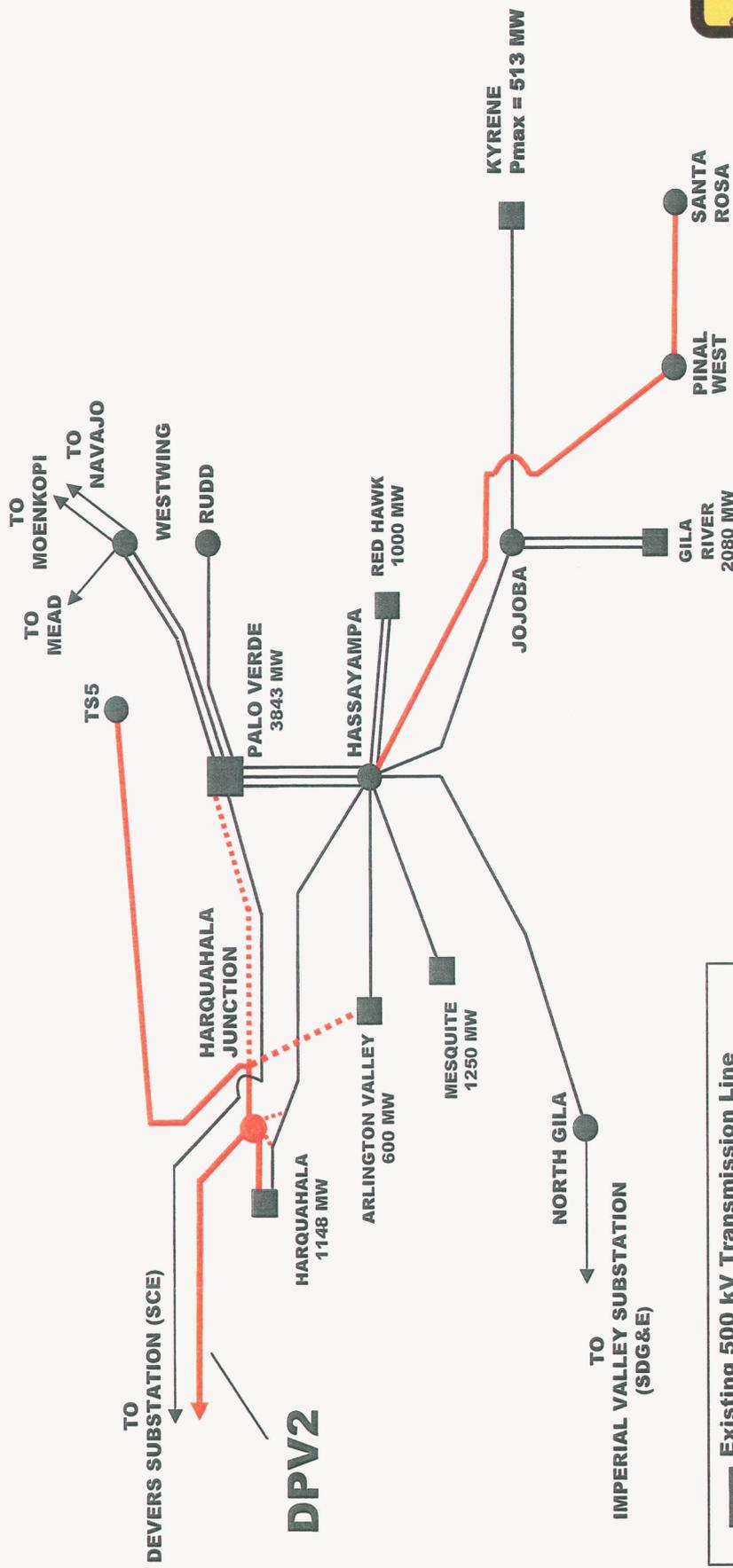


EXHIBIT
tabbles*
A-13
admitted

	Existing 500 kV Transmission Line
	Future 500 kV Transmission Line
	Alternative 500 kV Transmission Line
	Substation
	New Substation
	Power Plant

DPV2

Additional EHV Projects Identified in "Project Zia"

EXHIBIT
A-14
Submitted



Source:
Transmission
Planning and
Expansion in the
Western
Interconnection,
Doug Larson
Western Interstate
Energy Board
August 21, 2006;
and Project Zia
Transmission
Planning Workshop,
Bob Smith,
Arizona Public
Service Company,
August 17th, 2006.
(<http://www.dora.state.co.us/puc/projects/ReliableInfrastructure/Aug21TFMmeeting/Wieb08-06ColoradoPUCpresentation8-16.ppt>)

The Brattle Group

13a

Legend

Proposed/Planned projects

Potential Transmission Identified

Overall Impact: Arizona Benefits Exceed Costs

	2006 Present Value (\$millions)	
	2009-2015	2009-2055
Costs		
1. Increases in Arizona "costs"		
"Costs" quantified in SCE report	\$11-17 million per year	(\$52)
URG offset due to acquisition of Red Hawk	approx. \$2.0 million per year	\$8
Total costs	(\$44)	(\$130)
Benefits		
2. Construction benefits	\$86 million in 2008-09	\$64
3. Annual tax benefits		
Property taxes	\$17 million over 10 years	\$5
Exise taxes on natural gas	\$36 million over 10 years	\$9
IPP corporate income taxes	\$3.2 million over 10 years	\$0.8
Subtotal	\$56 million over 10 years	\$16
4. Reliability benefits	\$50-150 million over life of line	\$11
5. Liquidity benefits	\$6-15 million per year	\$20
6. Diversification benefits	reduced risk	n/a
7. Improved investment climate	increasing to \$60 million per year	\$3
8. Improved resource utilization	lower Arizona costs	n/a
9. Synergies with TransWest Exp.	\$200+ million, more diversity	\$90
10. Renewable resource access	\$130+ million, more diversity	\$48
Total benefits	\$251	\$361
Net benefits	\$207	\$231

58-revised

The Brattle Group

Overall Impact: Arizona Benefits Exceed Costs

	2006 Present Value (\$millions)	
	2009-2015	2009-2055
Costs		
1. Increases in Arizona "costs"		
"Costs" quantified in SCE report	(\$52)	(\$148)
URFG offset due to acquisition of Red Hawk	\$8	\$18
URFG offset on new generation	<u>\$6</u>	<u>\$37</u>
Total costs	(\$38)	(\$93)
Benefits		
2. Construction benefits		
Annual tax benefits	\$64	\$64
Property taxes	\$17 million over 10 years	\$5
Excise taxes on natural gas	\$36 million over 10 years	\$9
<u>IPP corporate income taxes</u>	<u>\$3.2 million over 10 years</u>	<u>\$0.8</u>
Subtotal	\$56 million over 10 years	\$38
4. Reliability benefits		
	\$50-150 million over life of line	\$11
5. Liquidity benefits		
	\$6-15 million per year	\$20
6. Diversification benefits		
	reduced risk	n/a
	increasing to \$60 million per year	\$3
7. Improved investment climate		
	lower Arizona costs	n/a
8. Improved resource utilization		
	\$200+ million, more diversity	\$90
9. Synergies with TransWest Exp.		
	\$130+ million, more diversity	\$48
Total benefits	\$251	\$361
Net benefits	\$213	\$268

New Generation in California (2001-2005)

About 13,000 MW of New Thermal Generation in California

Projects greater than 1,000 MW	3
Projects between 500 and 1,000 MW	10
Projects between 100 and 500 MW	9
Projects between 0 and 100 MW	15

Total Number of Projects 37

About 500 MW of New Renewable Generation in California

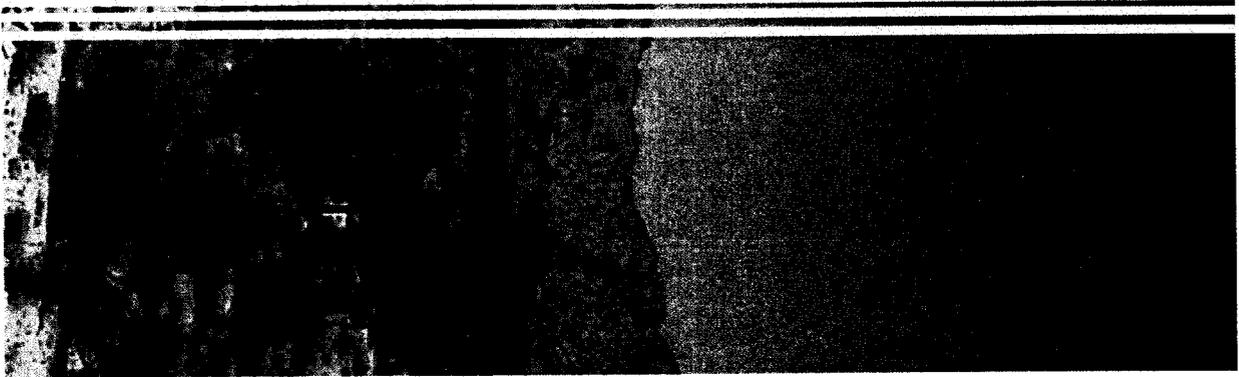
Projects between 100 and 500 MW	1
Projects between 0 and 100 MW	151

Total Number of Projects 152

EXHIBIT
A-15
admitted

Sample Natural Gas Generation Projects in California (2001-2005)

- La Paloma - 1,124 MW
- Moss Landing - 1,060 MW
- Mountainview - 1,056 MW
- Delta Energy Center - 887 MW
- High Desert - 830 MW
- Pastoria - 750 MW
- Metcalf - 600 MW
- Los Medanos - 555 MW
- Palomar Escondido - 546 MW
- Sutter - 540 MW
- Blythe I - 520 MW
- Elk Hills - 500 MW
- SMUD Cosumnes - 500 MW



Sample Renewable Generation Projects in California (2001-2005)

High Winds Energy Center - 150 MW - Wind

Mountain View Power Partners I - 44 MW - Wind

Cabazon - 41 MW - Wind

Mesquite - 30 MW - Biomass

Victory - 30 MW - Wind

Mountain View Power Partners II - 22 MW - Wind

Catellus Riverside - 11 MW - Wind

Catellus Riverside - 10 MW - Wind

Solano Wind Project Phase 1 - 10 MW - Wind

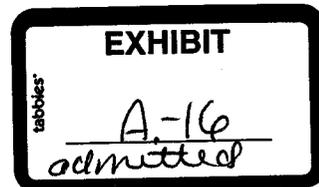
Diamond Valley Lake - 10 MW - Hydro

Calwind Resources - 9 MW - Wind

CEC PV Program Projects - 8 MW - Solar

Miramar Landfill - 8 MW - Biomass





Applicant's Exhibit A-16

Requested Route, Right of Way, and Corridor

The Arizona portion of the Devers-Palo Verde 2 Project ("DPV2") includes 102 miles of 500kV transmission line from the Harquahala Generating Station Switchyard (Line Siting Case No. 96), located in Maricopa County, Section 31, Township 2 North, Range 8 West, to a crossing of the Colorado River in La Paz County, Section 5, Township 2 North, Range 22 West. The majority of the proposed route is located within Bureau of Land Management ("BLM") designated utility corridors.

The proposed transmission line alignment and alternatives are depicted in Figure 1 and are described below as follows:

Proposed Route

The transmission line would exit the Harquahala Generating Station Switchyard, and parallel the existing Harquahala-Hassayampa 500kV line (Line Siting Case No. 96) in an easterly direction for approximately 5 miles within a 1,000-foot-wide corridor centered on the existing line. The nominal right-of-way for this portion of the Project would be 130 feet wide on Federal land and state land and 160 feet wide on private land.

The remainder of the Project would be located within a nominal 130-foot-wide right-of-way on Federal land and state land and a nominal 160-foot wide right-of-way on private land adjacent to the existing Devers to Palo Verde No. 1 500kV transmission line ("DPV1") (Line Siting Case Nos. 34 and 48) right-of-way. The Project right-of-way will be to the west and south of the DPV1 right-of-way east of Copper Bottom Pass (located in La Paz County, Section 20, Township 3 North, Range 20 West), and on the east and north side of the DPV1 right-of-way between the western end of Copper Bottom Pass (Section 14, Township 3 North, Range 21 West) and the Colorado River.

At the point 5 miles east of the Harquahala Generating Station where the route meets the DPV1 transmission line, (located in Maricopa County, the southwest quarter of Section 25, Township 2 North, Range 8 West), the route would turn north and parallel DPV1 for approximately 2.7 miles to Interstate 10 ("I-10"), where it would cross I-10 and proceed to a point 1 mile northwest of Burnt Mountain.

The route would then turn west and roughly parallel the I-10 and Central Arizona Project ("CAP") Canal for approximately 20 miles through the Big Horn Mountains and across the Harquahala Plain to a point 0.5 mile north of I-10. The route would then turn southwest, crossing I-10, and proceed approximately 5 miles to intersect the El Paso Natural Gas Company's existing pipeline just north of its Wenden Pump Station north of the Eagletail Mountains.

The route would then roughly parallel the El Paso Natural Gas pipeline and parallel the DPV1 line for approximately 56 miles, crossing the Ranegras Plain, through approximately 25 miles of the Kofa National Wildlife Refuge (beginning at the east boundary in Section 13, T2N R15W, and ending at the west boundary in Section 7, T2N R18W), La Posa Plain, and Arizona State Highway 95, through the Dome Rock Mountains to the summit of Copper Bottom Pass.

The route would then turn southwest away from the pipeline, descend the western slope of the Dome Rock Mountains and proceed approximately 9 miles to a crossing of the Colorado River.

Harquahala Junction Interconnection Option

An additional interconnection option is to originate the line at a new Harquahala Junction Switchyard (Line Siting Case No. 128) to be located in the southwest quarter of Section 25, Township 2 North, Range 8 West, rather than at the Harquahala Generating Station Switchyard. If this interconnection option is used, the Applicant would not construct the 5 miles of 500kV line parallel to the existing Harquahala-Hassayampa 500kV line.

In this case, the entire Project would be located within a nominal 130-foot-wide right-of-way on Federal land and state land and a nominal 160-foot wide right-of-way on private land adjacent to the existing DPV1 transmission line right-of-way.

Palo Verde Subalternate Route

The Palo Verde Subalternate Route would originate at the Palo Verde Nuclear Generating Station ("PVNGS") Switchyard (Line Siting Case Nos. 22 and 24) in Maricopa County, Section 34, Township 1 North, Range 6 West, rather than at the Harquahala Generating Station Switchyard. This alternative would require the construction of an additional 10 miles of 500kV transmission line parallel to the DPV1 transmission line on the east and north of the DPV1 right-of-way from a point near the location of the approved Harquahala Junction switchyard to the PVNGS switchyard.

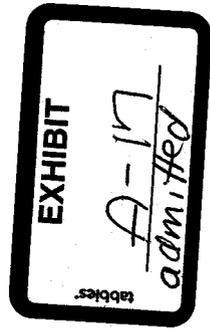
The requested corridor for this alternative is 1000 feet wide, centered on the existing DPV1 transmission line. The majority of this alternative route is within a BLM designated utility corridor.

CALIFORNIA ELECTRICAL ENERGY GENERATION, 1983 TO 2005
TOTAL PRODUCTION, BY RESOURCE TYPE
(Gigawatt Hours)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Generation:	199,609	211,900	210,172	211,028	220,371	232,926	238,567	252,355	242,343	245,535	242,026	256,719	256,367	253,621	255,080	276,412	275,803	280,496	265,059	272,509	276,969	289,359	287,977
Hydroelectric	59,351	46,880	33,898	44,478	27,140	26,692	32,742	26,092	23,244	22,373	41,595	25,626	51,665	47,883	41,400	48,757	41,627	42,053	31,221	36,140	36,140	34,372	39,891
Nuclear	6,738	13,467	18,911	28,000	32,995	35,481	33,803	36,586	37,167	38,622	36,579	38,828	36,186	39,753	37,267	41,715	40,419	43,533	33,294	34,353	35,594	30,241	36,155
Coal	17,564	18,811	14,977	18,621	18,707	21,034	19,702	21,402	23,442	32,435	22,907	25,095	17,925	25,460	27,114	34,537	27,294	36,804	27,636	27,817	28,589	28,129	28,129
Oil	6,535	2,632	2,790	3,126	2,143	8,158	9,275	4,449	523	107	2,085	1,954	489	693	143	123	55	449	1,328	481	107	119	148
Gas	45,486	58,248	69,771	49,260	75,437	74,221	78,916	76,082	75,828	87,033	70,715	95,025	78,378	66,711	74,341	82,052	84,703	106,878	113,145	90,991	91,994	104,612	96,047
Geothermal	7,020	9,272	10,957	13,094	14,083	14,194	15,247	16,038	17,312	7,362	5,760	7,173	5,969	5,557	5,701	5,266	5,663	13,456	13,619	13,867	13,771	14,000	14,380
Organic Waste	731	1,099	1,171	2,063	2,461	4,092	5,204	6,644	7,312	7,362	5,760	7,173	5,969	5,557	5,701	5,266	5,663	6,086	6,185	6,261	5,935	5,903	6,027
Wind	52	192	655	1,221	1,713	1,824	2,139	2,418	2,669	2,707	2,867	3,293	3,182	3,154	2,739	2,776	3,433	3,604	3,242	3,546	3,316	4,258	4,084
Solar	2	11	33	64	188	315	471	681	719	700	857	798	793	832	810	839	838	860	837	851	759	741	660
Other	0	0	0	6	5	4	4	4	0	2	0	0	0	343	896	230	0	0	0	261	249	246	0
Energy Imports	56,130	61,288	57,009	51,095	45,499	46,911	41,064	61,959	55,873	37,704	42,892	43,354	47,514	49,696	52,720	47,563	49,487	26,774	40,768	62,859	61,811	66,278	62,456
Utility-owned: Total	138,603	143,613	143,236	145,200	154,062	154,013	155,081	139,309	131,866	153,350	154,639	157,589	148,936	147,163	144,799	153,791	130,413	133,353	94,425	99,003	105,497	100,932	112,969
Hydroelectric	59,244	46,687	33,639	44,117	26,727	26,259	32,096	25,612	22,728	22,033	40,440	25,024	50,089	46,660	40,122	47,326	40,593	41,001	24,522	30,777	35,584	33,771	38,975
Nuclear	6,738	13,467	18,911	28,000	32,995	35,481	33,803	36,586	37,167	38,622	36,579	38,828	36,186	39,753	37,267	41,715	40,419	43,533	33,294	34,353	35,594	30,241	36,155
Coal	17,001	18,080	14,112	17,588	17,544	19,243	17,223	17,710	20,392	28,806	20,358	22,440	16,788	22,590	24,838	31,836	32,726	33,620	23,676	23,635	23,123	24,504	24,114
Oil	6,535	2,632	2,790	3,126	2,143	8,158	9,275	4,449	523	107	2,085	1,954	489	693	143	123	55	157	381	38	39	42	58
Gas	42,742	54,168	63,654	40,517	62,222	53,040	52,249	45,262	42,353	54,338	46,738	61,474	39,448	31,826	37,048	27,699	14,995	13,747	11,547	8,891	9,938	11,120	12,630
Geothermal	6,341	8,576	10,122	11,831	12,421	11,827	10,429	9,684	8,700	9,441	8,435	7,842	5,855	5,540	5,302	5,009	1,543	1,252	997	1,150	1,190	1,140	997
Organic waste	0	0	0	6	8	0	0	0	0	0	0	0	65	59	71	80	73	34	0	152	0	70	0
Wind	2	3	0	3	3	0	0	0	0	0	1	26	7	10	6	3	7	7	7	4	27	42	37
Solar	0	0	0	4	4	1	2	2	3	1	3	1	3	2	2	2	3	3	3	2	2	2	2
Other	0	0	0	6	5	4	4	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonutility: Total	4,876	6,999	9,927	14,733	20,810	32,002	42,422	51,087	54,604	54,481	44,496	55,776	59,917	56,763	57,561	75,058	95,903	120,369	129,866	110,647	109,661	122,149	112,552
Hydroelectric	107	193	259	361	413	433	646	480	516	340	1,155	602	1,576	1,223	1,277	1,430	1,035	1,052	484	444	557	600	916
Coal	563	731	865	1,033	1,163	1,791	2,479	3,692	3,050	3,629	2,549	2,655	1,136	2,870	2,276	2,701	3,602	3,183	3,960	4,182	4,171	4,086	4,016
Oil	N/A	947	443	68	76	90																	
Gas	2,744	4,080	6,117	8,743	13,215	21,181	26,667	30,820	33,475	32,694	23,977	33,550	38,930	34,854	37,292	54,354	69,708	93,130	101,599	82,100	82,056	93,492	83,417
Geothermal	679	696	835	1,263	1,662	2,367	4,818	6,354	6,866	7,050	7,334	7,731	8,412	7,999	6,648	7,546	11,708	12,204	12,622	12,718	12,580	12,860	13,382
Organic waste	731	1,099	1,165	2,055	2,461	4,092	5,204	6,644	7,312	7,362	5,760	7,173	5,904	5,498	5,630	5,186	5,590	6,052	6,185	6,109	5,935	5,833	6,027
Wind	50	189	655	1,218	1,710	1,824	2,139	2,418	2,669	2,707	2,867	3,268	3,169	3,144	2,733	2,773	3,426	3,597	3,235	3,542	3,289	4,216	4,047
Solar	2	11	31	60	186	314	469	679	716	699	854	797	790	831	808	837	835	857	834	848	757	739	658
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	343	896	230	0	0	261	249	246	246	0
Energy imports: Total	56,130	61,288	57,009	51,095	45,499	46,911	41,064	61,959	55,873	37,704	42,892	43,354	47,514	49,696	52,720	47,563	49,487	26,774	40,768	62,859	61,811	66,278	62,456
Pacific Northwest	38,375	41,027	37,146	31,632	24,977	19,893	17,739	31,665	28,819	19,600	15,466	15,315	19,890	29,529	25,204	19,428	26,051	18,777	6,826	27,186	22,303	20,831	20,286
Pacific Southwest	17,755	20,261	19,863	19,463	20,522	27,018	23,325	30,294	27,054	18,104	27,426	28,040	27,624	20,167	27,517	28,135	23,436	7,997	33,941	35,673	39,508	45,447	42,170

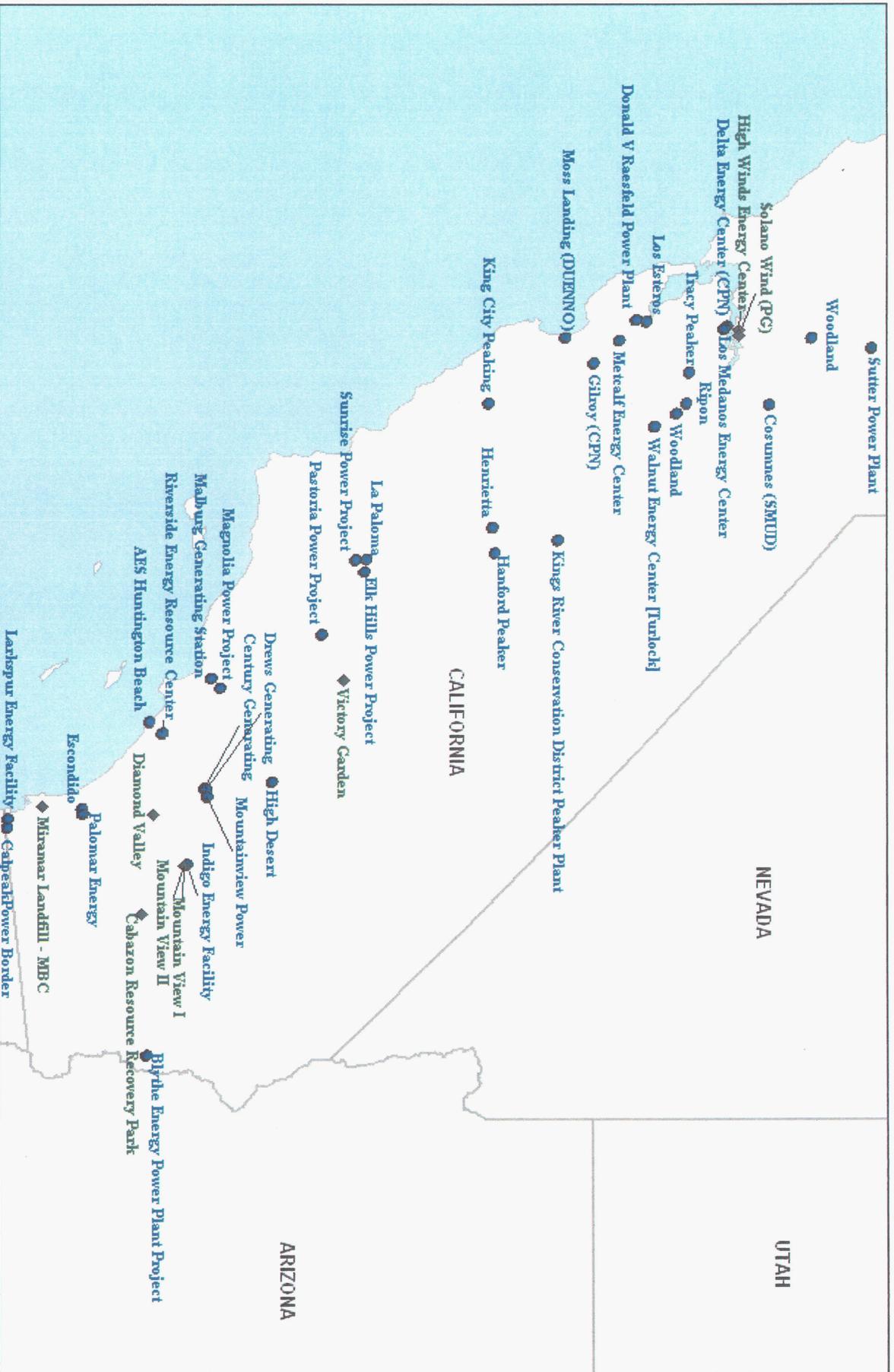
Notes:

(1) Prior to 2001, utility-owned shares of coal, nuclear plants and some firm contract generation outside California were considered part of utility-owned generation category. Since 2001 most of this data is included in the energy imports category.



Location of New Generation in California (13,000 MW from 2001 to 2005)

About 5,600 MW in N. CA and about 7,400 MW in S. CA



tabbies' EXHIBIT
A-1.8
admitted

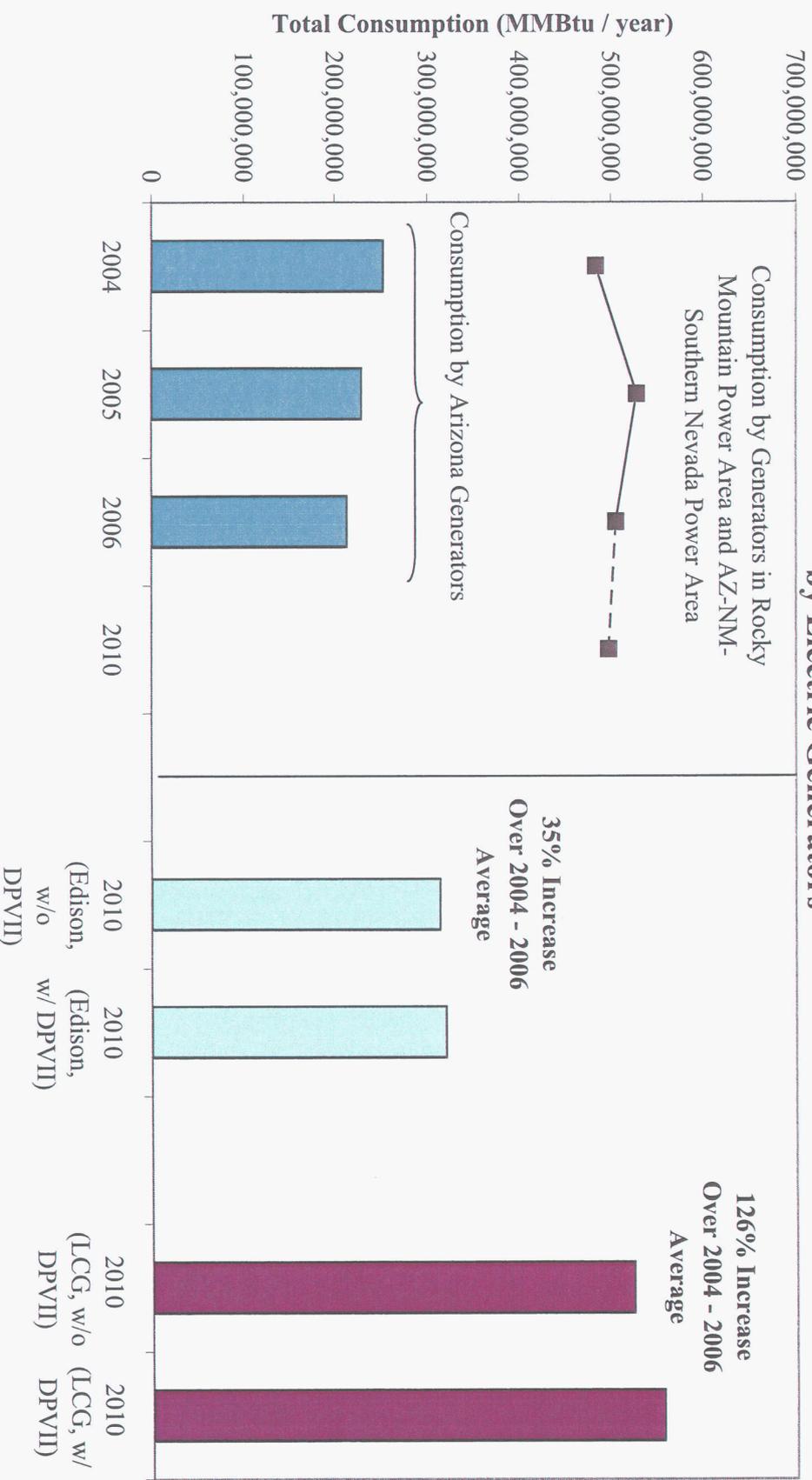
EXHIBIT
A-19
attached

Arizona 500 kV Lines Sharing Common Corridor

Line Name	Common Corridor Distance	Common Miles	Outage History
Navajo – Westwing Navajo – Moenkopi	130 ft	76	20 years/ 2 outages
Navajo – Westwing Yavapai – Westwing	130 ft	101	20 years/ 2 outages
Navajo – Westwing Moenkopi – Yavapai	130 ft	79	20 years/ 2 outages
Palo Verde – Westwing #1 and #2	130 ft	45	13 years/ 1 outage

Source: APS Report to WECC titled – Performance Category Upgrade Request for Palo Verde-North Gila Lines, dated April 2006

Comparison of Historical and Modeled Natural Gas Consumption by Electric Generators



DOE Historical and Forecast Data *SCE and LCG Results for Arizona Generators*

DOE Sources:
http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html
<http://www.eia.doe.gov/oiat/aeo/supplement/index.html> (Table 71)

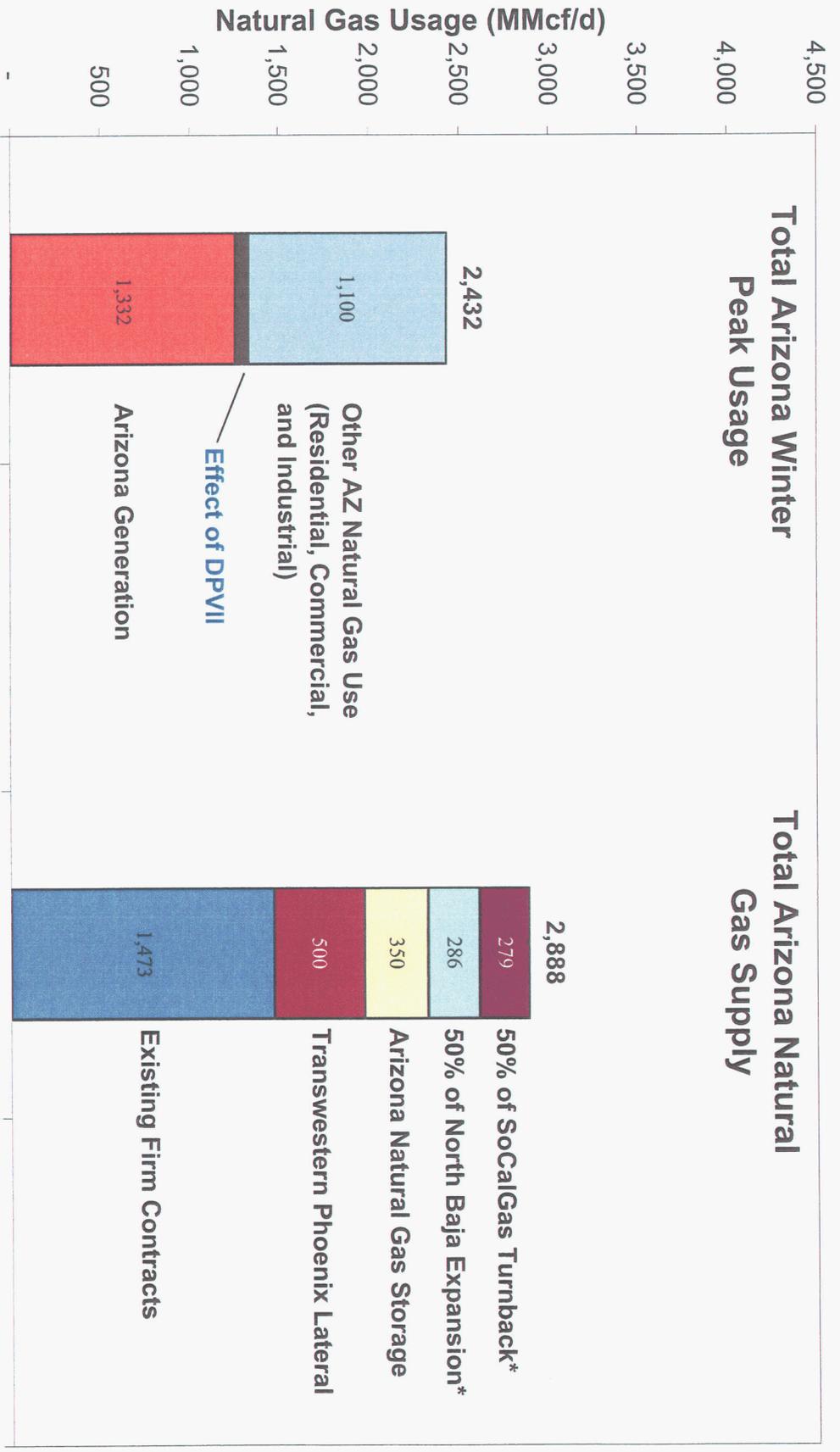


Short-Term Purchases and Sales of Arizona Utilities

Utility	Purchases (Million MWh)	Sales (Million MWh)	Net Purchases (Million MWh)
Arizona Public Service	20.2	19.0	1.2
Tucson Electric Power	2.9	3.3	-0.4
Salt River Project	4.7	2.0	2.6
Total	27.8	24.3	3.5

Sources and Notes:

APS and TEP: FERC Form 1 for 2005.
SRP: Based on other utilities' transactions with SRP in those utilities' FERC Form 1 for 2005.
Purchases and sales include spot, seasonal, and other contracts of duration less than one year.
Summary excludes contracts of duration greater than one year, requirements sales, adjustment and exchange contracts.



* North Baja Expansion and SoCalGas Turnback will serve both Arizona and California. Arizona supply quantity for these projects conservatively assumed to be equal to half of total capacity. The remaining supply from these projects for California will more than cover California estimates of statewide natural gas demand growth from 2005-2015 (460 MMcf/day.)

Sources: DOE, CA Gas Report, 3rd Quarter 2006 Index of Customers, Transwestern Pipeline Phoenix Expansion Project (4/06), El Paso Natural Gas statement (5/06), N. Baja Expansion Application (2/06), and a SoCalGas Advice Letter (12/04).



CALIFORNIA ISO

California Independent
System Operator

A-23

Wheeling Through

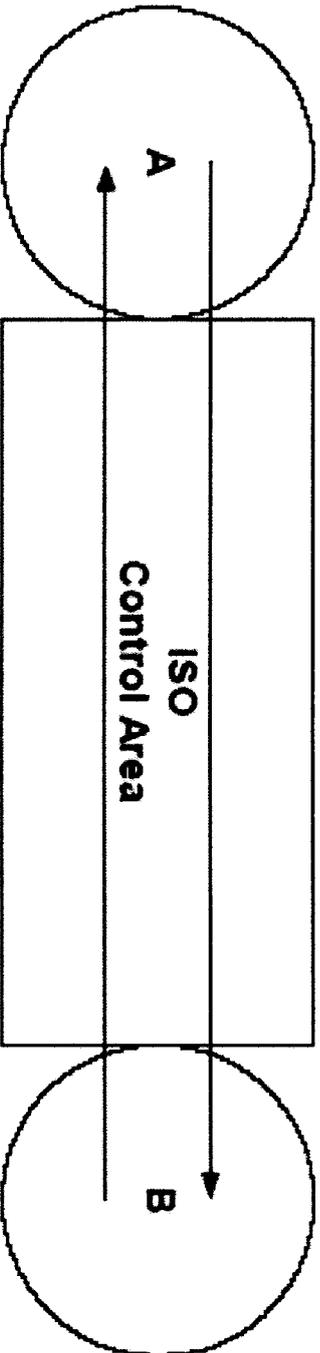


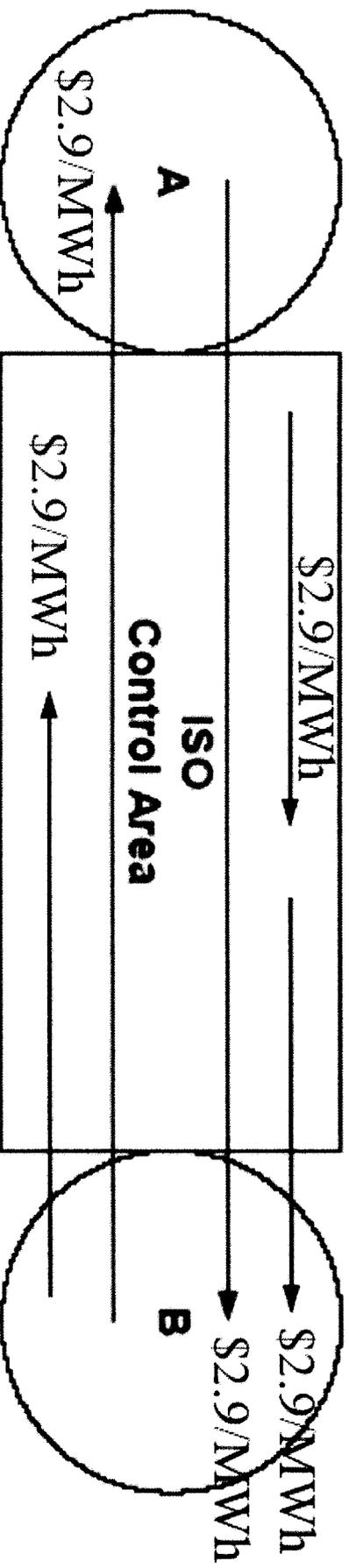
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Source: Jerry Smith testimony (CAISO Presentation on Wheeling 9-1-04 [read only].pdf)

CAISO Transmission Charges

- Charges for CAISO transmission use:
 - ▶ “Access Charge” (imposed only for deliveries to CAISO-internal load; i.e., from internal generation or imports)
Definition: charge paid by all utilities with load in ISO service area
Tariff Section 26.1: “All Market Participants withdrawing Energy from the ISO Controlled Grid shall pay Access Charges in accordance with this Section 26.1 and Appendix F, Schedule 3... [Under] Schedule 3 to Appendix F, the Access Charges shall ... consist, where applicable, of a High Voltage Access Charge, a Transition Charge and a Low Voltage Access Charge.”
 - ▶ “Wheeling Access Charge” (imposed only for deliveries to CAISO-external load; i.e., wheeling out or wheeling through)
Definition: charge assessed by the ISO for Wheeling (out or through)
Tariff Section 26.1.4.1: “equal to the High Voltage Access Charge ... in accordance with Section 3 of Appendix F plus the applicable Low Voltage Access Charge if the Scheduling Point is on a Low Voltage Transmission Facility”
- Only one charge: Access Charge or Wheeling Charge
- “Access Charge” = “Wheeling Charge”

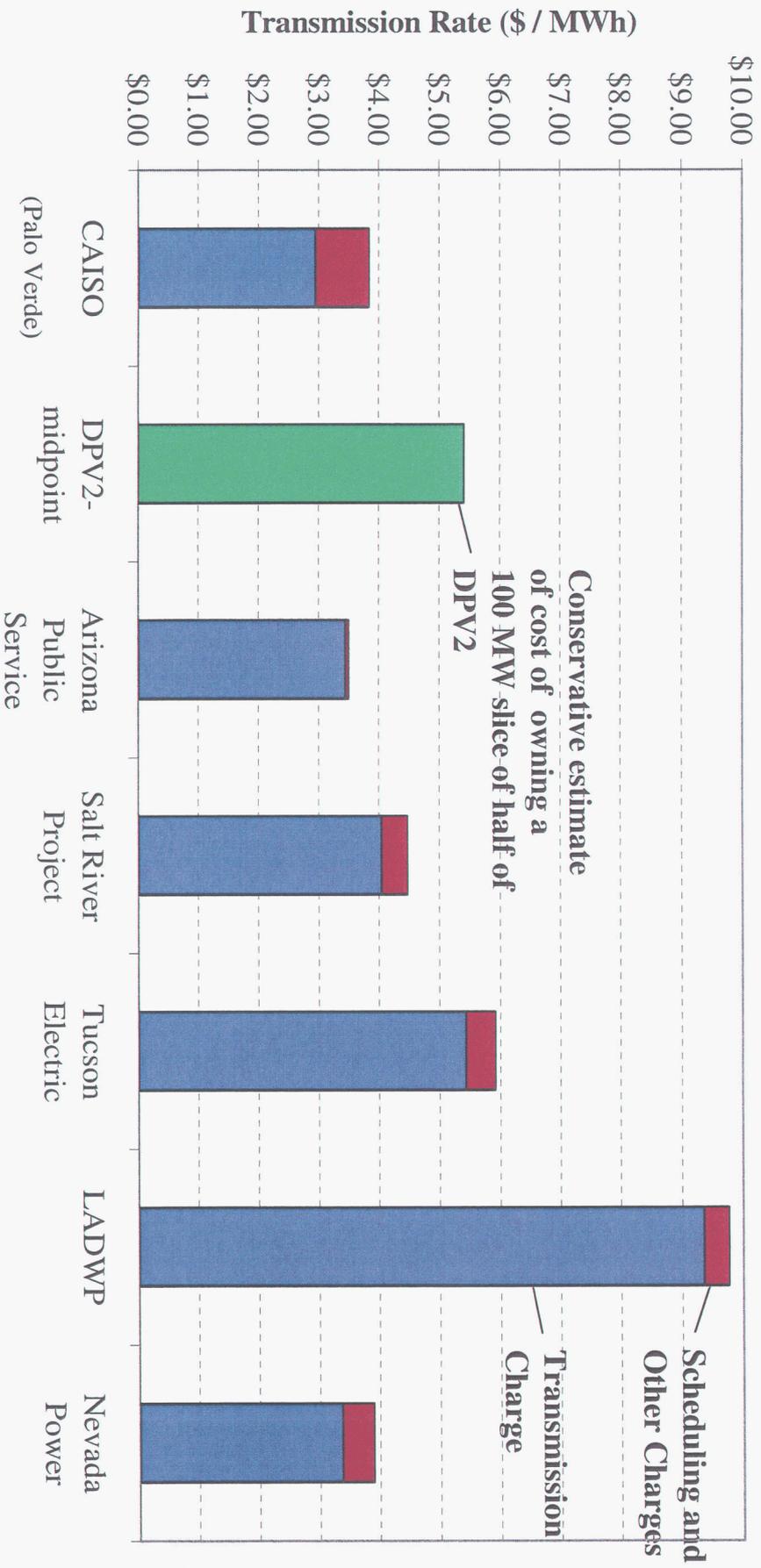
Access Charges for Various Types of Transactions



- Wheeling through charges are the same as charges for wheeling out, wheeling in, or transmitting electricity
- Wheeling access charge = access charge

Comparison of CAISO Transmission Charges

Transmission Rates for 100 MW 6 x 16 Peak Delivery



Note: Other charges include relevant Grid Management Charges for CAISO and Schedules 1 and 2 for other transmission providers

CAISO Transmission Charges

- Charges for use of CAISO transmission facilities (\$/MWh of actual transmission use) are comparable to other Western utilities' charges (\$/MW-reserved)
- CAISO administrative charges ("Grid Management Charges" or "GMC") are comparable to other Western utilities' charges ("Scheduling, System Control, Dispatch, Reactive Supply and Voltage Support")
- Buying a slice of DPV2 from Palo Verde to Colorado River (i.e., approximately half the line's full length) is more expensive than paying CAISO access charges
 - ▶ New DPV2 line vs. significantly depreciated CAISO grid
 - ▶ Average transmission distance on CAISO grid fairly short because most CAISO load is supplied through internal generation

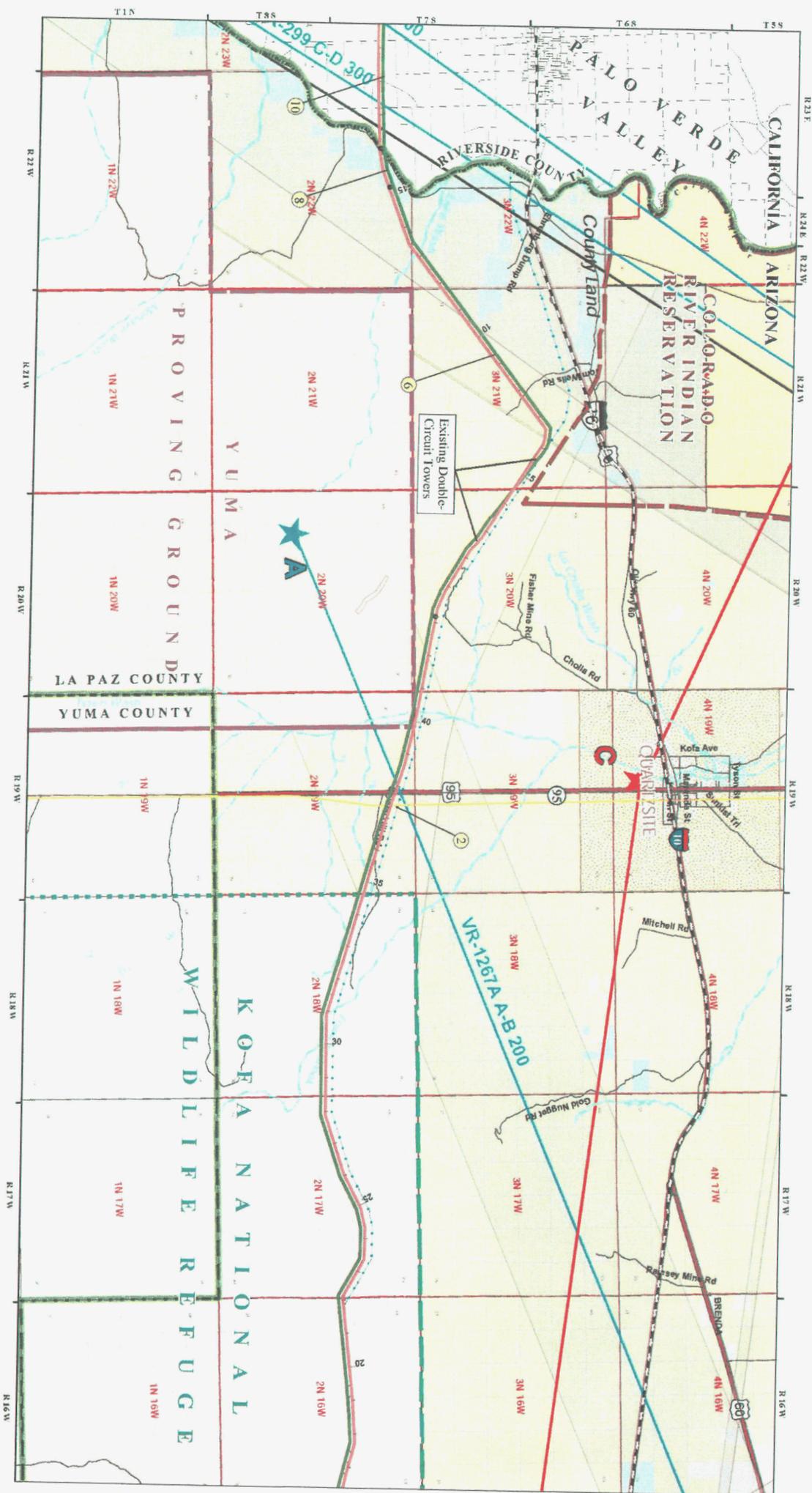


EXHIBIT
 A-24
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SUMMARY OF LOS ANGELES DEPARTMENT OF WATER AND POWER
AGREEMENT IN PRINCIPAL

On May 5, 2006, LADWP protested SCE's CPUC Application No. 05-04-015 because LADWP asserted that it has the right to build DPV2 and that the issue of who builds DPV2 should be resolved. SCE and LADWP have reached an agreement in principle that resolves LADWP's protest. Under the agreement in principle, LADWP will withdraw its protest in A.05-04-015 and will not be a participant in the DPV2 project. SCE will continue to provide transmission service to LADWP on DPV1 in accordance with the Exchange Agreement as it will be amended pursuant to the principles. The settlement will not affect any of the costs or benefits of DPV2.

SCE and LADWP will negotiate a settlement agreement effectuating the agreement in principle. The settlement agreement will be subject to approval by LADWP's governing authorities and the FERC.

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BEFORE THE ARIZONA CORPORATION COMMISSION

- JEFF HATCH-MILLER
Chairman
- WILLIAM MUNDELL
Commissioner
- MIKE GLEASON
Commissioner
- KRISTIN K. MAYES
Commissioner
- BARRY WONG
Commissioner

IN THE MATTER OF THE APPLICATION)
OF SOUTHERN CALIFORNIA EDISON)
COMPANY AND ITS ASSIGNEES IN)
CONFORMANCE WITH THE)
REQUIREMENTS OF ARIZONA REVISED)
STATUTES SECTIONS 40-360.03 AND)
40-360.06 FOR A CERTIFICATE OF)
ENVIRONMENTAL COMPATIBILITY)
AUTHORIZING CONSTRUCTION OF A)
500kV ALTERNATING CURRENT)
TRANSMISSION LINE AND RELATED)
FACILITIES IN MARICOPA AND LA PAZ)
COUNTIES IN ARIZONA ORIGINATING)
AT THE HARQUAHALA GENERATING)
STATION SWITCHYARD IN WESTERN)
MARICOPA COUNTY AND)
TERMINATING AT THE DEVERS)
SUBSTATION IN RIVERSIDE COUNTY,)
CALIFORNIA)

Docket No. L-00000A-06-0295-00130
Case No. 130

**SOUTHERN CALIFORNIA
EDISON COMPANY'S
RESPONSE TO ACC STAFF'S
PROPOSED CONDITIONS**

As requested by the Arizona Power Plant and Transmission Line Siting Committee ("Committee"), Southern California Edison Company ("SCE") submits its responses to the Arizona Corporation Commission ("ACC") Staff's proposed conditions. As part of its Response, SCE has attached as Exhibit A a revised version of Staff's conditions showing the revisions acceptable to SCE.

1 **ACC Staff Condition No. 1**

2 SCE noted in its testimony that it has filed comments (in a California Public Utility
3 Commission proceeding) supporting open access to gas storage in southern California.
4 Staff Condition No. 1 is consistent with SCE's position, but SCE has made two revisions.
5 The first limits the effective time of the Condition to the term of the CEC or ten (10) years,
6 whichever is less. The second is to limit required participation to California and federal
7 proceedings and not proceedings in other states or the region. SCE should not have to
8 make a commitment in perpetuity or to participate in proceedings other than in California
9 or at the Federal Energy Regulatory Commission ("FERC").

10 **ACC Staff Condition No. 2**

11 Staff Condition No. 2 is acceptable with two changes. First, the concept of
12 "separate" towers must be eliminated because SCE should use the double circuit towers in
13 Copper Bottom Pass to reduce environmental impact and to be consistent with the Bureau
14 of Land Management ("BLM") right-of-way grant. Second, SCE should be able to use the
15 special protection system ("SPS") which will not affect load or generation in Arizona.
16 SPS is consistent with WECC Planning Criteria, NERC Reliability Standards, and general
17 industry standards. The ACC Staff should not seek to impose unilaterally different
18 Reliability Standards than those accepted by the industry and reliability regional oversight
19 bodies. SCE has already modified its SPS to ensure that any load or generation dropped
20 will be in California, not in Arizona. This change was made in response to an earlier Staff
21 request. No further modification is necessary. The last two sentences of Condition No.
22 2(b) are not necessary.

23 **ACC Staff Condition No. 3**

24 Staff Condition No. 3 is acceptable with some minor word changes and the addition
25 of a paragraph that gives SCE the option of interconnecting at the Harquahala Generating
26

1 Station switchyard if a Junction Switchyard agreement is not completed by the end of
2 2007.

3 **ACC Staff Condition No. 4**

4 Condition No. 4(a) is not acceptable because it requires SCE to get FERC approval
5 on behalf of all of the Palo Verde Hub interconnecting parties – a task outside of SCE’s
6 control. SCE cannot file rates at FERC on behalf of all Palo Verde Hub interconnection
7 parties because the rates, terms and conditions for transmission service will have to be
8 filed at FERC by each of the various transmission owners under Section 205 of the Federal
9 Power Act. In addition, Conditions No. 4(a) and (b) as proposed by the Staff are subject to
10 federal jurisdiction and not appropriate conditions in a state siting proceeding. Condition
11 No. 4(b) is also dependent on agreement of the Palo Verde to TS5 line participants, which
12 is out of SCE’s control. SCE believes that the alternative to Condition No. 4 set forth in
13 Exhibit A can help achieve the goal of ensuring that the Harquahala Power Plant can
14 schedule its full capacity from the new Junction Switchyard to the Hassayampa
15 Switchyard.

16 **Staff Condition No. 5**

17 Staff Condition No. 5, as explained by Jerry Smith during his testimony, is
18 acceptable to SCE. Changes have been made in the wording of Condition No. 5 to be
19 consistent with SCE’s understanding of Staff’s intention and to clarify what commitment
20 SCE is making.

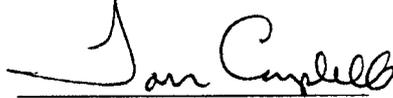
21 **Staff Condition No. 6**

22 Staff Condition No. 6(a) is acceptable. Staff Condition No. 6(b) is not acceptable.
23 SCE must operate within the regulatory framework of the State of California and FERC
24 and No. 6(b) requires that SCE enter an agreement and file a tariff inconsistent with the
25 California and FERC regulatory frameworks. The Committee should not impose a
26 condition that mandates a revision to the California and FERC regulatory frameworks.

1 CAISO should have control of DPV2 up to the Junction Switchyard just as it has control
2 of the DPV1 and the North Gila lines up to their termination in the Palo Verde Hub area.
3 Staff admitted that there have been no particular problems with CAISO's control of those
4 other two lines. Staff has not presented a persuasive or compelling case that CAISO's
5 control over the DPV2 line will disadvantage Arizona. To the contrary, the testimony in
6 this case is that CAISO will treat parties for both California and Arizona fairly, equitably
7 and equally.

8 RESPECTFULLY SUBMITTED this 25th day of October, 2006.

9 LEWIS AND ROCA LLP

10 

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12 Albert H. Acken
13 40 N. Central Avenue, 19th Floor
14 Phoenix, Arizona 85004

15 Attorneys for Applicant

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17 ORIGINAL and twenty-five (25) copies
18 of the foregoing filed this 25th day of
19 October, 2006, with:

20 Docket Control – Utilities Division
21 Arizona Corporation Commission
22 1200 W. Washington Street
23 Phoenix, Arizona 85007

24 COPY of the foregoing provided electronically
25 this 25th day of October, 2006 to:

26 Laurie A. Woodall, Chairman
Arizona Power Plant and Transmission Line Siting Committee
Office of the Attorney General
1275 W. Washington Street
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Betty J. Griffin

**SCE Response to
ACC Staff Proposed Conditions
October 25, 2006**

SOUTHERN CALIFORNIA EDISON
DEVERS TO PALO VERDE 500 kV LINE No. 2
DOCKET NO. L-00000D-06-0295-00130

ACC Staff Condition No. 1

- 1 Southern California Edison agrees to make good faith efforts for the term of the CEC not to exceed ten years to work within ~~future~~ California and regional FERC proceedings to encourage regional access to natural gas storage facilities in California in a manner that addresses natural gas service reliability and efficiency in the region, including Arizona.

ACC Staff Condition No. 2

2. To ensure the second Palo Verde to Devers 500 kV transmission line does not adversely effect reliability of the Arizona Extra High Voltage (EHV) grid and power plants interconnected at the Palo Verde Hub, one of the following options must be adopted by Southern California Edison for construction of the new line:

a. The line must be constructed on **separate** towers or monopoles for its entire length and have sufficient physical separation from the existing Palo Verde to Devers line to assure a common mode outage frequency of less than one in thirty years (per NERC/WECC Planning Standards S-2) or that no cascading outages would occur for such a common mode outage (per NERC Category C.5) **without the use of a special protection scheme;**

Or

b. The WECC rated Path 49 shall not be operated above a level at which a, NERC Category C.5, common mode outage of the two Palo Verde to Devers lines would cause cascading outages ~~unless a special protection scheme were activated~~. Studies are to be performed annually to establish with WECC such a Path 49 Operational Transfer Capability (OTC) limit for the common mode outage of the two Palo Verde transmission lines. ~~If the Applicant does not want to perform annual studies, the Applicant may choose to request a lower rating of the line from the appropriate regulatory authority. The lower rating must achieve the above goals.~~

ACC Staff Condition No. 3

3. The second Palo Verde to Devers 500 kV line shall terminate at the new Harquahala Junction Switchyard along with the existing Harquahala to Hassayampa 500 kV line in order to mitigate prevailing reliability risks associated with extreme contingencies in the vicinity of the Palo Verde trading hub. The Harquahala Junction Switchyard is to be jointly owned by the Palo Verde to TS5 participants and Southern California Edison. The Harquahala Junction Switchyard to Hassayampa Switchyard line is to be jointly owned by Southern California Edison and the ~~same~~ Palo Verde to TS5 transmission participants.

If Harquahala Junction Switchyard (Switchyard) joint agreements, Switchyard property acquisitions, and other necessary Switchyard joint arrangements are not complete by December 31, 2007, SCE may terminate the DPV2 500kV line at the Harquahala Generating Station Switchyard in accordance with SCE's CEC application before the Arizona Line Siting Committee.

ACC Staff Condition No. 4

4. To assure that prevailing Palo Verde Hub commercial practices are not compromised by the transmission interconnections at Harquahala Junction Switchyard, Southern California Edison must prior to commencing operation:
- ~~a. File with the Federal Energy Regulatory Commission and receive approval of a request, on behalf of all Palo Verde Hub interconnecting parties, for modification of the transmission tariff free zone at the Palo Verde Hub to include all transmission lines currently interconnecting power plants to either the Palo Verde Switchyard or the Hassayampa Switchyard;~~
 - OR**
 - ~~b. File with the Arizona Corporation Commission (ACC) staff an executed transmission agreement with Harquahala Power Plant and the participants of the Palo Verde to TS5 transmission line that establishes that Harquahala Power Plant can schedule its full capacity over the Harquahala Junction Switchyard to Hassayampa Switchyard transmission line without transmission tariff costs and that all three parties will assume pro-rata obligations to share in the cost of an additional transmission line between these two switchyards as needed at some future date.~~

SCE commits to work with APS so that Harquahala Power Plant can schedule its full capacity from Harquahala Junction Switchyard to Hassayampa Switchyard.

ACC Staff Condition No. 5

5. SCE will not object or seek to change the Control area authority and associated operational reliability obligations placed by the ACC upon power plants originally interconnected at the Palo Verde Hub. ~~are to be maintained with the new interconnection at Harquahala Junction.~~ Such SCE will not object to power plant obligations ~~can~~ being transferred to the transmission control area to which they are interconnected in the event that they desire to discontinue as a generator only control area operator.

ACC Staff Condition No. 6

6. To assure that non-discriminatory open-access transmission principles are not compromised, commercial barriers to Arizona transmission users do not occur on lines serving as tie lines between CAISO and the forming WestConnect RTO operational footprint, and that no new seams issues between the two RTOs result from the construction of the Palo Verde to Devers 2 transmission line:
- a. Arizona Public Service Company shall have operational control of the Harquahala Junction Switchyard, the Harquahala Junction Switchyard to Hassayampa Switchyard transmission line and the Harquahala Junction Switchyard termination of the second Palo Verde to Devers transmission line and the Harquahala Power Plant line.
 - b. ~~The Applicant executes a binding written agreement with the CAISO to limit its control area. The CAISO operational control and transmission tariff application shall initially end at the Devers termination of the Palo Verde to Devers 2 transmission line and may extend eastward to any future switchyard interconnecting with the line between Devers and the Colorado River. This implies a new Southern California Edison transmission tariff will be required should a future switchyard interconnect occur with the Palo Verde to Devers 2 line between Harquahala Junction and the Colorado River. The Applicant must file the executed agreement with the Commission prior to commencing operations of the line.~~