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ORIGINAL

NEW APPLICATION

0000049214

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Admitted in: Arizona

Our File Number: 43431-00001

May 1, 2006

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AZ CORP COMMISSION
DOCUMENT CONTROL

VIA HAND DELIVERY

Arizona Corporation Commission
Utilities Division - Docket Control
1200 W. Washington Street
Phoenix, Arizona 85007

Re: *L-00000A-06-0295-00130*
Southern California Edison Company
Application for a Certificate of Environmental Compatibility

Dear Docket Control:

Enclosed is the original and twenty-five (25) copies of the Southern California Edison Company Application for a Certificate of Environmental Compatibility for the Devers-Palo Verde No. 2 Transmission Line Project.

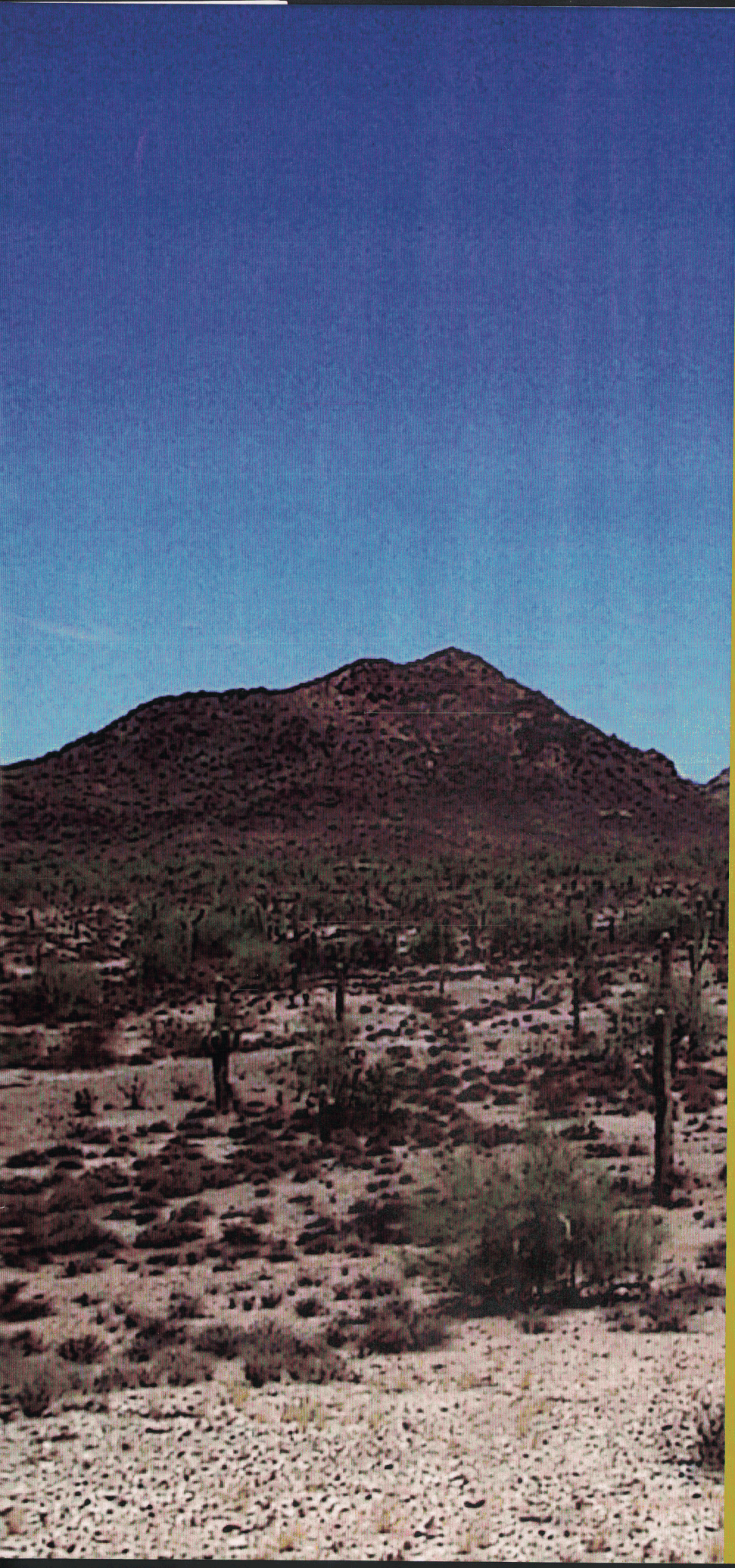
Very truly yours,

LEWIS AND ROCA LLP

Thomas H. Campbell

THC/mjh
Enclosures

cc: Laurie Woodall (*via hand delivery*, w/encs.)



Date: _____
Case#: _____

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

SOUTHERN CALIFORNIA EDISON

An *EDISON INTERNATIONAL®* Company

BEFORE THE
ARIZONA POWER PLANT AND TRANSMISSION LINE SITING COMMITTEE

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 Switchyard west of Phoenix, Arizona and terminating at the Devers Substation in Riverside County, California.	**Case No.** _____

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

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

Date: _____
Case No. _____

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LIST OF ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
ACC	Arizona Corporation Commission
Applicant	Southern California Edison Co. *or* SCE *or* Edison
APS	Arizona Public Service
A.R.S.	Arizona Revised Statutes
BLM	Bureau of Land Management
CAP	Central Arizona Project
CEC	Certificate of Environmental Compatibility
CPUC	California Public Utilities Commission
CRC	Certificate of Right-of-Way Compatibility
DOI	Department of Interior
DPV1	Devers-Palo Verde No. 1 500kV Transmission Line
DPV2	Devers-Palo Verde No. 2 Project (*this application*)
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPG	Environmental Planning Group *or* EPG, Inc.
HGC	Harquahala Generating Company
I-10	Interstate 10
kV	Kilovolt
MW	Megawatts
NEPA	National Environmental Policy Act
NWR	National Wildlife Refuge
Project	Devers-Palo Verde No. 2 Project (this application)
PEA	Proponent's Environmental Assessment
PVNGS	Palo Verde Nuclear Generating Station
ROD	Record of Decision
SCE	Southern California Edison Company
Siting Committee	Arizona Power Plant and Transmission Line Siting Committee
SPS	Special Protection System
SVC	Static VAR Compensator
USFWS	U.S. Fish and Wildlife Service
VAR	Voltage Ampere Reactive

INTRODUCTION

INTRODUCTION

Southern California Edison Company (SCE or Applicant or Edison) requests a Certificate of Environmental Compatibility (CEC) from the Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) for authority to construct approximately 102 miles of a proposed 500 kilovolt (kV) transmission line and related facilities (Project), in western Maricopa County and La Paz County, Arizona. The remaining 128 miles of the proposed 500kV transmission line would be located in Riverside County, California. The Project is called the Devers-Palo Verde No. 2 project or DPV2. The DPV2 project also includes an upgrade to SCE's 230kV transmission system in Riverside and San Bernardino counties west of SCE's existing Devers Substation.

SCE is an investor-owned public utility engaged in the business of generating, transmitting, and distributing electric energy in portions of central and southern California. In addition to its properties in California SCE owns, in some cases jointly with others, facilities in Arizona, Nevada, and New Mexico. In conducting such business, SCE operates an interconnected and integrated electric utility system.

PROJECT OVERVIEW

The proposed transmission line, known as the Devers-Harquahala 500kV transmission line, would originate at the Harquahala Generating Station Switchyard (Harquahala Switchyard), located approximately 17 miles northwest of the Palo Verde Nuclear Generating Station (PVNGS) and 60 miles west of Phoenix, and would terminate at SCE's existing Devers Substation in Riverside County, California, as shown on Figure 1 (Project Vicinity Map). The proposed line would parallel the existing Devers-Palo Verde No. 1 500kV line (DPV1) within BLM-designated utility corridors for the majority of the proposed route. CECs for the DPV1 were issued by the Arizona Corporation Commission (ACC) in Case No. 34 (Decision No. 49226) and Case No. 48 (Decision No. 51170).

Construction of the proposed 500kV line would utilize the same types of towers as the existing DPV1 transmission line, as shown in Exhibit G-1. Of the approximately 343 transmission structures that would be constructed in Arizona, approximately 320 would be single-circuit lattice steel towers. The 5-mile segment of the proposed route, east of the Harquahala Generating Station, would be constructed on 23 single-circuit tubular-steel poles, as shown in Exhibit G-2. The remaining portion of the proposed Devers-Harquahala line includes 13 existing double-circuit structures (as shown in Exhibit G-3) that presently support the DPV1 and DPV2 conductors in the Copper Bottom Pass, about 10 miles east of the Colorado River.

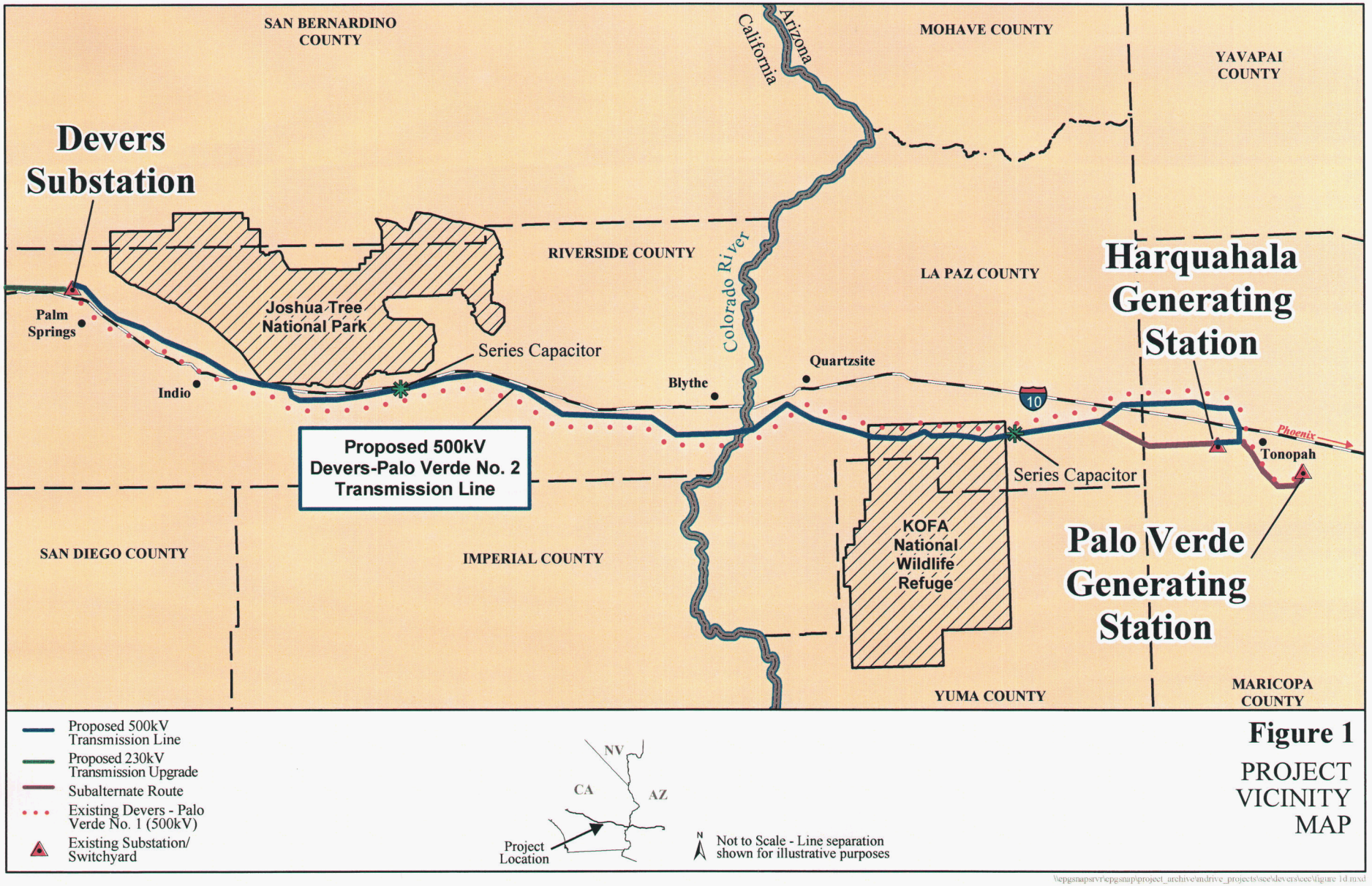

Figure 1

PROJECT VICINITY MAP

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Other major related facilities to be constructed would include the following:

- Telecommunications system modifications, including an optical ground wire on the transmission line structures, a new telecommunications facility on Harquahala Mountain in Arizona, and an optical repeater facility located 3 miles west of Blythe, California within the Devers-Harquahala transmission line right-of-way.

- Two series capacitor banks, each adjacent to an existing DPV1 series capacitor bank: one in Arizona approximately 55 miles west of the Harquahala Switchyard and one in California approximately 64 miles east of the Devers Substation.

- A Static Voltage Ampere Reactive (VAR) Compensator would be installed at the Devers Substation in California.

- Shunt reactors, dead-end structures, circuit breakers, and disconnect switches at the Harquahala Switchyard in Arizona and Devers Substation in California.

- Special Protection System (SPS) relays may be installed at SCE's substations in California to drop load for mitigation of the system reliability impacts due to the simultaneous loss of DPV1 and Devers-Harquahala.

Project construction is scheduled to begin in early 2007 with completion and operation anticipated for 2009.

As part of DPV2, SCE plans to purchase the existing 500kV transmission line and related facilities that connect the Harquahala Switchyard to the Hassayampa 500kV Switchyard.

PROPOSED AND ALTERNATE ROUTES

Proposed Route

The Arizona portion of the proposed DPV2 project would consist of the construction of 102 miles of 500kV transmission line from the existing Harquahala Switchyard, located in Maricopa County to the Colorado River, as illustrated in Figure 2. While the proposed route would terminate at the Harquahala Switchyard, SCE would utilize the existing Harquahala-Hassayampa 500kV transmission line and the existing Hassayampa-PVNGS 500kV interconnection to provide a path to the PVNGS Switchyard. A CEC for the Harquahala-Hassayampa transmission line project was issued by the ACC in Case No. 96 (Decision No. 62655). The line was constructed in 2001. The proposed Devers-Harquahala 500kV transmission line would exit the Harquahala Switchyard and parallel the Harquahala-Hassayampa 500kV line in an easterly direction for approximately 5 miles to its intersection with the DPV1 right-of-way.

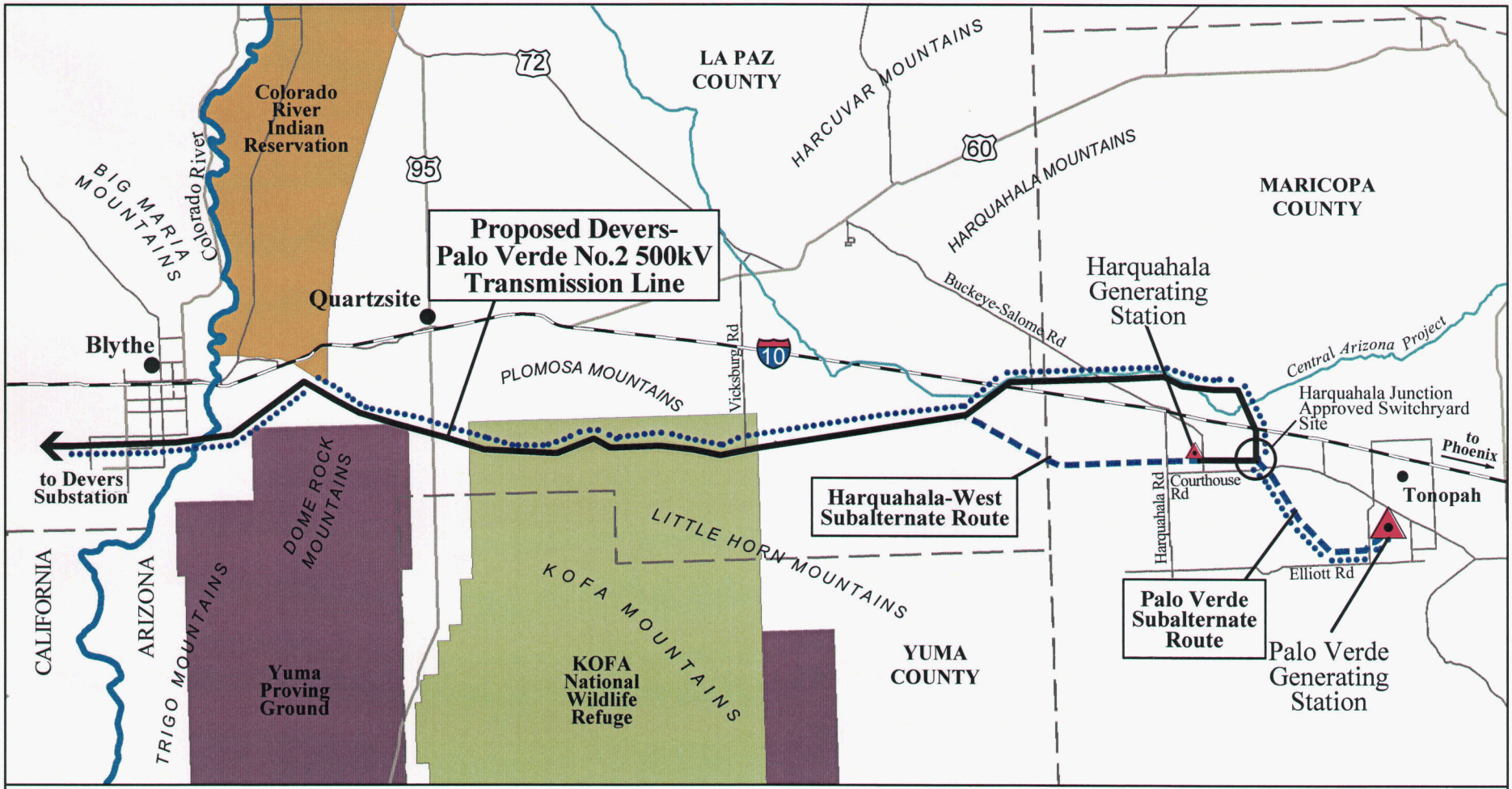

Figure 2
PROPOSED AND SUBALTERNATE ROUTES IN ARIZONA

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From that point, the route would then turn north and parallel the DPV1 single-circuit 500kV line for approximately 2.7 miles to Interstate 10 (I-10), where it would cross the interstate highway and proceed to a point 1 mile northwest of Burnt Mountain. The route would then turn west and generally 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 right-of-way just north of its Wenden Pump Station north of the Eagletail Mountains.

The route would parallel the El Paso Natural Gas pipeline and the DPV1 line for approximately 56 miles, crossing the Ranegras Plain, through approximately 25 miles of the KOFA National Wildlife Refuge (NWR) and the La Posa Plain, crossing Arizona State Highway 95 before it continues 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.

Along the 5-mile segment of the route parallel to the existing Harquahala-Hassayampa 500kV line, the Devers-Harquahala 500kV line would be constructed on new single-circuit tubular-steel poles to match the structures of the existing line. Once the Devers-Harquahala 500kV line turns north to parallel the existing DPV1 line, new single-circuit lattice steel towers would be constructed to match the existing DPV1 towers along the route to Copper Bottom Pass. When DPV1 was constructed, conductors for the DPV2 line were installed on the double-circuit towers as the second circuit on 13 four-legged lattice steel towers, along approximately 3 miles through Copper Bottom Pass.

The California portion of the Devers-Harquahala 500kV transmission line is illustrated in Figure 1. It would extend 128 miles from the Colorado River to the Devers Substation near Palm Springs in Riverside County, California.

The majority of the proposed 500kV line route is located within a designated utility corridor on public land managed by the Bureau of Land Management (BLM) as specified in the BLM Resource Management Plans. The proposed Devers-Harquahala line would be located within a nominal 130-foot-wide right-of-way that was granted in perpetuity to SCE by the BLM in 1989 and is adjacent to the DPV1 right-of-way. Additional rights-of-way would be acquired on private, state, and other federal land, including approximately 5 miles of additional right-of-way between the junction of the proposed Devers-Harquahala route with the DPV1 line and the Harquahala Switchyard, adjacent to a portion of the existing Harquahala-Hassayampa 500kV line. The proposed route also would parallel Arizona Public Service's planned Palo Verde to TS5 500kV line, recently approved by the ACC Case No. 128 (Decision No. 68063), for approximately 5.5 miles from the point where the proposed Devers-Harquahala line would turn north (after paralleling the Harquahala-Hassayampa line) to the point where it would then turn west.

Harquahala-West Subalternate Route

This subalternate route would exit the Harquahala Switchyard directly to the west for 12 miles, and then follow the El Paso Natural Gas pipeline corridor northwest for 9 miles to its intersection with the proposed Devers-Harquahala 500kV route. The route would be located in a designated BLM utility corridor for the portion that parallels the pipeline right-of-way. New right-of-way would need to be acquired across private, state, and BLM land for this entire route. The Harquahala-West Subalternate route would be 14 miles shorter than the proposed route (a total distance of 216 miles) and would require about 48 fewer 500kV towers than the proposed route. This alternative would have a greater level of environmental impact than the proposed route and is not the Applicant's preferred route.

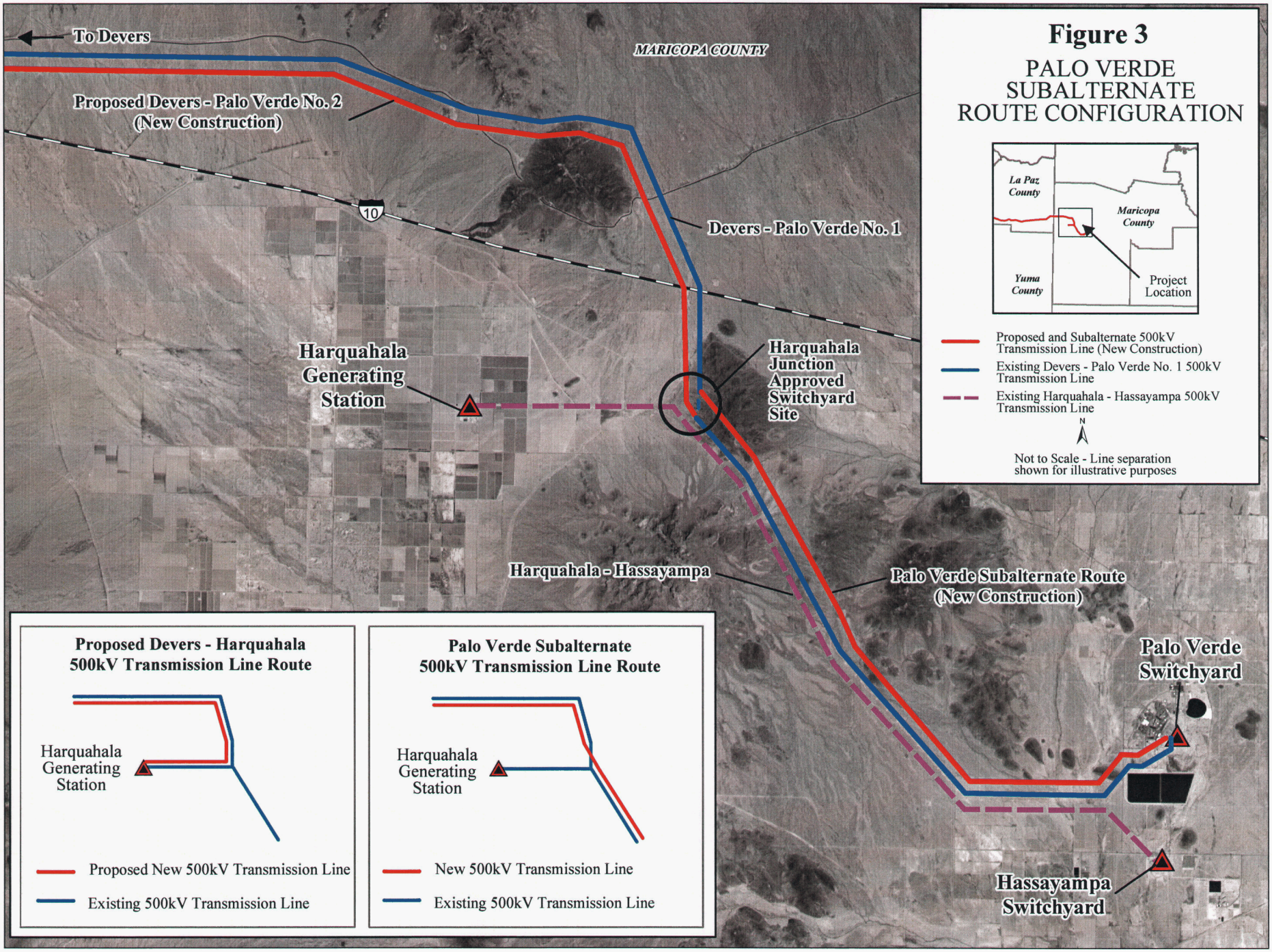
Palo Verde Subalternate Route – Interconnection Option

The proposed route for the Devers-Harquahala 500kV transmission line is generally parallel to SCE's existing DPV1 500kV line, except for the 5-mile segment from Harquahala Junction to the Harquahala Switchyard. Unlike the DPV1 and DPV2 routes described in the 1989 BLM right-of-way grant, the proposed project involves building a new 500kV transmission line from Devers to the Harquahala Switchyard and interconnecting to the existing Harquahala-Hassayampa 500kV transmission line.

As an interconnection option to termination of the Devers-Harquahala 500kV transmission line at Harquahala, the Palo Verde Subalternate route would terminate at the PVNGS Switchyard (Figure 3). This would require the construction of a new 500kV transmission line parallel to the DPV1 transmission line, a distance of approximately 15 miles from the Harquahala Junction to the PVNGS Switchyard, as an alternative to interconnecting with the Harquahala-Hassayampa line. This alternative is not the Applicant's preferred route.

Harquahala Junction Switchyard – Interconnection Option

This option would be the same as the proposed route, but would reduce the length of the 500kV transmission line required for the proposed Devers-Harquahala route by approximately 5 miles. SCE, Arizona Public Service Company (APS) and Harquahala Generating Company (HGC) have been discussing a potential joint project arrangement in which the parties (subject to the parties' ability to reach a mutually acceptable agreement) would share the existing Harquahala-Hassayampa 500kV transmission line and thereby defer the need for APS to construct an additional 500kV line into the Palo Verde Hub. This arrangement would provide for the interconnection of the proposed Devers-Harquahala line, the existing Harquahala-Hassayampa line, and the certificated APS Palo Verde Hub-TS5 line at a new Harquahala Junction Switchyard. The Palo Verde Hub-TS5 line and Harquahala Junction Switchyard were certificated in 2005 in Case No. 128 (Decision No. 68063).



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Detailed discussions among the parties regarding the proposed joint project arrangement are ongoing and are the subject of a non-disclosure agreement.

ROUTE SELECTION AND ENVIRONMENTAL STUDIES

In the development phase of the DPV1 project, an extensive range of routes was developed by the Applicant based on the results of environmental studies, input from governmental agency resource plans and private interests, and consideration of engineering, economic, and right-of-way acquisition factors. Alternatives to the proposed route also were considered and reevaluated during the Project development for DPV2 in the 1980s as documented in the BLM's Supplemental Environmental Impact Statement (EIS) (Exhibit B-1) and concluding in the Record of Decision (ROD) issued by the Department of Interior (DOI) in 1989 for compliance with the National Environmental Policy Act (NEPA). The ROD and right-of-way grant issued by the BLM in 1989 are attached to this application in Exhibit B-2 (PEA, Volume II, Appendix B). The U.S. Fish and Wildlife Service (USFWS) issued a Certificate of Right-of-Way Compatibility (CRC) in 1989 for the portion of the proposed project crossing the KOFA NWR (see Exhibit B-2, Volume II, Appendix C). The USFWS has indicated that it will re-evaluate and update the 1989 CRC. SCE applied for a new Right-of-Way Permit in 2005 (see Exhibit B-3).

The results of subsequent reviews and evaluation of alternatives conducted by the Applicant show that the proposed route remains as the environmentally preferred route. These studies are documented in the Proponent's Environmental Assessment (PEA), attached as Exhibit B-2. The PEA was filed in support of SCE's application for a Certificate of Public Convenience and Necessity with the California Public Utilities Commission (CPUC) on April 11, 2005.

In December 2005, the BLM together with the CPUC issued a Notice of Intent to prepare a joint EIS/Environmental Impact Report (EIR) for the proposed project. The EIS/EIR will meet the requirements of the NEPA and the California Environmental Quality Act (CEQA). Public scoping meetings were held in the fall of 2005 in California and in January 2006 in Arizona. Scoping reports were issued in December 2005 and February 2006 which categorized comments received on the proposed project based on the human and physical environment, alternatives, cumulative projects, and the environmental review and decision-making process.

Two subalternate routes at the eastern portion of the proposed route for the Devers-Harquahala 500kV line were considered: (1) Harquahala – West and (2) Palo Verde. Construction of the Harquahala-West Subalternate route would result in a greater amount of adverse environmental impact than the proposed route. Because this subalternate route would not parallel an existing transmission line, visual impacts to residential viewers would occur. Also, construction of a new access road for a portion of the subalternate route would be required, causing more ground disturbance than the proposed Devers-Harquahala route.

Although the Palo Verde Subalternate route would be environmentally compatible, SCE's preference is to construct the proposed Devers-Harquahala route. The Palo Verde Subalternate route would be used if SCE would not be able to utilize the existing Harquahala-Hassayampa transmission line, in order to provide a direct interconnection with the PVNGS Switchyard.

The option to interconnect with the Harquahala Junction Switchyard would reduce the length of the 500kV line required for the Devers-Harquahala route by approximately 5 miles, and therefore reduce the amount of ground disturbance that would result from construction of new towers between Harquahala Junction and the Harquahala Generating Station.

PUBLIC INVOLVEMENT OVERVIEW

The Applicant has endeavored to keep the public and all interested agencies informed and involved in the various steps of the Project development process. SCE conducted public outreach activities for the DPV2 project to encourage communication with local communities, local businesses, elected and appointed officials, and other interested parties. Public outreach and information activities included distribution of a project fact sheet, in-person interviews, media briefings, open houses, and meetings with individuals and small groups. In addition, public scoping meetings were held in January 2006 in Arizona for the EIS/EIR. SCE sponsored public open house meetings at three locations in Arizona in April 2006. A more detailed description of these activities is contained in Exhibit J and Exhibit B-2 (PEA, Volume II, Appendix E).

The Applicant sent letters to government agencies to solicit their comments. A list of the entities that have been contacted is included in Exhibit H. All responses will be included in a supplemental filing.

PROJECT NEED

DPV2 would provide strategic and economic benefits to Arizona, California, and the Southwest including enhanced power pooling opportunities, increased emergency interconnection support, improved reliability, and increased utilization of existing Arizona generation facilities.

Generating companies have located in the Palo Verde area to access two large markets: Arizona and Southern California. DPV2 enhances this market by adding additional transmission capacity between Arizona and Southern California. Expanding this market is beneficial to Arizona as it adds high-paying jobs in the energy marketplace, creates economic multiplier impacts due to these jobs, and increases corporate and personal tax base.

DPV2 is expected to provide employment and related tax benefits to Arizona (see Exhibit J-3). These include the following:

- Provide approximately 150 jobs during the two-year construction phase.

- Create positive economic impacts from all direct, indirect, and induced employment totaling an estimated $85 million.

- Generate property tax revenues to state and local government during the construction phase and the first 10 years of operation of approximately $24 million.

SUMMARY

The Project in Arizona is environmentally compatible for the following reasons:

- The majority of the proposed route is either within and/or adjacent to an existing utility right-of-way (DPV1 line) and within a BLM designated utility corridor.

- Existing access roads will be used to the maximum extent possible to minimize land disturbance during construction.

- No residences are within the proposed right-of-way or would be affected by the proposed Devers-Harquahala transmission line route.

- No conflicts with any existing or planned residential or recreational uses along the proposed route are anticipated.

- No long-term adverse effects to special status species, unique habitats, or archaeological and historic sites are anticipated.

- The Project will match existing transmission structure types wherever possible, use non-specular conductors, and use dulled-steel finish structures to reduce visual impacts.

- No adverse noise effects or interference with communications signals are anticipated.

APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

APPLICATION FOR
A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

(Pursuant to A.R.S. Sections 40-360.03 and 40-360.06)

1. Name and address of the Applicant:

Name: Southern California Edison Company
Address: 2244 Walnut Grove Avenue
Rosemead, California 91770

2. Name, address and telephone number of a representative of the Applicant who has access to technical knowledge and background information concerning this application, and who will be available to answer questions or furnish additional information:

Name: Michael Mackness, Senior Attorney
Address: 2244 Walnut Grove Avenue
Rosemead, California 91770
Telephone: (626) 302-2863
Fax: (626) 302-2610
E-mail: Mike.Mackness@SCE.com

3. Dates on which the Applicant filed a Ten Year Plan in compliance with Arizona Revised Statutes (A.R.S.) Section 40-360.02, which the facilities for which this application is made were described:

Under A.R.S. Section 40-360.02, SCE filed a Ten-Year Plan for the Devers-Palo Verde No. 2 Project with the Arizona Corporation Commission on January 30, 2006.

4. Description of the proposed facilities:

4.1 Description of electric generating plant:

Not applicable.

4.2 Description of the proposed transmission line:

4.2.1 General description:

4.2.1.1 Nominal voltage for which the lines are designed:

500kV alternating current (AC).

The transmission line would be designed to operate at a nominal voltage of 500kV phase to phase and a maximum voltage of 550kV phase to phase. The line would increase the electrical transfer capability between Arizona and California by 1,200 megawatts (MW) on a continuous basis.

4.2.1.2 Description of proposed structures:

The proposed 500kV line would utilize new and existing structures:

- 771 new single-circuit structures total, including 343 structures in Arizona (approximately)
- 13 existing double-circuit structures in Arizona

Exhibit G contains conceptual illustrations of the proposed structures to be utilized for the Project.

The single-circuit structures in Arizona would be constructed using approximately 320 lattice steel towers and 23 tubular-steel poles. The lattice steel structures (Exhibit G-1) will include galvanized lattice steel angle members connected together by bolts and will support one circuit consisting of three phases of conductors. Each phase would be a two-conductor bundle. Two static wires, one of which would contain optical fibers for telecommunications, would be included.

Along the portion of the Project paralleling the Harquahala-Hassayampa 500kV line, 23 new single-circuit tubular-steel poles (Exhibit G-2) would be used to match the structure type of the existing line.

The 13 double-circuit existing structures were constructed for the DPV1 line through the Copper Bottom Pass in the Dome Rock Mountains, approximately 10 miles east of the Colorado River in

Arizona. These towers support two circuits, each consisting of three phases of conductors that were installed for both DPV1 and DPV2 when DPV1 was constructed in the early 1980s (see Exhibit G-3).

4.2.1.3 Description of proposed switchyards:

No new switchyards would be constructed as part of the proposed project, but expansions of the existing switchyards and series capacitor stations would be needed. As part of DPV2, SCE is considering purchase of the existing 500kV transmission line from Harquahala to the Hassayampa 500kV Substation. For the proposed Devers-Harquahala transmission line, improvements to the existing Harquahala Switchyard would be required to implement that interconnection.

At the Harquahala Switchyard, a new line dead-end structure, circuit breakers, disconnect switches, and associated equipment such as relays and control cable would be installed to accommodate the line termination. With the proposed project, the terminating transmission tower or turning pole would be the tallest structure at the substation, ranging between 150 and 180 feet. Most of the equipment required for remote operation and control would be contained in a new telecommunication room.

A 500kV shunt-line reactor bank and associated disconnect devices would be installed for the proposed project at a location immediately adjacent and north of the Harquahala Switchyard within the Harquahala Generating Station property. Outdoor night lighting for the shunt reactor would be designed to illuminate the reactors and would be manually switched. The shunt reactor would be installed on approximately 2 acres of property to be acquired for this purpose. Temporary laydown and construction would require approximately 1 acre.

Two new 500kV series capacitor banks (one in Arizona) would be located adjacent to the two existing DPV1 series capacitor banks. Each of the two series capacitor banks would consist of the following major components:

- Series capacitors

- Dead-end structures located on either side of the series capacitor banks where the transmission line conductors enter the series capacitor sites
- Telecommunication equipment
- AC and direct current power to operate facility equipment
- Manually switched outdoor night lighting to illuminate the series capacitors
- Grounding grid placed beneath the surface of the facility as a safety measure
- Mechanical-electrical equipment room

The proposed Arizona series capacitor site would be located approximately 55 miles west of the Harquahala Switchyard on the Ranegras Plain on BLM land. The new site would be south of and adjacent to the existing DPV1 series capacitor bank. The site is approximately 7 miles south of I-10 and is accessed from the nearby El Paso Natural Gas pipeline access road.

The proposed California series capacitor site would be located approximately 64 miles to the east of the Devers Substation in the Chuckwalla Valley on BLM land. Both facilities would occupy approximately 2 acres inside the fenced site and temporarily use a 1-acre fenced area for material laydown, storage, and staging.

A SPS is proposed to mitigate post-transient voltage violations of system planning criteria for the simultaneous loss of DPV1 and the proposed project. The technical studies to define the design for this SPS have not been completed. However, preliminary technical studies indicated the SPS would need to drop approximately 2000 MW of SCE load and develop an operating procedure to bypass the phase shifting transformer in the Mead-Phoenix Transmission Project. Relays to support the SPS would be installed at existing substation sites as needed.

4.2.1.4 Purpose for constructing said transmission line:

The DPV2 project is primarily driven by the need to provide additional high-voltage electrical transmission infrastructure to enhance competition among energy suppliers, and increase reliability of supply, which will enable California utilities to reduce energy costs to customers over the life of the Project. Specifically, DPV2 will increase regional transmission capacity by

1,200 MW. Chapter 2 of Exhibit B-2 (PEA) contains a more detailed discussion of the purpose and need for the Project.

The DPV2 project is expected to provide a number of economic benefits to Arizona including employment and related tax revenues during construction, and property tax revenues in future years (see Exhibit J-3). These include the following:

- Provide approximately 150 jobs during the two-year construction phase
- Create positive economic impacts from all direct, indirect, and induced employment totaling an estimated $85 million
- Generate property tax revenues to state and local government during the construction phase and the first 10 years of operation of approximately $24 million

DPV2 would provide strategic and economic benefits to Arizona, California, and the Southwest including enhanced power pooling opportunities, increased emergency interconnection support, improved reliability, and increased utilization of existing Arizona generation facilities.

4.2.2 General location:

4.2.2.1 Description of the geographic points between which the transmission line will run:

The proposed 500kV transmission line route would originate at the Harquahala Switchyard located in Section 31, Township 2 North, Range 8 West, Gila and Salt River Base and Meridian, in Maricopa County, Arizona and terminate at SCE's Devers Substation in Riverside County, California.

Three switchyard interconnection options are possible for the proposed project including (1) Harquahala Generating Station, (2) Palo Verde, and (3) the potential Harquahala Junction Switchyard. For the Harquahala-West Subalternate route, the line would originate at Harquahala Switchyard and terminate at the Devers Substation, as described above. For the Palo Verde Subalternate route, the line would originate at the PVNGS

Switchyard located in Section 34, Township 1 North, Range 6 West, Gila and Salt River Baseline and Meridian.

The Harquahala Junction Switchyard was described as an interconnection option for the APS Palo Verde Hub to TS5 CEC (Case No. 128) and also is an interconnection option for DPV2 under the ongoing joint project discussions among APS, SCE, and HGC. The Harquahala Junction Switchyard would be located in Section 25, Township 2 North, Range 8 West, Gila and Salt River Baseline and Meridian.

4.2.2.2 Straight-line distance between such geographic points:

The total straight-line distance of the proposed 500kV transmission line route between the Harquahala and Devers switchyards is approximately 170 miles. The distance between the Palo Verde and Devers switchyards is approximately 186 miles.

The straight-line distance in Arizona from the state line to the Harquahala Switchyard is approximately 83 miles; approximately 99 miles to the Palo Verde Switchyard; and approximately 88 miles to the proposed Harquahala Junction Switchyard.

4.2.2.3 Length of the transmission line for each alternate route:

The length of the proposed route is approximately 230 miles between Harquahala and Devers, including approximately 102 miles of transmission line in Arizona. The length of the Harquahala West Subalternate route is approximately 216 miles between Harquahala and Devers. The Palo Verde Subalternate route is approximately 240 miles between Palo Verde and Devers.

The total length of the Devers-Harquahala Junction 500kV route, with origination at the Harquahala Junction Switchyard, would be approximately 225 miles.

4.2.3 Detailed dimensions:

4.2.3.1 Nominal width of right-of-way requested:

SCE is requesting approval of a nominal 130-foot-wide right-of-way on BLM and state land, and a nominal 160-foot-wide right-of-

way on private land. In 1989, approximately 134 miles (2,112 acres) of right-of-way were granted to SCE in perpetuity by the BLM, which includes 92.7 miles in Arizona and 57.2 miles of the proposed route in California. The majority of the right-of-way for the proposed route is located adjacent to existing 500kV transmission line rights-of-way including the DPV1 right-of-way. In this Application, SCE requests that a 1,000-foot-wide corridor be reserved for the following route segments within which the exact location of the transmission line would be determined according to right-of-way considerations, site-specific design, and environmental requirements:

- the 5-mile segment parallel to the Harquahala-Hassayampa transmission line between the Harquahala Generating Station and Harquahala Junction, 500 feet on either side of the existing transmission line;

- the Harquahala-West Subalternate route, 500 feet on either side of the section lines and natural gas pipeline right-of-way;

- and the Palo Verde Subalternate route, 500 feet on either side of the existing DPV1 transmission line.

4.2.3.2 Nominal length of span:

The span length between structures would range from a minimum of 400 feet to a maximum of 2,200 feet with an average of 1,550 feet or about 3.4 towers per mile of line for lattice steel towers. Typical span lengths for the 500kV tubular-steel poles would be 1,320 feet or about 4 poles per mile. Final design characteristics would be determined in the detailed design phase of the Project and would be influenced by the terrain, land use, and economics. The span lengths are also, in part, subject to variation to achieve site-specific mitigation objectives.

4.2.3.3 Maximum height of supporting structures:

The height of a typical single-circuit lattice steel tower would be approximately 150 feet, and 140 feet for a typical tubular-steel pole. The maximum height of a single-circuit lattice steel tower may be 195 feet and the maximum height of a tubular steel pole

may be 160 feet depending on final engineering. The heights of the existing double-circuit structures range from 240 feet to 289 feet.

4.2.3.4 Minimum height of conductor above ground:

The conductor height would vary with the minimum height above ground at least 35 feet.

4.2.4 Estimated costs of proposed transmission line:

The estimated cost of the Arizona portion of the DPV2 project is approximately $143 million (in 2005 dollars) for the proposed Devers-Harquahala 500kV transmission line route. The table below provides the estimated construction and right-of-way costs for the proposed and subalternate routes. These estimates exclude allocated costs such as administrative and general, pensions and benefits, and financing costs.

Route Description	Length of Route (miles)	Construction Cost (millions)	Right-of-Way Cost (millions)
Proposed Devers-Harquahala Route	102	$137	$6
Harquahala-West Subalternate Route	88	$121	$4
Palo Verde Subalternate Route	112	$149	$2

4.2.5 Description of the proposed and subalternate routes:

Proposed Route

The Arizona portion of the proposed DPV2 project would consist of the construction of 102 miles of 500kV transmission line from the existing Harquahala Switchyard, located in Maricopa County to the Colorado River, as illustrated in Figure 2. While the proposed route would terminate at the Harquahala Switchyard, SCE would utilize the existing Harquahala-Hassayampa 500kV transmission line and the existing Hassayampa-PVNGS 500kV interconnection to provide a path to the PVNGS Switchyard. A CEC for the Harquahala-Hassayampa transmission line project was issued by the ACC in Case No. 96 (Decision No. 62655). The line was constructed in 2001. The proposed Devers-Harquahala 500kV transmission line would exit the Harquahala Switchyard and parallel the Harquahala-Hassayampa 500kV line in an easterly direction for approximately 5 miles to its intersection with the DPV1 right-of-way.

From that point, the route would then turn north and parallel the DPV1 single-circuit 500kV line for approximately 2.7 miles to I-10, where it would cross the interstate highway and proceed to a point 1 mile northwest of Burnt Mountain. The route would then turn west and generally parallel the I-10 and 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 right-of-way just north of its Wenden Pump Station north of the Eagletail Mountains.

The route would parallel the El Paso Natural Gas pipeline right-of-way and the DPV1 line for approximately 56 miles, crossing the Ranegras Plain, through approximately 25 miles of the KOFA NWR and the La Posa Plain, crossing Arizona State Highway 95 before it continues 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.

Along the 5-mile segment of the route parallel to the existing Harquahala-Hassayampa 500kV line, the Devers-Harquahala 500kV line would be constructed on new single-circuit tubular-steel poles to match the structures of the existing line. Once the Devers-Harquahala 500kV line turns north to parallel the existing DPV1 line, new single-circuit lattice steel towers would be constructed to match the existing DPV1 towers along the route to Copper Bottom Pass. When DPV1 was constructed, conductors for the DPV2 line were installed on the double-circuit towers as the second circuit on 13 four-legged lattice steel towers, along approximately 3 miles through Copper Bottom Pass.

The California portion of the Devers-Harquahala 500kV transmission line is illustrated in Figure 1. It would extend 128 miles from the Colorado River to the Devers Substation near Palm Springs in Riverside County, California.

The majority of the proposed 500kV line route is located within a designated utility corridor on public land managed by the BLM as specified in the BLM Resource Management Plans. Construction of the proposed Devers-Harquahala line would be located within a nominal 130-foot-wide right-of-way that was granted in perpetuity to SCE by the BLM in 1989 and is adjacent to the DPV1 right-of-way. Additional rights-of-way would be acquired on private, state, and other federal land, including approximately 5 miles of additional right-of-way between the junction of the proposed Devers-Harquahala route with the DPV1 line and the Harquahala Switchyard,

adjacent to a portion of the existing Harquahala-Hassayampa 500kV line. The proposed route also would parallel APS' planned Palo Verde to TS5 500kV line, recently approved by the ACC Case No. 128 (Decision No. 68063), for approximately 5.5 miles from the point where the proposed Devers-Harquahala line would turn north (after paralleling the Harquahala-Hassayampa line) to the point where it would then turn west.

Harquahala-West Subalternate Route

This subalternate route would exit the Harquahala Switchyard directly to the west for 12 miles, and then follow the El Paso Natural Gas pipeline corridor northwest for 9 miles to its intersection with the proposed Devers-Harquahala 500kV route. The route would be located in a designated BLM utility corridor for the portion that parallels the pipeline right-of-way. New right-of-way would need to be acquired across private, state, and BLM land for this entire route. The Harquahala-West Subalternate route would be 14 miles shorter than the proposed route (a total distance of 216 miles) and would require about 48 fewer 500kV towers than the proposed route. This alternative would have a greater level of environmental impact than the proposed route and is not the Applicant's preferred route.

Palo Verde Subalternate Route – Interconnection Option

The proposed route for the Devers-Harquahala 500kV transmission line is generally parallel to SCE's existing DPV1 500kV line, except for the 5-mile segment from Harquahala Junction to the Harquahala Switchyard. Unlike the DPV1 and DPV2 routes described in the 1989 BLM right-of-way grant, the proposed project involves building a new 500kV transmission line from Devers to the Harquahala Switchyard and interconnecting to the existing Harquahala-Hassayampa 500kV transmission line.

As an interconnection option to termination of the Devers-Harquahala 500kV transmission line at Harquahala, the Palo Verde Subalternate route would terminate at the PVNGS Switchyard (see Figure 3). This would require the construction of a new 500kV transmission line parallel to the DPV1 transmission line, a distance of approximately 15 miles from the Harquahala Junction to the PVNGS Switchyard, as an alternative to interconnecting with the Harquahala-Hassayampa line. This alternative is not the Applicant's preferred route.

Harquahala Junction Switchyard – Interconnection Option

This option would be the same as the proposed route, but would reduce the length of the 500kV transmission line required for the proposed Devers-Harquahala route by approximately 5 miles. SCE, Arizona Public Service Company (APS) and Harquahala Generating Company (HGC) have been discussing a potential joint project arrangement in which the parties (subject to the parties' ability to reach a mutually acceptable agreement) would share the existing Harquahala-Hassayampa 500kV transmission line and thereby defer the need for APS to construct an additional 500kV line into the Palo Verde Hub. This arrangement would provide for the interconnection of the proposed Devers-Harquahala line, the existing Harquahala-Hassayampa line, and the certificated APS Palo Verde Hub-TS5 line at a new Harquahala Junction Switchyard. The Palo Verde Hub-TS5 line and Harquahala Junction Switchyard were certificated in 2005. Detailed discussions among the parties regarding the proposed joint project arrangement are ongoing and are the subject of a non-disclosure agreement.

4.2.6 Land ownership:

In Arizona, the proposed route traverses approximately 55.4 miles of BLM land, 23.8 miles of USFWS land, 10.8 miles of Arizona State Land Department (ASLD) land, 12.1 miles of private land, and 0.1 mile of Department of Defense – Yuma Proving Ground land.

In 1989, 92.7 miles (1,461 acres) of right-of-way for the DPV2 transmission line in Arizona were granted to SCE in perpetuity by the BLM (Exhibit B-2). The grant included 55.4 miles of BLM land traversed by the proposed Devers-Harquahala line, 23.8 miles of USFWS land, and approximately 10 additional miles of the DPV2 line that would terminate at PVNGS. (The total length of the DPV2 transmission line right-of-way grant differs from the length of the proposed route due to inaccuracy in the previous method of measurement.)

5. Jurisdictions:

5.1 Areas of jurisdiction (as defined in A.R.S. Section 40-360) affected by this route:

Jurisdictions crossed by the proposed route are Maricopa and La Paz counties; no incorporated towns or cities would be affected.

5.2 Designation of proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of affected areas of jurisdiction:

The proposed route is not located contrary to zoning ordinances or general plans of any affected areas of jurisdiction. The proposed route is located near or in existing utility rights-of-way and within a BLM designated utility corridor.

6. Description of the environmental studies the Applicant has performed:

Relevant previous studies performed by the Applicant and related agency documents and actions are listed in the following table.

DEVERS – PALO VERDE NO. 2
PREVIOUS STUDIES, AGENCY APPROVALS AND ACTIONS

Document	Date	Agency	Action
Certificate of Public Convenience and Necessity (CPCN) Application and Proponents Environmental Assessment (PEA)	12/85	CPUC	Initial filing
Draft Environmental Impact Report (DEIR)	03/87	CPUC	State of California public and agency review
Supplemental Draft Environmental Impact Statement (SEIS)	05/87	DOI/BLM	Review in compliance with NEPA
Final EIR	08/05/87	CPUC	Compliance with CEQA
Arizona CEC Application filed (Case No. 76)	11/16/87	ACC	Filed application for State of Arizona review (withdrawn)
Amended PEA filed (No. 85-12-012)	08/88	CPUC	Incorporated SCE/CPUC cost/benefit study
Addendum to Final EIR	09/88	CPUC	Review required pursuant to amended PEA
Final SEIS[1]	10/88	DOI/BLM	Proposed project and route adjacent to the DPV1 approved
Interim Opinion (Decision No. 88-12-030)	12/09/88	CPUC	Interim Order Granting conditional approval for CPCN and route
Record of Decision[2]	02/21/89	BLM	Approved project and preferred route in compliance with NEPA
Certificate of Right-of-Way Compatibility[2]	03/01/89	USFWS	Certifies compatibility of 500kV transmission line on KOFA NWR land
Right-of-Way Grant (CA-17905/AZ-23805)[2]	08/11/89	BLM	Right-of-way permitted across federal land
PEA[2]	04/11/05	CPUC	Application for CPCN and PEA filed
Application for Right-of-Way Amendment	05/20/05	BLM	Application to amend existing grant to add two series capacitor sites, Midpoint Substation site, and parcel addition
Right-of-Way Permit Application[3]	10/31/05	USFWS	Application for right-of-way crossing the KOFA NWR
SCE Ten-Year Plan	01/30/06	ACC	Notice of SCE's plan to construct in Arizona
Notice of Intent for EIS/EIR	12/7/05	BLM, CPUC	Notice of BLM and CPUC's intent to prepare a joint EIS/EIR

[1]Exhibit B-1 [2]Exhibit B-2 [3]Exhibit B-3

Beginning in 2003, the Environmental Planning Group (EPG) consulting firm coordinated the preparation of environmental studies to support this application, including the PEA (Exhibit B-2).

Environmental resource studies, including data collection and impact assessment, were conducted. Potential impacts to the natural, human, and cultural environment were evaluated including but not limited to land use, visual, biological, and cultural resources. Existing data from various agencies, aerial photographs, maps, and literature were reviewed and field surveys were conducted. A study corridor measuring 2 miles on each side of the proposed route's centerline was studied for potential land use and visual resource impacts. In addition, intensive cultural resource and biological resource field surveys were conducted for the proposed and subalternate routes.

Potential impacts were identified through an impact assessment process that compared the proposed project and the existing environment. Mitigation measures incorporated into the scope of the proposed project were based on those specified in the Right-of-Way Grant issued by the BLM for the DPV2 project. Examples included the use of non-specular conductors; matching existing structure types, heights, and spans; dulled metal structure surfaces; use of existing access; and biological and cultural resource monitoring, as necessary, among other mitigation measures.

Construction of the Harquahala-West Subalternate route would result in a greater amount of adverse environmental impact than the proposed route. Because this subalternate route would not parallel an existing transmission line, visual impacts to residential viewers would occur. Also, construction of a new access road for a portion of the subalternate route would be required, causing more ground disturbance than the proposed Devers-Harquahala route.

Although the construction and operation of the Palo Verde Subalternate route would be environmentally compatible, SCE's preference is to construct the proposed Devers-Harquahala route. The Palo Verde Subalternate route is proposed to be used if SCE were not able to acquire the existing Harquahala-Hassayampa transmission line, in order to provide a direct interconnection with the PVNGS Switchyard.

The option to interconnect with the Harquahala Junction Switchyard would reduce the length of the 500kV line required for the Devers-Harquahala route by approximately 5 miles, and therefore reduce the amount of ground disturbance that would result from construction of new towers between Harquahala Junction and the Harquahala Generating Station.

7. Rationale for route preference:

The proposed route impacts described in this application are within the range of impacts deemed "environmentally compatible" in past Siting Committee decisions. The proposed

route is the preferred route in Arizona based on environmental, system planning, mitigation, and cost considerations. Environmental advantages include the following:

- The majority of the proposed route is both within and/or adjacent to an existing utility right-of-way (DPV1 line) and within a BLM designated utility corridor.
- Existing access roads will be used to the maximum extent possible to minimize land disturbance during construction.
- No residences are within the proposed right-of-way or would be affected by the proposed Devers-Harquahala transmission line route.
- No conflicts with any planned residential or recreational uses along the proposed route are anticipated.
- No long-term adverse effects to special status species, unique habitats, or archaeological and historic sites are anticipated.
- The Project will match existing transmission structure types wherever possible, use non-specular conductors, and use dulled steel finish structures to reduce visual impacts.
- No adverse noise effects or interference with communications signals are anticipated.

SOUTHERN CALIFORNIA EDISON

BY: _____

Original and 25 copies of the foregoing hand delivered and filed with the Director of Utilities, Arizona Corporation Commission, this 1st day of MAY, 2006.

EXHIBIT A
LOCATION AND LAND USE MAPS

EXHIBIT A
LOCATION AND LAND USE MAPS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"*Where commercially available, a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes less than 50 miles in length, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by the applicant's order of preference.*"

Provided below is a list of the exhibits and their titles:

Exhibit A-1 – Proposed and Subalternate Routes
Exhibit A-2 – Land Ownership and Jurisdiction
Exhibit A-3 – Existing and Planned Land Use

Exhibit A-1
PROPOSED AND SUBALTERNATE ROUTES
Devers - Palo Verde No. 2
Transmission Line Project

Sources

United States Geological Survey (USGS), Phoenix, AZ (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. April 28, 2006

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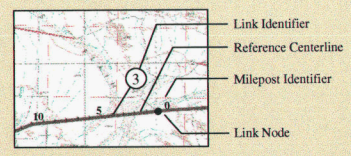
General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- State Boundary
- County Boundary
- Substation/Switchyard
- KOFA National Wildlife Refuge
- Series Capacitor



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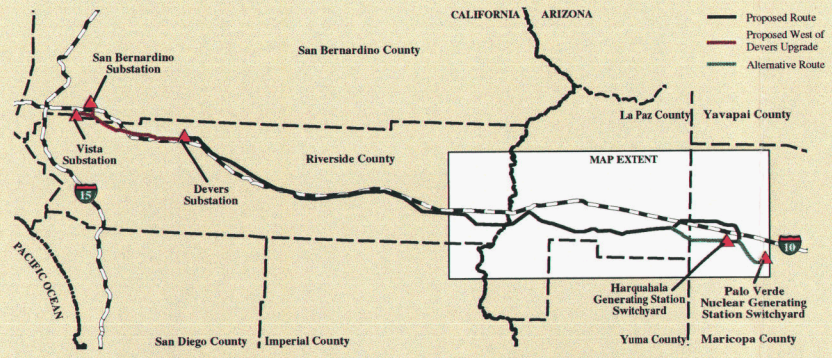

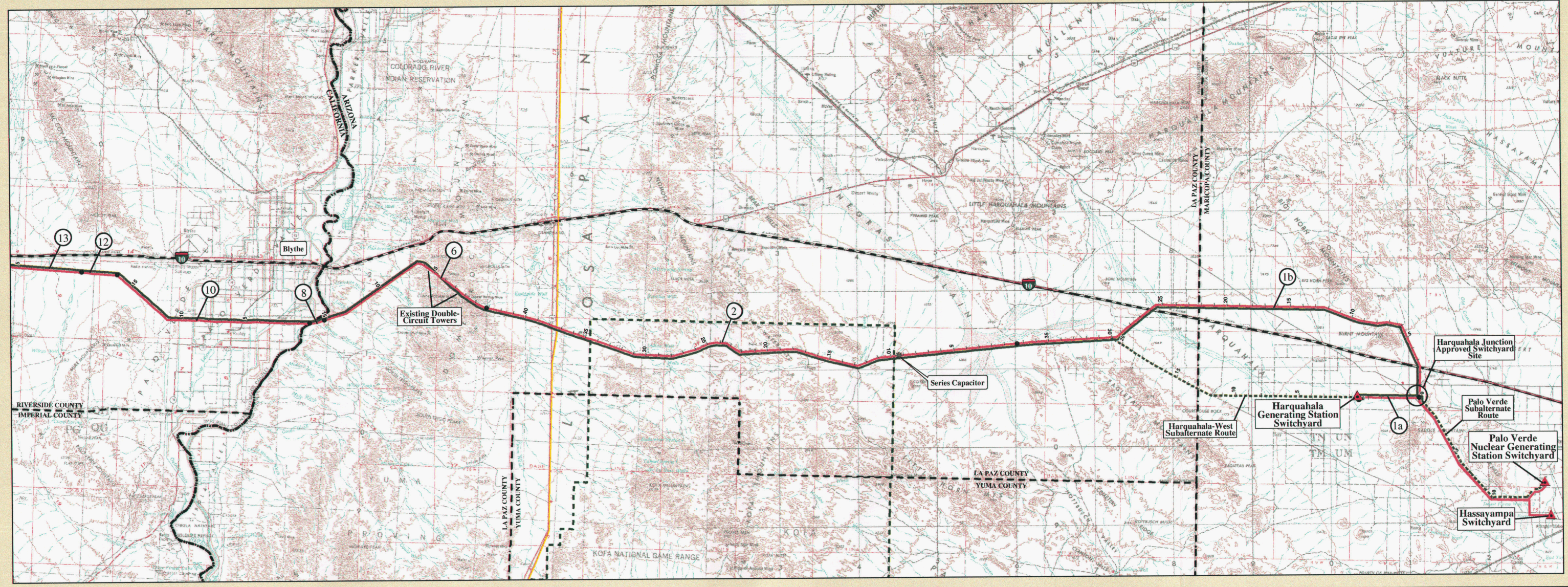

Exhibit A-2
LAND OWNERSHIP AND JURSIDICTION

Devers - Palo Verde No. 2
Transmission Line Project

Sources

United States Geological Survey (USGS), Phoenix, AZ (1969), Salton Sea, AZ (1969), 1:250,000-scale topographic maps. Arizona land ownership, EPG, Inc. 2000. Arizona land jurisdiction, Town of Quartzsite, 2003. KOFA, U.S. Fish and Wildlife Service. U.S. Bureau of Land Management, California State Office, June 1998. U.S. Department of the Interior, Bureau of Land Management, BLM Arizona Access Guide (La Posa), October 1999. Devers to Palo Verde No.2 PEA (1988), SEIS (1988).

Prepared By: Environmental Planning Group, Inc. April 28, 2006

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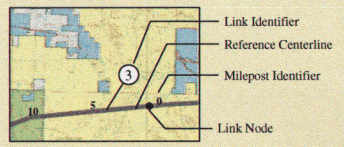
Ownership

- Bureau of Land Management
- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- Native American Tribe
- Yuma Proving Ground
- State
- Private

General Reference Features

- Proposed 500kV Transmission Line Route
- Alternative 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 161kV Transmission Line
- Natural Gas Pipeline
- Central Arizona Project Canal (USBR)
- State Boundary
- County Boundary
- Substation/Switchyard
- Series Capacitor



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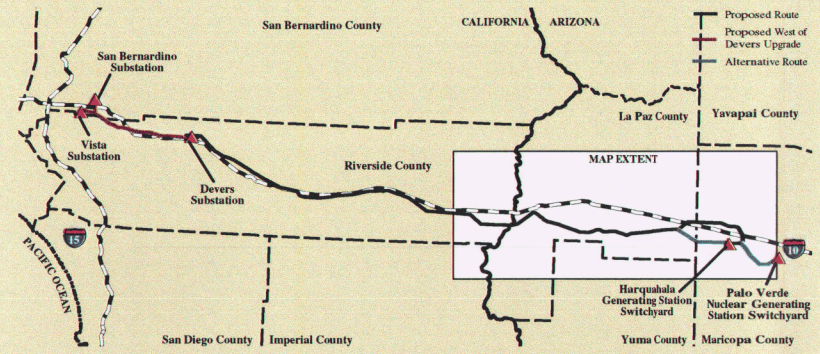

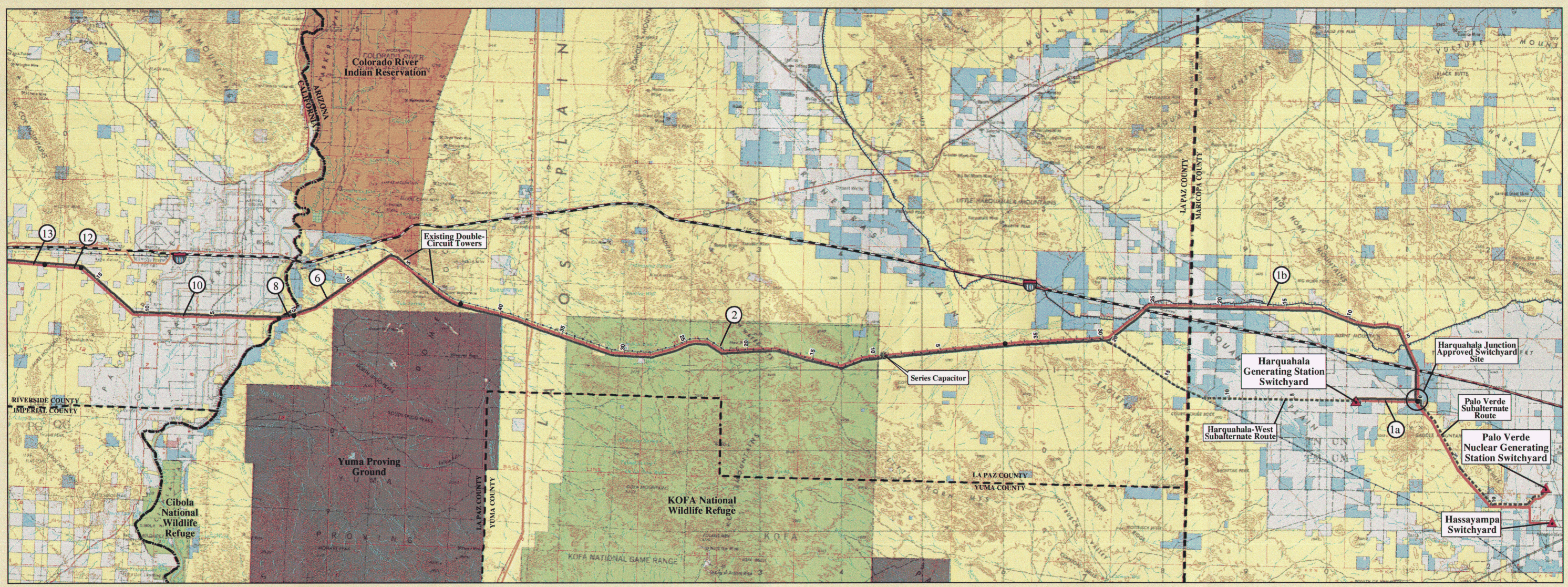

Exhibit A-3
EXISTING AND PLANNED LAND USE
Devers - Palo Verde No. 2 Transmission Line Project
Panel 1 of 2

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. April 28, 2006

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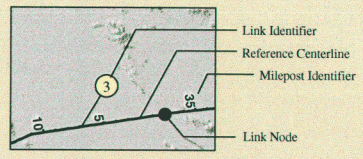
Land Use

EXISTING LAND USE
- Wilderness
- Residential - Low Density
- Single Family Dwelling Unit
- Industrial
- Agriculture
- Agriculture - Outstructure
- Communication Facility
- Abandoned Building
- Rest Area
- Airstrip

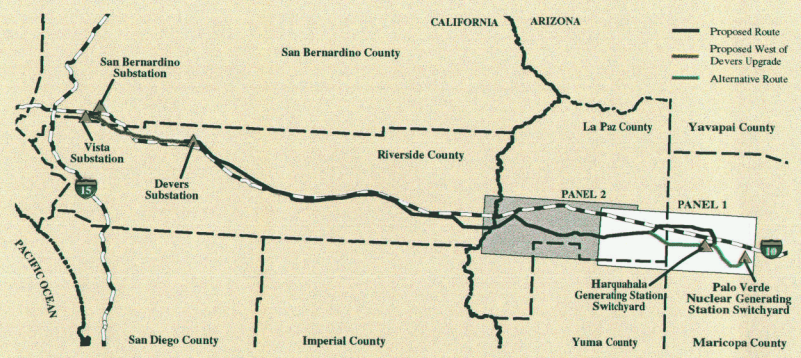
PLANNED LAND USE
- Rural Residential
- Utility
- Undesignated
- Platted Subdivision
- BLM Designated Utility Corridor

General Reference Features

- Proposed 500kV Transmission Line Route
- Subalternate Route
- Existing 500kV Transmission Line
- County Boundary
- Substation/Switchyard
- Interstate/Highway
- Central Arizona Project Canal
- Natural Gas Pipeline
- Roads
- Township and Range
- KOFA National Wildlife Refuge
- Series Capacitor



Panel Index Map



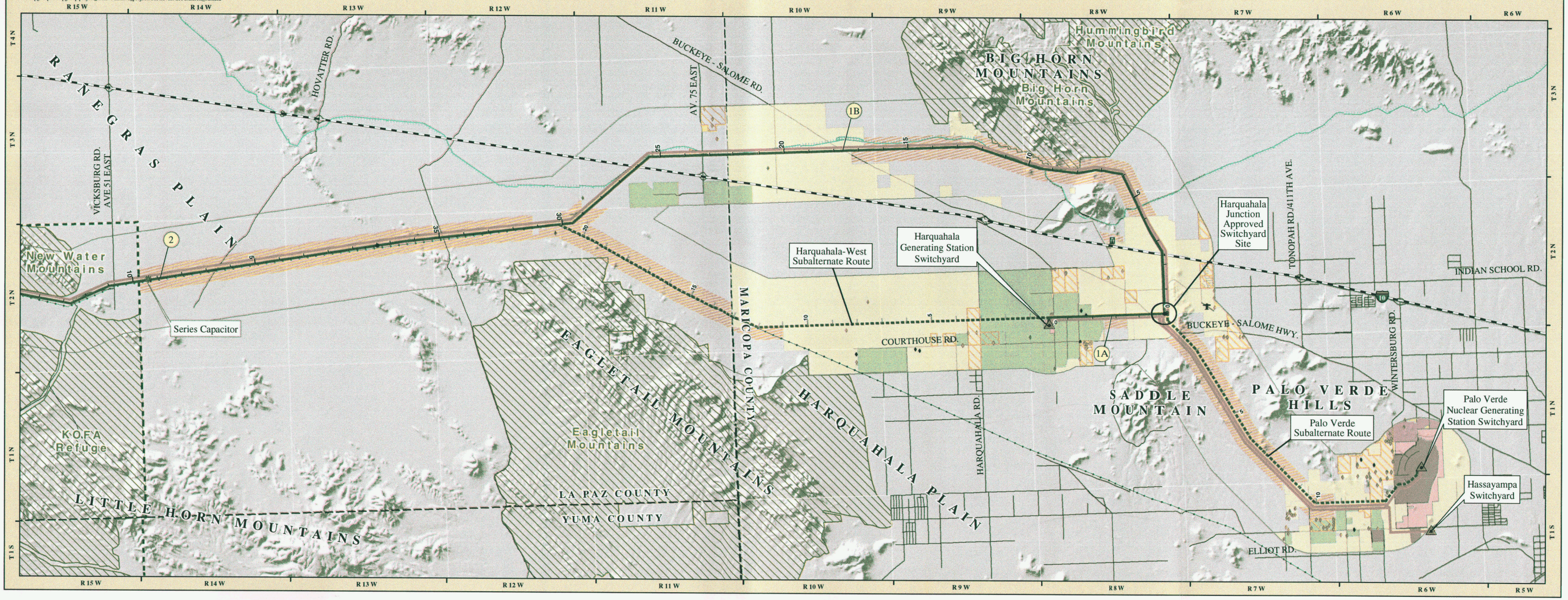


Exhibit A-3
EXISTING AND PLANNED LAND USE
Devers - Palo Verde No. 2 Transmission Line Project
Panel 2 of 2

Sources

United States Geological Survey (USGS), hillshade derived from USGS 30-meter Digital Elevation Models. Land use data, EPG, Inc. 2003.

Prepared By: Environmental Planning Group, Inc. April 28, 2006

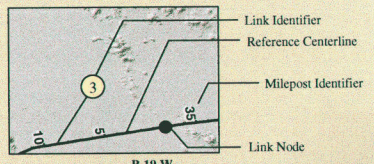
Land Use

EXISTING LAND USE
- Wilderness
- Residential - Low Density
- Single Family Dwelling Unit
- Communication Facility

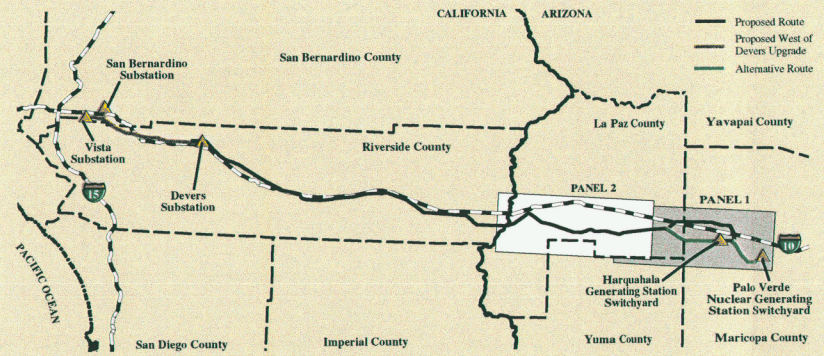
PLANNED LAND USE
- Undesignated
- BLM Designated Utility Corridor

General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Existing 161kV Transmission Line
- State Boundary
- County Boundary
- Interstate/Highway
- Central Arizona Project Canal
- Natural Gas Pipeline
- Roads
- Township and Range
- Series Capacitor



Panel Index Map



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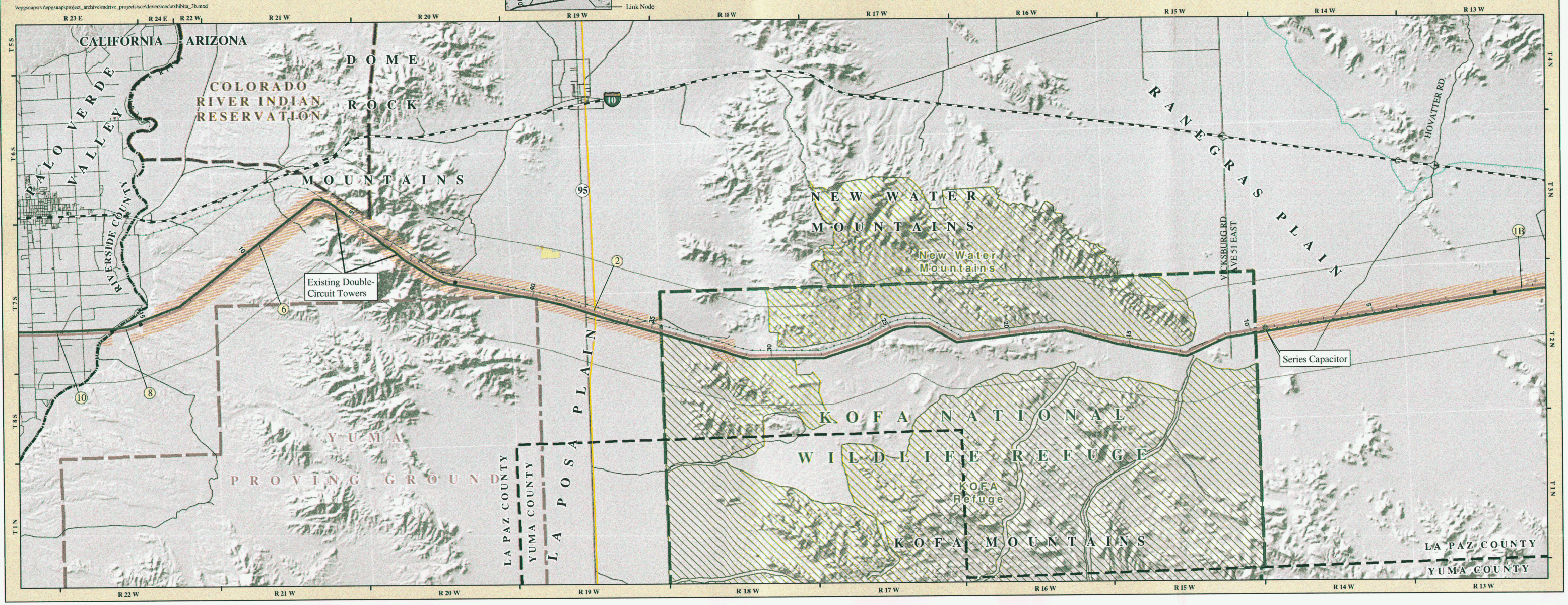

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EXHIBIT B
ENVIRONMENTAL REPORTS

EXHIBIT B
ENVIRONMENTAL REPORTS

As stated in Arizona Corporation Commission Rules of Practice R-14-3-219:

"Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as part of this exhibit."

Provided for this exhibit are the following reports:

Exhibit B-1 Final Supplemental Environmental Impact Statement (FSEIS) – *Under Separate Cover*

The U.S. Department of Interior – BLM approved the DPV2 project and the proposed route following completion of a Final Supplemental Environmental Impact Statement and issued a Record of Decision in 1989 in compliance with the NEPA. Later that year, BLM issued a Right-of-Way Grant to SCE for the construction, operation, and maintenance of the DPV2 across federal lands, pursuant to Title V of the Federal Land Policy and Management Act of 1976. The majority of the proposed DPV2 500kV transmission line would be constructed within the 130-foot-wide right-of-way on public lands granted in perpetuity to SCE by the BLM in 1989.

Exhibit B-2 Proponent's Environmental Assessment (PEA) – *Under Separate Cover*

The PEA was prepared in support of the Application for Certificate of Convenience and Necessity that was filed by SCE with the California Public Utilities Commission. This document provides a description of the purpose and need, details of the proposed project, description of the existing environmental setting, environmental impact assessment summary, and proposed mitigation. Appendices to the PEA include the socioeconomic, biological resources, cultural resources, and electrical and magnetic effects technical reports.

Exhibit B-3 USFWS Right-of-Way Permit Application

This application was for a permit to construct, operate, and maintain the portion of the proposed Devers-Harquahala 500kV transmission line that would cross the KOFA National Wildlife Refuge, pursuant to 50 CFR Section 29.21, et seq. The application was submitted to the U.S. Fish and Wildlife Service by SCE on October 31, 2005.

EXHIBIT B-3
USFWS RIGHT-OF-WAY PERMIT APPLICATION

SOUTHERN CALIFORNIA
EDISON
An *EDISON INTERNATIONAL* Company

United States Department of the Interior
U. S. Fish & Wildlife Service
P. O. Box 1306
500 Gold Ave. SW
Albuquerque, New Mexico 87103

October 31, 2005

Attn.: Barbara Rose

Subject: DPV2 500kV Transmission Line Project

Southern California Edison Company (SCE) is proposing to construct a new 500kilovolt (kV) transmission line (T/L) between California and Arizona known as the Devers-Harquahala 500kV T/L. Operation of the proposed line would require that upgrades be made to certain existing SCE electrical transmission facilities in California. The proposed line and transmission facility upgrades are known as the Devers-Paloi Verde No. 2 Transmission Project (DPV2).

Enclosed are 8 copies of an application and maps for the proposed project across lands of the Kofa National Wildlife Refuge. Also enclosed are 2 copies of the Proponent's Environmental Assessment (PEA).

Please have these documents distributed to the Refuge and other Fish & Wildlife Service Divisions as you see fit. Additional copies of the PEA are available upon request.

Please have these documents reviewed and provide the necessary documentation for SCE to proceed with this project.

Corporate Real Estate
9500 Cleveland Ave, #100
Rancho Cucamonga, CA 91730
Fax: 909-944-4416

If you have any questions or need additional information, please call me at (909) 944-4413.

Sincerely,

Laura L. Verdugo
Right of Way Agent

Llv
Enclosures

RIGHT-OF WAY PERMIT APPLICATION

FOR

THE DEVERS-PALO VERDE NO. 2 500 KV TRANSMISSION LINE

CROSSING OF THE

KOFA NATIONAL WILDLIFE REFUGE

YUMA COUNTY, ARIZONA

Submitted to the U.S. Fish and Wildlife Service

Prepared by Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, CA 91770

October 28, 2005

APPLICATION PURPOSE

This document is an application to the U. S. Fish and Wildlife Service (USFWS) for a right-of-way (ROW) permit to construct, operate and maintain the portion of the Devers-Palo Verde No. 2 (DPV2) Transmission Line Project that would cross the KOFA National Wildlife Refuge (KOFA). This application is made pursuant to 50 CFR Section 29.21, et seq.. As shown in Figure 1 (Attachment A), the proposed line would be located in the center of a new 130 foot right-of-way that is immediately adjacent to and southerly of the existing Devers-Palo Verde No.1 (DPV1) 500 kV transmission line right-of-way. The length of the proposed line through the KOFA is 23.8 miles. The right-of-way would encompass an estimated 375 acres that would be used for the line and spur roads from the existing access road to the proposed towers.

PROJECT DESCRIPTION

Southern California Edison Company (SCE) proposes to construct a new 230-mile, high-voltage electric transmission line between California and Arizona known as the Devers-Harquahala 500 kilovolt (kV) transmission line. Operation of the proposed line would require that upgrades be made to certain existing SCE electrical transmission facilities in California. The proposed line and transmission facility upgrades are known as the Devers-Palo Verde No. 2 Transmission Project (DPV2).

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. A Proponent's Environmental Assessment (PEA) was included in the CPUC filing. A copy of the PEA is enclosed in this application for reference purposes. A detailed description of the DPV2 Project is provided in Chapter 3 of the enclosed PEA.

The proposed route for the Devers-Harquahala 500 kV transmission line is located generally parallel to SCE's existing Devers-Palo Verde No.1 500 kV transmission line (DPV1) as shown in Figure 1 (Attachment A). A portion of the line would parallel the DPV1 line across 23.8 miles of the KOFA with the centerline of the new DPV2 structures being located 130 feet south of the DPV1 line on a proposed new 130 foot right-of-way as shown in Figure 3-6 of the PEA.

In February, 1989, the US Department of the Interior – Bureau of Land Management (BLM) issued a Record of Decision (Attachment B) approving the proposed route for the DPV2 Project as described in the December 1988 Supplemental Environmental Impact Statement (SEIS). The DPV2 route that was approved in 1989 followed the entire length of the existing DPV1 line, including the KOFA, and terminated at the Palo Verde Nuclear Generating Station (PVNGS). Now the proposed DPV2 transmission line would terminate at the existing Harquahala Generating Station switchyard, located approximately 16 miles directly northwest of PVNGS (see PEA Map 1-1). The 1989 BLM approved route is the same route proposed in 1989 except for a distance of 4.8

miles from the DPV1 corridor to the Harquahala Generating Station[1]. The 1989 BLM approved DPV2 route includes the proposed DPV2 line route across the KOFA. In August 1989, the BLM issued a Right-of-Way Grant (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 BLM Right-of-Way Grant contains only a listing of land sections managed by the BLM.

The proposed DPV2 line route crossing of the KOFA is on land under the jurisdiction of the USFWS. A Certificate of Right-of-Way Compatibility (CRC) (Attachment C) was issued March 1, 1989 by the USFWS Regional Director for the proposed DPV2 line route. However, a Right-of-Way Permit for the proposed DPV2 line has not been issued by the USFWS. This Application requests that the USFWS issue that Right-of-Way Permit.

ENVIRONMENTAL ANALYSIS

SCE understands that the USFWS may want to re-evaluate the CRC issued in 1989 for the proposed line. To assist in this re-evaluation, SCE has enclosed: (i) the above referenced PEA which contains the information required by 50 CFR Subpart B, Article 29.21-2(a)(4); and (ii) a series of strip maps showing the right-of-way across the KOFA in compliance with 50 CFR Subpart B, Article 29.21-2(b). The PEA describes the entire DPV2 Project. The PEA contains information regarding environmental information required by the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The USFWS may use the PEA for any necessary environmental review. Several PEA sections that are relevant to the proposed transmission line crossing of the KOFA include:

1) Section 3.1.1 (pages 3-1 through 3-3): this section presents an overview and history of the proposed project, including previous CRC issuance.

2) Section 3.1.2.1 (pages 3-5 through 3-13): this section describes alternative routes considered, including Subalternate Route 1 north of the KOFA, which was studied in response to concerns regarding potential impacts to the KOFA and protection of desert bighorn sheep. As shown in Table 3-3 (page 3-6), Subalternate Route 1 is 3.4 miles longer than the proposed route through the KOFA and would result in 82 acres of permanent ground disturbance, compared to 9 acres for the proposed route. This is primarily due to about 43 more miles of access and spur roads that would be required for the subalternate route. The need for new construction access in a separate corridor would result in potentially greater adverse impact to bighorn sheep than the proposed route.

3) Section 5.1.8 (pages 5-24 through 5-27): There are no federally listed threatened or endangered plants that have been documented in the Arizona portion of the study corridor. Impacts to sensitive wildlife species in Arizona are expected to be less than significant. Most species, if impacted at all, would be temporarily disturbed by

[1] As discussed on page 2-21 of the PEA, a 500 kV transmission line was constructed for the Harquahala Generating Company (HGC) from the Harquahala Switchyard to the Hassayampa Switchyard. . For the DPV2 Project, SCE would use the existing Harquahala – Hassayampa 500 kV line to complete the connection of the DPV2 Project to the Hassayampa Switchyard. The Hassayampa Switchyard is a satellite switchyard that is functionally equivalent to connecting at the PVNGS Switchyard.

construction activity and noise, and most would simply move away from the disturbance. The results of studies[2] conducted on desert bighorn sheep in the KOFA between 1978 and 1984 suggest that the effects of construction activities would neither be "negative nor severe". In that study, the most significant effect of construction of the DPV1 line was that radio-collared bighorn spent more time in the construction zone during construction than they did before (four years of data) or after (two years of data) construction.
4) Section 6.1 (pages 6-1 through 6-34): Mitigation measures contained in this section of the PEA were developed by SCE and the BLM to reduce potential impacts to less than significant levels. These measures are contained in the existing BLM right-of-way grant. Mitigation measures in addition to those contained in Section 6.1 of the PEA that are specifically applicable to the KOFA would be discussed and developed by SCE in cooperation with and approval of applicable USFWS representatives, as needed.

MAPS

Strip maps showing the location of the proposed transmission line are enclosed. The locational relationship of the existing DPV1 and proposed DPV2 right-of-ways is shown in Figure 1 (Attachment A). As illustrated in Figure 1, the proposed DPV2 line right-of-way would be located 130 feet immediately south and adjacent to the existing 160-foot wide DPV1 right-of-way.

CONSTRUCTION

As noted in Section 3.5 (page 3-65) of the PEA, construction of the DPV2 500kV transmission line will commence upon approval of the CPUC and other permitting agencies. Construction is currently scheduled to commence in March 2007. The construction of the proposed 500 kV line is presently planned to be performed by contract personnel with SCE responsible for administration and inspection. The estimated number of personnel and amount of equipment for each construction phase on the KOFA is shown in Table 1 (Attachment D). It is estimated that a total of 173 workers (full-time equivalent personnel) will be needed to construct the proposed line on the KOFA. Construction will occur in the six construction phases noted in Table 1 and is estimated to last a total of six months. Construction activities would be scheduled in conformance with seasonal limitations to minimize potential impacts to bighorn sheep, specifically during lambing season (PEA, pages 6-11 through 6-13).

Construction activities within the KOFA are discussed in the following sections of the PEA: 1) tower site surveys (page 3-69); 2) spur road work (page 3-71); 3) foundation installation (page 3-72); 4) tower assembly/erection (page 3-73); 5) conductor operations (page 3-74); and 6) final cleanup (page 3-77). No new main access roads are expected to be needed for the proposed line across the KOFA. Spur roads will be needed from the

[2] Smith, E.L., W.S. Gaud, G.D. Miller, and M.H. Cochran 1986. Studies of Desert Bighorn Sheep (Ovis Canadensis mexicana) in Western Arizona Impacts of the Palo Verde to Devers 500 kV Transmission Line Final Report – Volume II.

existing access road to each tower location. No construction yard will be located on the KOFA. Construction vehicles may be parked on spur roads near tower sites and material may be laid down at tower sites during a specific construction phase (e.g. – steel lay-down during tower erection). All construction activities will be coordinated with the appropriate USFWS/KOFA personnel.

ATTACHMENT A

DPV1/DPV2 RIGHT-OF-WAY CONFIGURATION ACROSS KOFA

Figure 1

PROPOSED DEVERS - PALO VERDE NO. 2 TRANSMISSION LINE

Sources

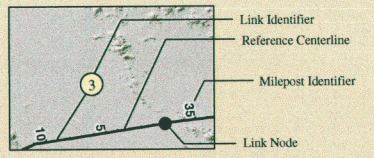
United States Geological Survey (USGS), hillshade derived from USGS 30-meterDigital Elevation Models.

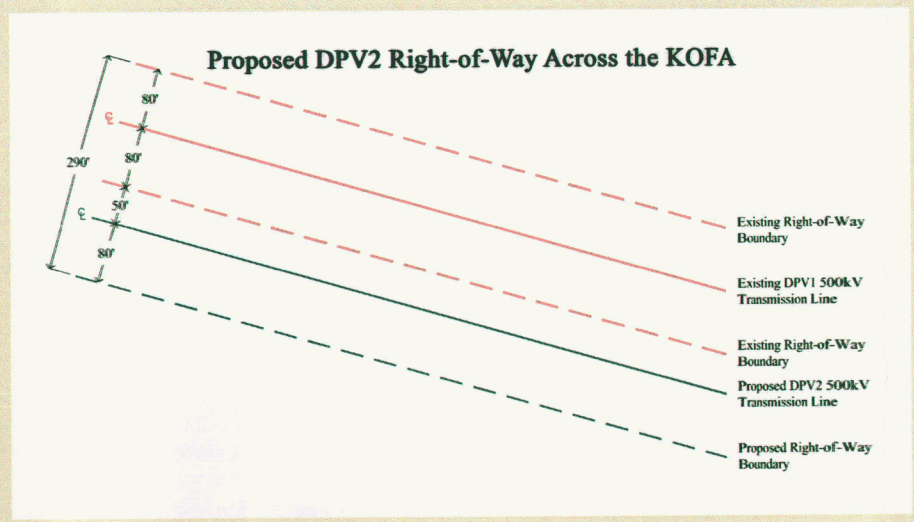
Jurisdiction

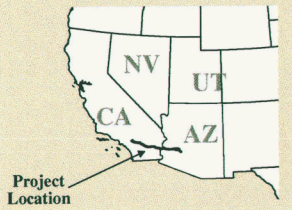
- Wilderness
- KOFA National Wildlife Refuge

General Reference Features

- Proposed 500kV Transmission Line Route
- Existing 500kV Transmission Line
- Natural Gas Pipeline
- County Boundary
- Roads
- Township and Range







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SOUTHERN CALIFORNIA EDISON
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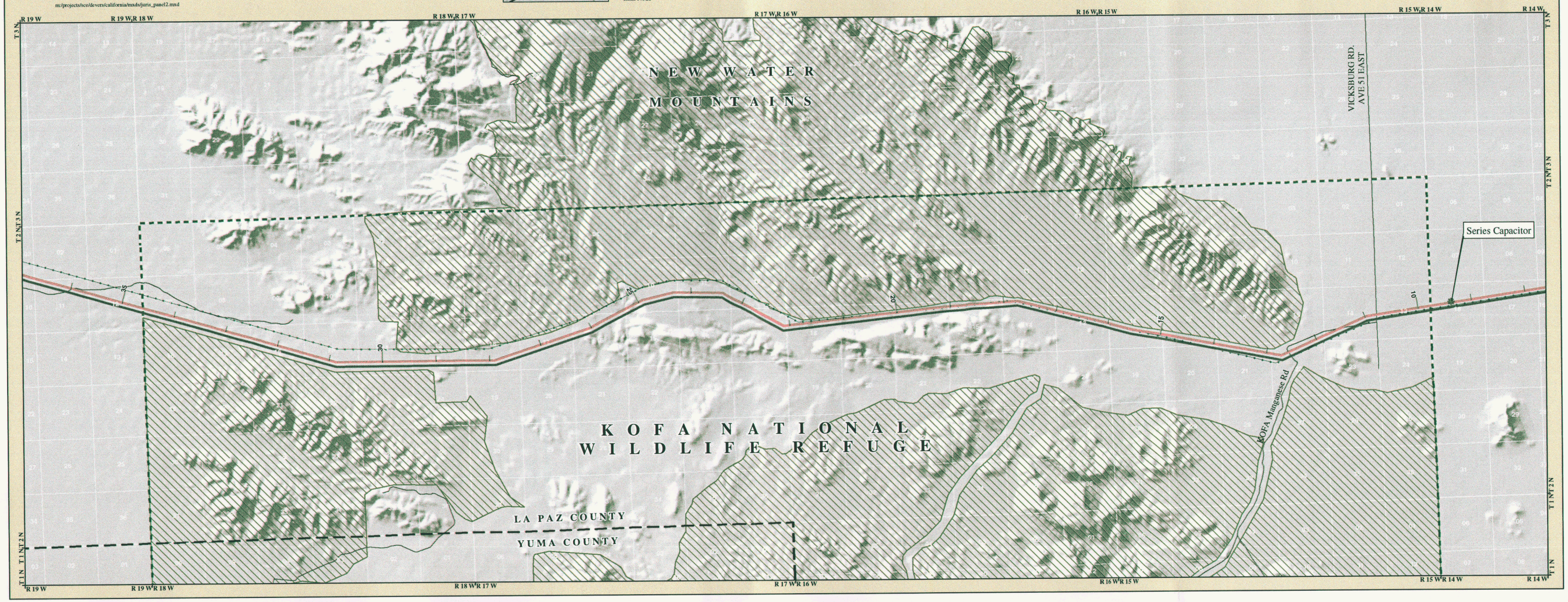


ATTACHMENT B

BUREAU OF LAND MANAGEMENT 1989 RECORD OF DECISION (ROD)

RECORD OF DECISION
DEVERS-PALO VERDE NO. 2 TRANSMISSION LINE PROJECT

Southern California Edison Company (SCE) in concert with other western utility companies proposes to construct a 500 kV transmission line from the vicinity of the Palo Verde Nuclear Generating Station (PVNGS), about 40 miles west of Phoenix, Arizona to the Devers Substation, near Palm Springs, California. The project participants includes SCE, members of the Southern California Public Power Authority (SCPPA) and the Modesto-Santa Clara-Redding Public Power Agency (M-S-R). The SCPPA has entitlements in PVNGS and M-S-R has entitlements in San Juan Unit 4, located in New Mexico. Both SCPPA and M-S-R need transmission line from the Phoenix area to California to deliver power from the two out-of-state energy resources.

The proposed transmission line was analyzed in a Supplemental Environmental Impact Statement (SEIS). A draft supplemental EIS was released for 60-day public review on May 8, 1987 and ended July 8, 1987. A complete description of the proposed project, including maps and diagrams of proposed facilities such as transmission lines and towers were included in that document and are included in this Record of Decision (ROD) by reference.

The Final SEIS was published and made available to the public on December 16, 1988 by a Notice of Availability published in the Federal Register. A thirty day period ended January 16, 1989.

The SEIS evaluated five alternatives, one of which included a no-action alternative:

1. Proposed Project: The proposed route would parallel SCE's existing 238-mile 500 KV Devers-Palo Verde No. 1 transmission line of which 112 miles is in Arizona and 126 miles is located in California.

2. Northern Alternative 1: This alternative's alignment parallels the proposed project and is parallel to DPV No. 1, for the first 51 miles in Arizona. From the proposed route (about 12 miles east of the Kofa National Wildlife Area), it turns northwesterly towards the town of Brenda, and through the Plomosa Mountains. The route then turns westerly through the southern portions of the Colorado Indian Reservation. Crossing the Colorado River, the route skirts the northern edge of Palo Verde Valley and rejoins the proposed route 12 miles west of Blythe. The remainder of the route is the same as proposed project.

3. Northern Alternative 2: This alternative departs the proposed alignment about 12 miles east of the Kofa NWR and proceeds towards Brenda. Southeast of Brenda, the route parallels I-10 through the Plomosa Pass. Then the alignment turns southwesterly along the edge of the mountains to a point about nine miles southwest of Quartzite where it rejoins the proposed route.

4. Southern Alternative: This alternative leaves the proposed route east of the Colorado River and turns southwest and crosses the river and lower Palo Verde Valley about 15 miles southwest of Blythe; it then heads northwest and rejoins the proposed route about 15 miles west of Blythe.

The no-action alternative considered the consequences of denying the proposal entirely.

The route alignment proposed by SCE is the preferred route of the Bureau of Land Management. It is also the environmentally preferred alternative for the following reasons. The route is utilized for interstate pipelines and transmission lines; impacts are confined to a utility corridor where environmental disturbances have already taken place. The original decision to route Devers-Palo Verde (DPV) No. 1 transmission line, which DPV No. 2 parallels, through the Kofa NWR was based on the greater potential for significant impact to bighorn sheep along the other alternatives. Detailed studies before, during and after construction of DPV No. 1 have not identified any significant adverse effect, and DPV No. 2 is expected to result in a similar negligible effects.

U.S. Fish and Wildlife Service is preparing a compatibility statement on the Kofa NWR segment, and has concurred with the Bureau's proposed action.

Northern Alternative 1, Northern Alternative 2, and Southern Alternative routes would require an additional 74 miles, 47 miles, and 32 miles, respectively, of new rights-of-way. The new and additional surface disturbance would involve greater environmental impact than the proposed route, particularly in soil disturbance, biological resources, visual quality, cultural resources, Native American cultural values and land use.

All practical means to avoid adverse impact have been adopted. Construction monitoring will be conducted by the appropriate District Office in each state to ensure compliance with the mitigation measures identified in Appendix A of the SEIS. The U.S. Fish and Wildlife Service will monitor the Kofa NWR segment.

The right-of-way grant will be given a different serial number for California and Arizona. The term of the grant will be perpetuity and will be renewable.

Ed Hastey
California State Director

Feb 21 1989
Date

ATTACHMENT C

U.S. FISH AND WILDLIFE SERVICE 1989 CERTIFICATE OF RIGHT-OF-WAY COMPATIBILITY (CRC)

LA-Arizona
Kofa NWR

CERTIFICATE OF RIGHT-OF-WAY COMPATIBILITY

WHEREAS, the U.S. Fish and Wildlife Service has received an application from Southern California Edison Company for a 500kV electrical transmission line across lands of the Kofa National Wildlife Refuge, Yuma County, Arizona.

WHEREAS, this Service is in the process of issuing a permit or easement for this right-of-way under the authority contained in the National Wildlife Refuge System Administration Act of October 15, 1966 (80 Stat. 926; 16 USC 668dd) as amended, and

WHEREAS, Section 4(d)(2) of this Act requires a determination (attached) "that such uses are compatible with the purposes for which these areas are established

I, THEREFORE, NOW certify that this non-programmed use of the above area is compatible with the purpose for which the land was acquired, subject to established mitigation measures and to the stipulation that no further above-ground utility development of this corridor be permitted after construction of this transmission line.

March 1, 1989
Date

Regional Director

Attachment

CERTIFICATE OF RIGHT-OF-WAY (ROW) COMPATIBILITY
KOFA NATIONAL WILDLIFE REFUGE

The proposed ROW under consideration for permit is the designated preferred alte native route for the Devers-Palo Verde #2 500kV Transmission Line depicted in th Supplementary Environmental Impact Statement prepared by the Bureau of Land Management, Riverside, California office. We have reviewed this ROW to determine i compatibility with the purposes for which the Kofa National Wildlife Refuge (Refuge) was established. These purposes, as set for in the Refuge's executive order of establishment, include "the conservation and development of natural wil life resources...and natural forage resources." With emphasis given to the conservation and protection of the desert bighorn sheep Ovis canadensis mexicana, management of the Kofa Refuge also encompasses the similar conservation and protection of all flora and fauna of the desert community lying within its boundaries. The analysis of the ROW has found that, with certain stipulations, it would be compatible with those purposes. The following facts form the basis for our findings:

-- Since 1950, the proposed route has been used for interstate pipelines and transmission lines. These have been constructed both prior to and after the designation of the Kofa Refuge as a unit of the National Wildlife Refuge System with sole jurisdiction by the U.S. Fish and Wildlife Service. There are current three natural gas pipelines and the initial 500kV transmission line occupying th proposed route traversing the Refuge. Therefore impacts of the proposed power line would be confined to an established ROW where environmental disturbances ha already occurred.

-- Previous findings of non-compatibility for the initial transmission line and the line currently under consideration were based on assumptions that a more northerly (off-refuge) route would be a feasible alternative. Because such a route would impact lands and resources contained within the Bureau of Land Manag ment's New Waters Mountains Wilderness Study Area, it cannot be deemed a feasibl alternative and has been eliminated from any further consideration.

-- Although the existing and proposed Devers-Palo Verde transmission lines are routed adjacent to proposed wilderness areas on the Kofa Refuge, they remain within the Crystal Hill-Coyote Peak Exclusion, an area specifically eliminated from consideration for wilderness designation because of its utility ROW develop ment. As stated in the Environmental Impact Statement prepared for the 1974 wil erness proposal, wilderness designation would provide for continuation of existi rights-of-way, easements, and permits, and would not preclude additional routes those lands excluded from wilderness designation if authorized under permit from this agency.

-- Construction of the transmission line facilities will be prohibited in or ne bighorn sheep lambing areas from January 1 to March 31.

-- Determination of specific tower site and spur road locations will be coordinated with Refuge personnel in order to minimize habitat disturbance and/or the loss of valuable habitat features.

-- Data currently available do not indicate any discernable impact on movement bighorn sheep across the existing single transmission line ROW. However, of cr tical importance to the herd integrity of the sheep population is the avoidance any barrier across movement corridors and the fragmentation of sheep habitat. bighorn sheep study conducted for the initial power line ROW documented the fac that sheep on the Refuge and north of the Refuge are components of the same pop lation. There is considerable movement of these animals between the Kofa Moun- tains-Livingston Hills on the Refuge and the Plomosa Mountains lying to the immediate north. Sheep moving between these areas must cross the ROW occupied the Devers-Palo Verde No. 1 and the proposed line. It is not known, nor can an one predict, how many such parallel transmission lines would constitute a barri to sheep movement. Nor is it known if detrimental impacts would be manifested only by restricting movement. Behavioral modification, hesitation, or increase in physiological stress prior to actual crossing may be detrimental factors res ting from increases in numbers of transmission lines. For this reason, in addi tion to spatial considerations to restrict development impinging on lands of th Kofa Refuge, we consider this second line to be the upper limit of utility deve opment in this area. Maintenance and upgrading of facilities would be permitte but, following the construction of Devers-Palo Verde No. 2 Transmission Line, n further above-ground utilities would be constructed in this area.

ATTACHMENT D

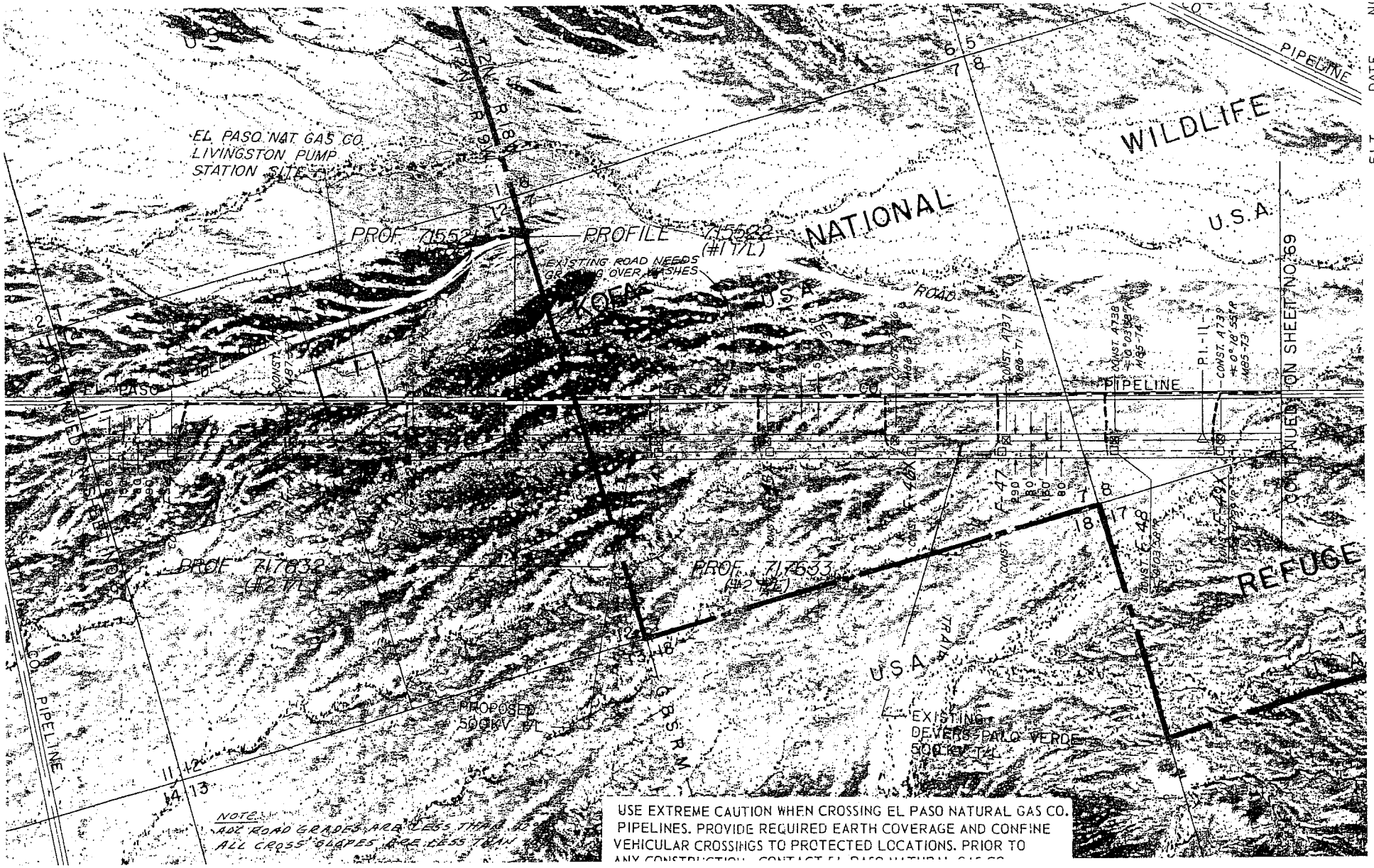
WORKER AND EQUIPMENT TABLE

TABLE 1
PROPOSED DEVERS-HARQUAHALA 500kV TRANSMSSION LINE LABOR FORCE AND EQUIPMENT REQUIREMENTS (KOFA NATIONAL WILDLIFE REFUGE)
23.8 MILES

Construction Element	Personnel	Equipment	Duration (months)
Survey Tower Sites	3	2 - pickup trucks	1
Road Work	12	2 - road graders 2 - dozers 2 - grad-all excavators 1 - water truck 2 - 10-yard dump trucks 3 - pickup trucks	1
Foundation Installation	23	5 - pickup trucks 2 - 2-1/2 ton flatbed trucks 2 - backhoes 3 - drill rigs 3 - boom trucks 2 - off-road loaders 2 - tractor trucks with trailers 1 - water truck 2 - portable generators 4 - concrete trucks	2
Tower Assembly/Erection	75	9 - pickup trucks 9 - 21/2 ton flatbed trucks 9 - truck cranes 9 - crew cab pickup trucks 9 - air compressors 1 - water truck 2 - portable generators 4 - large RT cranes	3
Conductor Installation	54	8 - pickups 8 - crew cab pickup trucks 2 - pole truck and trailers 6 - truck cranes 6 - bucket trucks 1 - digger 1 - backhoe 2 - conductor tensioners 2 - static tensioner 2 - sockline puller 2 - conductor pullers 4 - sagging units (skidders) 12 - reel stand trailers 6 - tractor trucks with trailers 2 - helicopters 4 - portable generators 1 - water truck	2
Final Cleanup	6	1 - pickup 1 - flatbed pickup truck 1 - backhoe 1 - 2 ton flatbed truck 1 - boom truck 1 - road grader 1 - dozer 1 - grade-all excavator 1 - water truck 1 - portable generator 1 - 10-yard dump truck	1
TOTAL MANPOWER:	173		
		DURATION OF CONSTRUCTION WORK:	6

NOTE:
Typical construction operations will work through the area performing the major tasks in a progressive manner. First there will be the surveying of the structure sites and laying out of spur roads, followed by installing the spur roads to structure locations where required. This will be followed by the digging of holes and the installing of foundations for the structures. Then follows the hauling of structure steel and the subsequent assembly and erection of the structures. After all structures are set in a section, the installation of the conductors takes place, followed by the final cleanup of the ROW and construction areas.

The number of vehicles and the duration they will be traveling through the area is dependent on the availability to access the ROW from the various roads in the area. While construction may be completed in the general timeframes indicated, construction vehicles may be utilizing the roads through these areas for longer periods.



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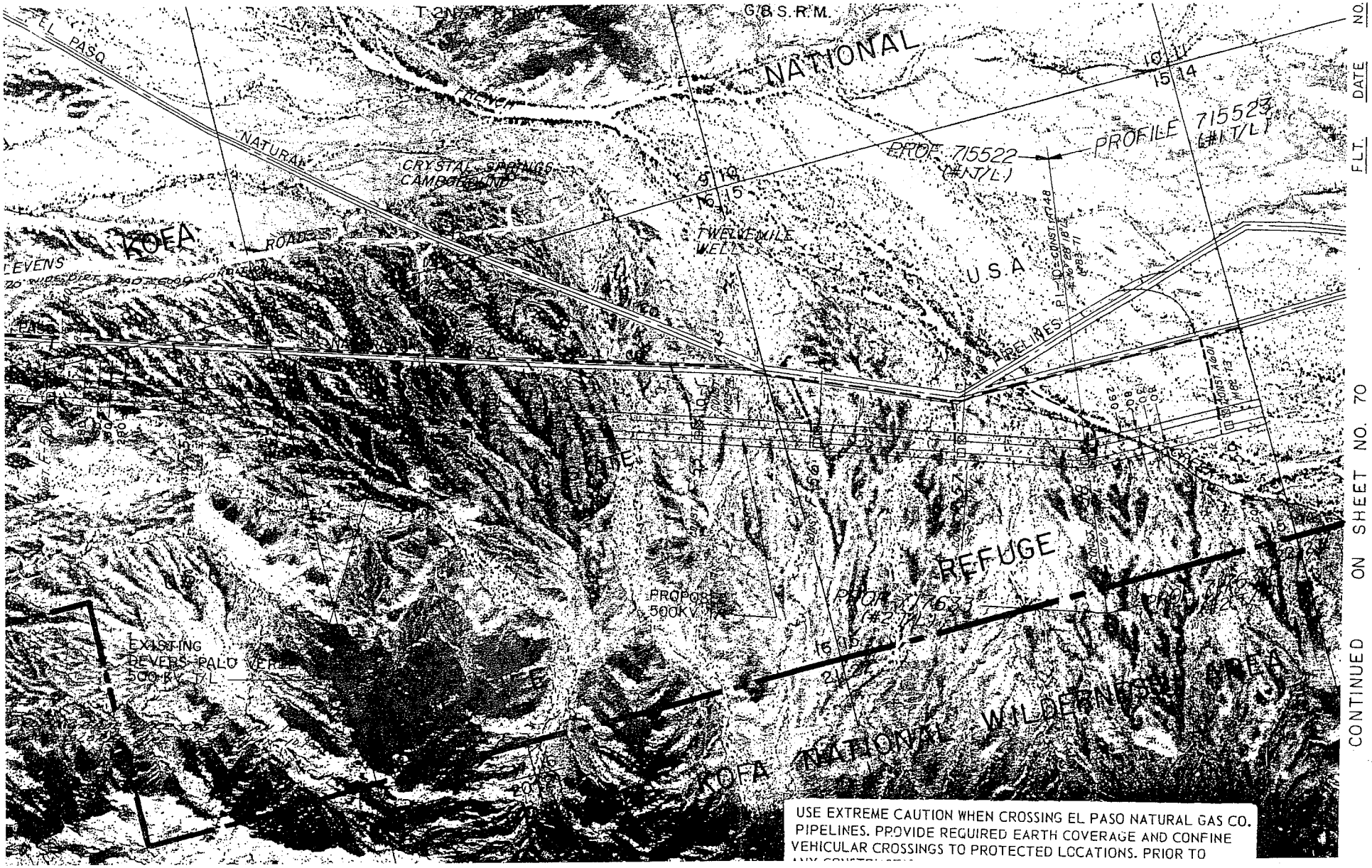

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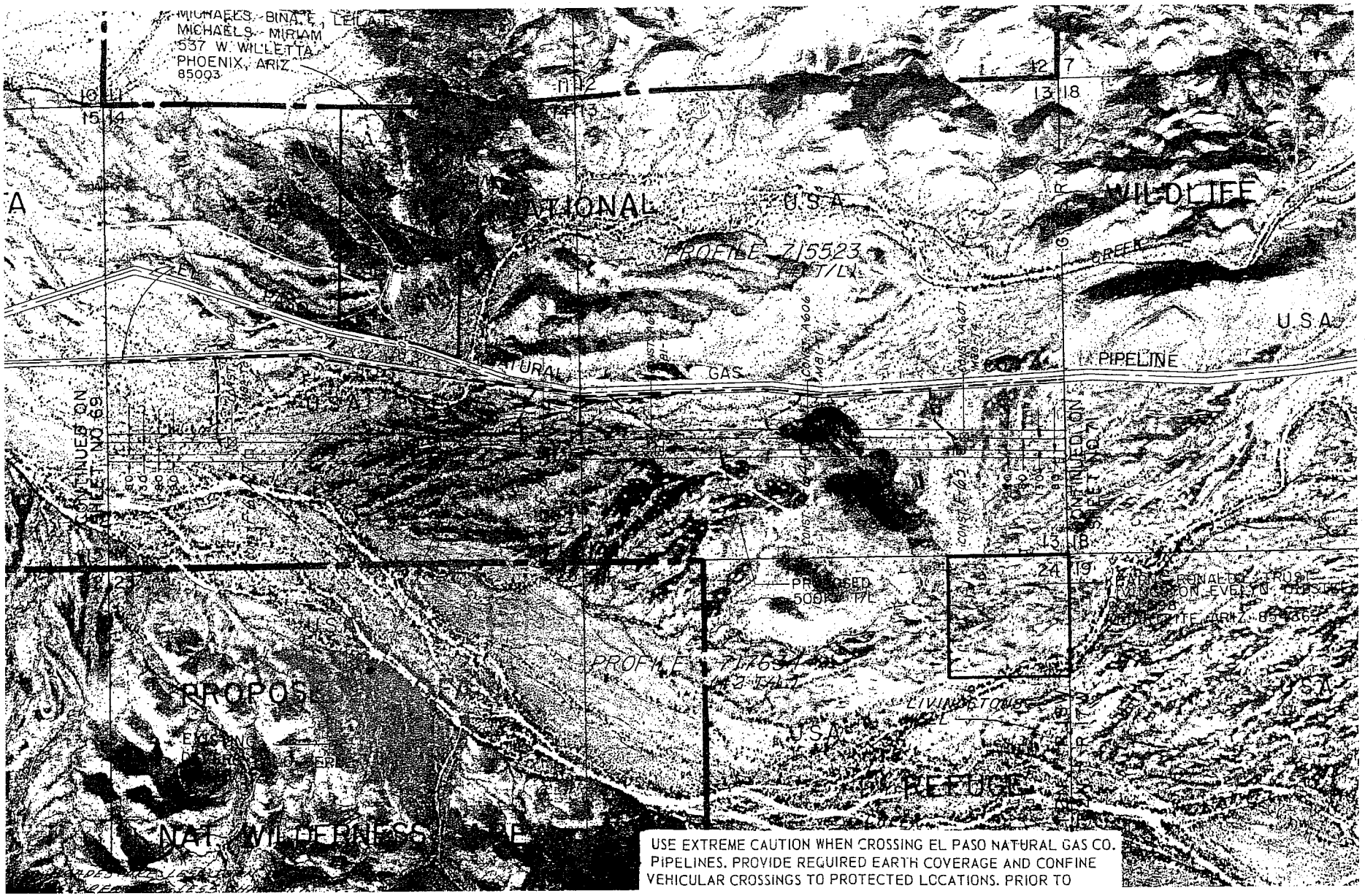

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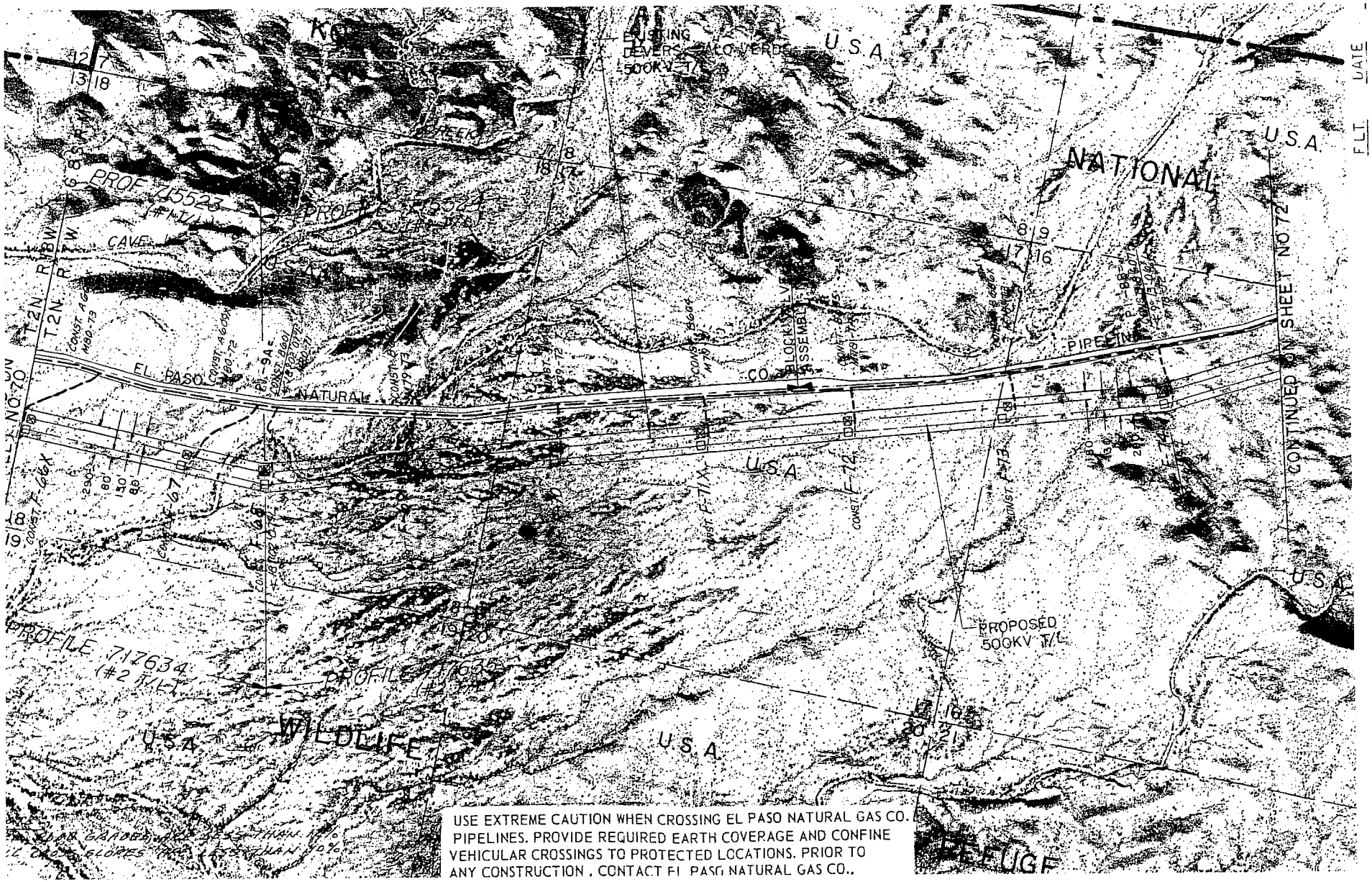
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500KV T/L
U.S.A.
NATIONAL
WILDLIFE
REFUGE
PROFILE 71523
(#1 MT.)
PROFILE 71634
(#2 MT.)
PROFILE 71635
(#3 MT.)
CAVE
CREEK
EL PASO NATURAL GAS CO.
PIPELINE
PROPOSED
500KV T/L
CONTINUED ON SHEET NO 72
T2N
R8W
R7W
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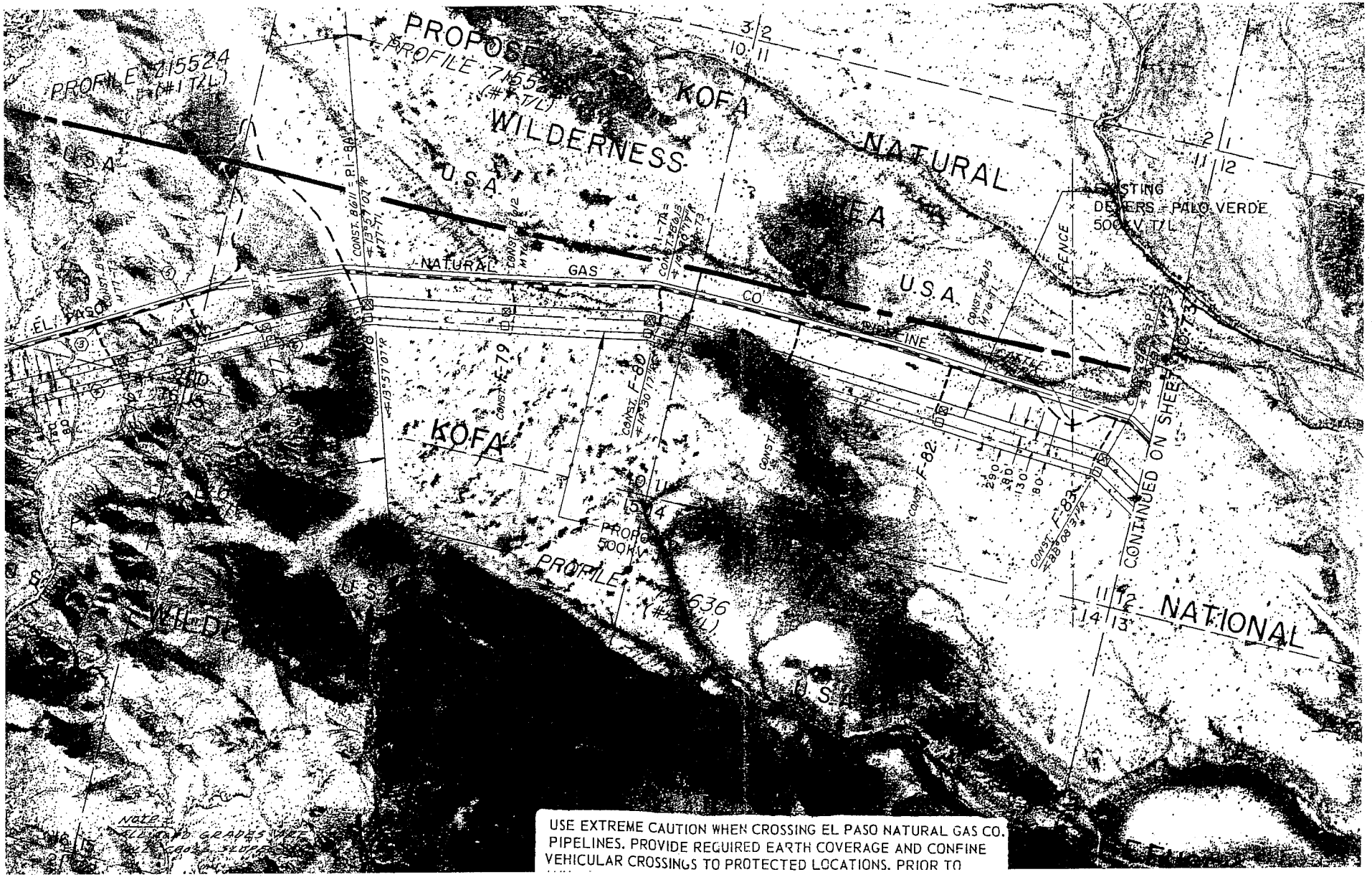

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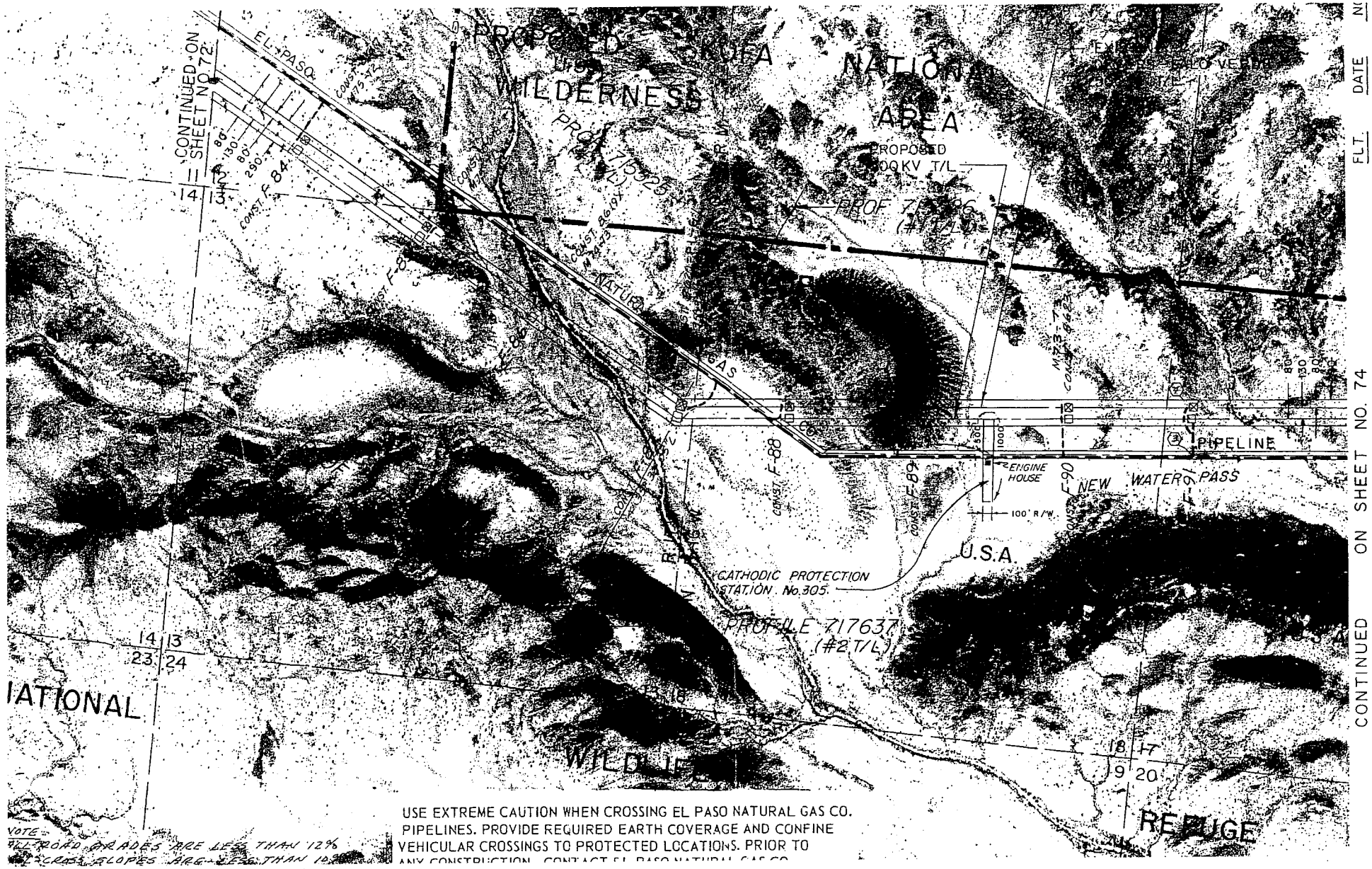

USE EXTREME CAUTION WHEN CROSSING EL PASO NATURAL GAS CO. PIPELINES. PROVIDE REQUIRED EARTH COVERAGE AND CONFINE VEHICULAR CROSSINGS TO PROTECTED LOCATIONS. PRIOR TO ANY CONSTRUCTION CONTACT EL PASO NATURAL GAS CO.

NOTE
ALL ROAD GRADES ARE LESS THAN 12%
CROSS SLOPES ARE LESS THAN 10

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EXHIBIT C
AREAS OF BIOLOGICAL WEALTH

EXHIBIT C
AREAS OF BIOLOGICAL WEALTH

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state the effects, if any, the proposed facilities will have thereon."

Exhibit C includes summaries of areas of biological wealth, as well as the potential impacts the proposed route and subalternate routes in Arizona may have on biological resources. For further information, refer to the Preliminary Environmental Assessment (PEA) (Exhibit B-2), which addresses the entire length of the proposed transmission line in Arizona and California.

BIOLOGICAL WEALTH

Introduction

Special status plant and wildlife species that potentially occur within the project vicinity are listed in Tables C-1 and C-2. These include species listed as endangered or threatened under the Endangered Species Act (ESA); wildlife of special concern identified by the Arizona Game and Fish Department (AGFD), or highly safeguarded plants by the Arizona Department of Agriculture (ADA). Lists of special status species were compiled using information obtained from the U.S. Fish and Wildlife Service (USFWS), AGFD, Heritage Data Management System (HDMS), and the ADA. The proposed project area was reviewed by biologists in the field.

TABLE C-1
SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR WITHIN THE PROJECT VICINITY

Common Name	Scientific Name	Habitat	Status
Kofa barberry	*Berberis harrisoniana*	Deeply shaded alcoves in narrow steep-walled canyons at elevations from 2,200 to 3,500 feet on soils derived from andesite or rhyolite	BLM
Death Valley Mormon tea	*Ephedra funerea*	Sandy dry soil in rocky scrub areas from 1,640 to 4,921 feet elevation	BLM
Flannel bush	*Fremontodendron californicum*	Gravelly loams to clayey soils in foothills and low mountains from 2,953 to 5,906 feet elevation	BLM, SR
Crested or fan-top saguaro	*Carnegiea gigantea*	Rocky hillsides and outwash slopes	HS
Scaly sandplant	*Pholisma arenarium*	Sandy soil at the edges of washes and on low dunes between 328 to 820 feet elevation	BLM, HS

TABLE C-1
SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR WITHIN THE PROJECT VICINITY

Common Name	Scientific Name	Habitat	Status
Arizona rosewood	*Vauquelinia californica* ssp. *sonorensis*	Cliffs, along canyon bottoms, and on moderate to steep slopes from 2,297 to 4,806 feet elevation	BLM

Status Codes:
FE – Federally Endangered
FSC – Federal Species of Concern
BLM – Bureau of Land Management (Arizona) Sensitive species
HS - Highly Safeguarded (ANPL, 1993)
SR – Salvage Restricted (ANPL, 1993)

Sources: ADA 2001; AGFD, HDMS 2003; ARPC 2001

TABLE C-2
SPECIAL STATUS WILDLIFE SPECIES THAT COULD OCCUR WITHIN THE PROJECT VICINITY

Common Name	Scientific Name	Habitat	Status
FISH			
Bonytail chub	*Gila elegans*	Flowing pools and backwaters, usually over mud or rocks	FE, WSC
Razorback sucker	*Xyrauchen texanus*	Silt- to rock-bottomed backwaters near strong currents and deep pools in medium to large rivers	FE, WSC
AMPHIBIANS			
Lowland leopard frog	*Rana yavapaiensis*	Restricted to permanent waters; pools of foothill streams, overflow ponds below 4,800-foot elevation.	FSC, WSC
REPTILES			
Desert tortoise (Sonoran population)	*Gopherus agassizii*	Xeroripariain riverbanks, washes, dunes, and rocky slopes	FSC, WSC
Arizona chuckwalla	*Sauromalus ater*	Rocky areas in desert flats, hillsides, and mountains, with rocky crevices	FSC, BLM
Mojave fringe-toed lizard	*Uma scoparia*	Aeolian sand habitats, at elevations from 300 to 3,000 feet	WSC
Arizona skink	*Eumeces gilberti arizonensis*	Found in a wide variety of habitats, including cottonwood and mesquite riparian areas, chaparral, pinyon-juniper woodland, and conifer forest	FSC, WSC, BLM
Red-backed whiptail	*Cnemidophorus xanthonotus*	Found in habitats ranging from the Arizona Upland Subdivision of the Sonoran Desert up to canyons and hills in juniper woodlands	FSC, BLM
Banded Gila monster	*Heloderma suspectum cinctum*	Found in undulating rocky foothills, bajadas, and canyons	FSC, P
Desert rosy boa	*Charina trivirgata gracia*	Rocky shrubland and desert	FSC, BLM

TABLE C-2
SPECIAL STATUS WILDLIFE SPECIES THAT COULD OCCUR WITHIN THE PROJECT VICINITY

Common Name	Scientific Name	Habitat	Status
BIRDS			
Western least bittern	*Ixobrychus exilis hesperis*	Marshy areas of emergent vegetation	FSC, WSC
Great egret	*Ardea alba*	Salt marshes or various fresh water bodies including lakes and rivers	WSC
Snowy egret	*Egretta thula*	Ponds, steams, and marshes	FSC, WSC
White-faced ibis	*Plegadis chihi*	Lakes, ponds, streams, marshes, and fields	FSC
Bald eagle	*Haliaeetus leucocephalus*	Lakes and rivers	FT, WSC
Peregrine falcon	*Falco peregrinus anatum*	Cliffs, generally distributed, tops of tall urban buildings	FSC, WSC
Yuma clapper rail	*Rallus longirostris yumanensis*	Cattail marshes	FE, WSC
Western snowy plover	*Charadrius alexandrinus nivosus*	Beaches and dry mud or salt flats along the margins of rivers, lakes, and ponds	FT, WSC
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Riparian areas	FC, WSC
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub	FE, WSC
Western burrowing owl	*Athene cunicularia hypugaea*	Open areas in deserts, grasslands, and agricultural and range lands	FSC, BLM
Southwestern willow flycatcher	*Empidonax traillii extimus*	Areas of willow, tamarisk, cottonwood with a well-developed lower canopy	FE, WSC
Loggerhead shrike	*Lanius ludovicianus*	Open country, thinly wooded or shrubby areas with clearings, meadows, pastures, agricultural fields, old orchards, and thickets along roadsides	FSC, BLM
MAMMALS			
California leaf-nosed bat	*Macrotus californicus*	Primarily cave and mine dwellers, mostly in Sonoran desertscrub	FSC, WSC, BLM
Yuma myotis	*Myotis yumanensis*	Roosts in manmade structures such as houses, porches or bridges near permanent open water source	FSC
Cave myotis	*Myotis velifer*	Desertscrub with caves or mine tunnels and water nearby	FSC, BLM
Occult little brown bat	*Myotis lucifugus occultus*	Found at higher elevations, generally from the oak-pine zone up into ponderosa	FSC, BLM
Red bat	*Lasiurus borealis*	Roosts in large trees or shrubs along riparian habitats or the edges of fields and urban areas	WSC
Western yellow bat	*Lasiurus xanthinus*	Roosts in palms or broad-leaved trees in riparian habitat	WSC

TABLE C-2 SPECIAL STATUS WILDLIFE SPECIES THAT COULD OCCUR WITHIN THE PROJECT VICINITY			
Common Name	**Scientific Name**	**Habitat**	**Status**
Spotted Bat	*Euderma maculatum*	Wide range of habitats, but most often in dry desert environments, and from below sea level to high elevation coniferous forest	FSC, WSC, BLM
Pale big-eared bat	*Plecotus townsendii pallescens*	Low desert up into coniferous forest where it normally roosts in mines or caves	FSC, BLM
Southwestern river otter	*Lontra canadensis sonora*	Rivers and lakes	FSC, WSC
Yuma Puma	*Puma concolor browni*	Mountains and desert along the Colorado River	FSC, WSC
Desert bighorn sheep	*Ovis canadensis mexicana*	Found in precipitous desert mountain ranges	None[1]

Status Codes:
FE – Federally Endangered
FT – Federally Threatened
FSC – Federal Species of Concern
WSC – Wildlife of Special Concern in Arizona
BLM - BLM Sensitive Species
P – Proposed BLM Sensitive Species

[1]Bighorn currently have no listed status in Arizona, but are a managed big game animal species.

Sources: AGFD 2003; Hoffmeister 1986; National Geographic Society 1999; Page and Burr 1991; Stebbins 2003; USFWS 1999, 2002a, 2002b

Vegetation

Kofa barberry (*Berberis harrisoniana*) is found in deeply shaded places such as alcoves in narrow steep-walled canyons at elevations from 2,200 to 3,500 feet on soils derived from andesite and rhyolite (Arizona Rare Plant Committee [ARPC] 2001). The three primary localities for this species in Arizona are in the west end of the Kofa Mountains, the north end of the Ajo Mountains, and at the south end of the Sand Tank Mountains. It is also reported from the Eagletail Mountains (ARPC 2001). The proposed Devers to Palo Verde transmission line corridor would pass on the north side of the Eagletail Mountains and on the north side of the Kofa Mountains. The corridor is generally below 2,000 feet in elevation, and it would not impact any heavily shaded narrow canyons. This species was not observed during sensitive species surveys in 2003.

There are two special status species of plants that could potentially be found in the study corridor. Death Valley Mormon tea (*Ephedra funerea*) is found on sandy dry soil and in rocky scrub areas at elevations from 500 to 1,500 meters (1,640 to 4,921 feet) (Flora of North America, no date). Death Valley Mormon tea is present in the Bouse Wash watershed in La Paz County (NatureServe 2002). The proposed Devers to Palo Verde transmission line would cross the upper end of the Bouse Wash watershed west of the Eagletail Mountains and it would pass through

potential habitat for this species. This species was not observed during sensitive species surveys in 2003.

Flannel bush (*Fremontodendron californicum*) is generally found in foothills and low mountains from 900 to 1,800 meters (2,953 to 5,906 feet) on a variety of soils from gravelly loams to clays (Pavek 1993). Flannel bush generally limited to elevations higher than those found in the study area. Therefore, it is unlikely that this species would be found within the project corridor. This species was not observed during sensitive species surveys in 2003.

Crested or fan-top saguaros (*Carnegiea gigantea*) are a rare growth form thought to be caused by freezing or mechanical injury to the saguaro's apical meristem (Steenbergh and Lowe 1983). The crested saguaro is listed as highly safeguarded in Arizona by the ADA. This growth form could be present wherever saguaros are found in the project area. No crested saguaros were observed within the right-of-way during fieldwork performed for the project.

Scaly sandplant (*Pholisma arenarium*) is found in sandy soil at the edges of washes and on low dunes between 328 to 820 feet. In Arizona, it occurs east and southeast of Parker (ARPC 2001). There are no known populations of scaly sandplant within the project corridor, although there is likely to be suitable habitat for this species. This species was not observed during sensitive species surveys in 2003.

In Arizona, the Arizona rosewood (*Vauquelinia californica* ssp. *sonorensis*) is limited to the Ajo Mountains in Arizona where it occurs at the base of cliffs, along canyon bottoms, and on moderate to steep slopes from 2,297 to 4,806 feet elevation (ARPC 2001). There are no known populations of Arizona rosewood within the project corridor. This species was not observed during sensitive species surveys in 2003.

Wildlife

The bonytail chub (*Gila elegans*) is found in flowing pools and backwaters, usually over mud or rocks (Page and Burr 1991). Bonytail chubs previously occurred throughout the Colorado River and its major tributaries. The last natural population is in Lake Mohave, where there is no evidence of reproduction or recruitment (AGFD 1996). This location is upstream from the proposed Devers to Palo Verde transmission line corridor, and it is unlikely that the bonytail chub could be found within the study area. Moreover, the transmission line spans the Colorado River, so, even if they were there, no impacts to this species would occur.

The razorback sucker (*Xyrauchen texanus*) prefers silt- to rock-bottomed backwaters near strong currents and deep pools in medium to large rivers as well as impoundments (Page and Burr 1991). Razorback suckers formerly occurred in all major rivers and larger streams of the Colorado River drainage. Natural populations have been reduced to a non-recruiting population in Lake Mohave, although a few adults recovered from Grand Canyon, Lake Mead, Lake Havasu, Central Arizona Project Canal, and the Lower Colorado River may represent other small, remnant natural populations (AGFD 1996). The razorback sucker is unlikely to be found

in the proposed Devers to Palo Verde transmission line corridor downstream from Parker Dam. Moreover, the transmission line spans the Colorado River, so, even if they were there, no impacts to this species would occur.

The lowland leopard frog (*Rana yavapaiensis*) may be found in desert, grassland, oak and oak-pine woodland, entering the permanent pools of foothill streams, overflow ponds and side channels of major rivers, permanent springs, and in drier areas, more or less permanent stock tanks, and are generally limited to elevations below 5,500 feet (Stebbins 2003). Historically, this species was found throughout the lower Colorado River and its tributaries in Arizona, California, and Nevada. The distribution of this species on the Colorado River now appears to be limited to the Yuma vicinity (AGFD 2001a). There is a very low probability of lowland leopard frogs being in the vicinity of the proposed crossing over the Colorado River.

Sonoran desert tortoises (*Gopherus agassizii*) are primarily found on rocky slopes and bajadas of Mojave desertscrub and the Arizona Upland and Lower Colorado River Valley subdivisions of Sonoran desertscrub south and east of the Colorado River (Murray and Dickinson 1996). There is a high probability of desert tortoises being present in suitable habitat throughout much of the proposed transmission line corridor in Arizona, and pre-construction surveys and construction monitoring will be required for this species.

The Arizona chuckwalla (*Sauromalus ater*) is restricted to rocky areas in desert flats, hillsides, and mountains, where crevices are available for shelter (Brennan 2003). Portions of the proposed Devers to Palo Verde transmission line corridor would pass through areas where suitable habitat for this species is likely to be present, mainly in the New Water and Dome Rock Mountains of western Arizona.

This Mojave fringe-toed lizard (*Uma scoparia*) is endemic to southern California and a small part of western Arizona, where it is limited to aeolian sand habitats, at elevations from 300 to 3,000 feet (Hollingsworth and Beaman, no date; Stebbins 2003). This species is found near Quartzsite and Parker, mostly on fine, wind-blown sands in and around the Bouse Dunes and Cactus Plains and along the Colorado River, but also on coarser sands (AGFD 1996).

The Arizona skink (*Eumeces gilberti arizonensis*) is found in a wide variety of habitats, including cottonwood and mesquite riparian areas, chaparral, pinyon-juniper woodland, and conifer forest (Stebbins 2003). The Arizona skink is reported to be present in several isolated populations in mountain ranges including the Harcuvar, Harquahala, Santa Maria, Bradshaw, and Weaver Mountains (Stebbins 2003). It is unlikely that these lizards would be present in the proposed Devers to Palo Verde transmission corridor because of a lack of suitable habitat.

The red-backed whiptail (*Cnemidophorus xanthonotus*) is found in habitats ranging from the Arizona Upland Subdivision of the Sonoran Desert up to canyons and hills in juniper woodlands (Brennan 2003). Their diet consists mainly of insects and spiders (Stebbins 2003). The red-backed whiptail is restricted to isolated populations in several mountain ranges between the Coyote, Agua Dulce, and Sierra Estrella mountains (Stebbins 2003). It is remotely possible that these lizards could be present in desert mountain ranges near the east end of the proposed Devers

to Palo Verde transmission corridor, although this area is at least 40 miles northwest of known populations of this species.

Gila monsters prefer undulating rocky foothills, bajadas, and canyons, and they tend to avoid open sandy plains (AGFD 1998). The banded Gila (*Heloderma suspectum cinctum*) monster is found in western Arizona, southern Nevada, a small part of southeastern California, and extreme southwestern Utah. Suitable habitat for this species is present within the proposed Devers to Palo Verde transmission corridor.

The desert rosy boa (*Charina trivirgata gracia*) is found in areas of rocky shrubland and desert. It is often attracted to oases and permanent or intermittent streams, but it does not require permanent water (Stebbins 2003). The desert rosy boa is found in several isolated desert mountain ranges in western and southwestern Arizona (Stebbins 2003). This species is known to be present just north of the existing DPV-1 transmission line near Crystal Hill in the southern New Water Mountains. This snake is probably present in small numbers where suitable rocky habitat is available within the proposed Devers to Palo Verde transmission corridor.

The western least bittern (*Ixobrychus exilis hesperis*) is a locally common breeder from April through September. It is uncommon in the winter around Imperial Dam and south to Yuma and rare farther north (Rosenberg et al. 1991). Breeding has been confirmed for this species along the lower Colorado River (AGFD 1996). The largest populations of least bitterns are found in extensive cattail and bulrush marshes, like those at Topock and near Imperial Dam (Rosenberg et al. 1991). It is unknown whether this species occurs within the proposed Devers to Palo Verde transmission line corridor, between these areas of known occupancy. If cattail or bulrush marshes are available in the vicinity of the proposed transmission line corridor, it is likely that the western least bittern would be present.

The great egret (*Ardea alba*) is generally found in open areas of salt marshes or various fresh water bodies including lakes and rivers where it roosts communally in nearby trees. The great egret is present as a breeding bird along the Colorado River below Bullhead City (AGFD 1996), but it is not known if it breeds in the vicinity of the proposed transmission line crossing. The lack of large trees along the river at the crossing probably precludes breeding of this bird in the vicinity of the project.

The snowy egret (*Egretta thula*) is found in freshwater marshes, lakes, ponds, and rivers and in shallow coastal habitats including saltwater marshes, bays, and estuaries (Small 1977). This species is known to have bred at the Salton Sea, and breeding colonies are present at a few sites along the Colorado River below Bullhead City (AGFD 1996; Small 1977). The snowy egret is likely to be present along the Colorado River in the vicinity of the proposed Devers to Palo Verde transmission line, but it is not known whether they are breeding in this vicinity.

The white-faced ibis (*Plegadis chihi*) is a fairly common transient and an uncommon winter visitor in lakes, ponds, streams, marshes, and fields, but it is not known to breed in Arizona (Monson and Phillips 1981; Witzeman et al. 1997). This species is only present in Arizona as a common migrant or an uncommon winter visitor. It may be found in suitable habitat almost

anywhere in the state, but it is most common along the lower Colorado River in La Paz and Yuma counties (AGFD 2002a). This species is likely to be present as a migrant or winter visitor along the Colorado River in the vicinity of the proposed Devers to Palo Verde transmission line. It is likely to use irrigated agricultural fields in the valley, primarily west of the river.

The bald eagle (*Haliaeetus leucocephalus*) is usually found near large bodies of open water where it feeds primarily on fish. The distribution of bald eagles in the winter along the Colorado River is inversely correlated with human activity (Brown and Stevens 1997). Wintering bald eagles may be found almost anywhere in the state, but they are usually along major rivers, and they are sporadically observed along the Colorado River (AGFD 2002b). Wintering bald eagles could be present at the proposed Colorado River crossing of the Devers to Palo Verde transmission line.

The peregrine falcon (*Falco peregrinus anatum*) is a rare and irregular transient, winter resident, and post-breeding visitor to the Lower Colorado River Valley (Rosenberg et al. 1991). It is an uncommon transient and winter visitor to Maricopa County (Witzeman et al. 1997). Peregrines inhabit open wetlands near cliffs, and they can also be found living in cities with tall buildings or bridges (National Geographic 1999). Peregrine populations have been increasing in recent years, and they could be found almost anywhere along the Colorado River, particularly during the winter.

The Yuma clapper rail (*Rallus longirostris yumanensis*) is a summer resident in some alkaline or freshwater cattail marshes along the lower Colorado River from Topock Marsh south to Mexico, and some birds may also winter in this area (AGFD 1996, 2001b; Monson and Phillips 1981; Phillips et al. 1964). Clapper rails are typically associated with dense marsh vegetation, but they are also found in high densities in some moderately dense cattail/bulrush marshes. Breeding has been confirmed at several sites along the Colorado River, including Topock Marsh, Bill Williams River, and Mittry Lake (AGFD 2001b). It is unknown whether the Yuma clapper rail occurs within the proposed Devers to Palo Verde transmission line corridor. This rail is not likely to be present at the Colorado River because the preferred crossing has no emergent vegetation.

The western snowy plover (*Charadrius alexandrinus nivosus*) is generally associated with beaches and dry mud or salt flats along the margins of rivers, lakes, and ponds (Ehrlich et al. 1988). The snowy plover could use beach areas along the Colorado River for foraging and resting during migration, but individuals of the Pacific Coast population are likely to be very rare in this vicinity.

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) is a summer resident in cottonwood (*Populus* sp.) and willow riparian forests and in larger mesquite bosques (AGFD 2002c). The yellow-billed cuckoo is not likely to be present because no suitable cottonwood-willow habitat is available at the preferred Colorado River crossing. There is no suitable habitat anywhere else along the corridor.

The cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) is a year-round resident of Arizona and is found below 4,000 feet. Habitat is typically characterized by highly diverse

Sonoran desertscrub vegetation. This owl is often found along washes, which provide larger trees for nesting cavities and cover. It is unknown whether the cactus ferruginous pygmy-owl is present within the proposed Devers to Palo Verde transmission line corridor. Potential habitat exists for this species within the project area, but vegetation components that comprise ideal habitat are not present. The portion of the transmission line within Maricopa County is in Survey Zone 3 as defined by the USFWS.

The western burrowing owl (*Athene cunicularia hypugaea*) inhabits open areas in deserts, grasslands, and agricultural and range lands. The western burrowing owl is a year-round resident species in Arizona, and they may be present in any part of the state in suitable habitat. Populations are known to be present in the bottomlands of the Colorado River and in agricultural areas of Maricopa County (deVos 1998). Western burrowing owls are likely to be present where the proposed Devers to Palo Verde transmission line corridor crosses the Colorado, and they may be present in other areas if the line crosses agricultural areas.

Suitable habitat for the southwestern willow flycatcher (*Empidonax traillii extimus*) is present along the Colorado River at Ehrenberg, and breeding has been confirmed in this area in recent years (Bureau of Reclamation 2002). The proposed transmission line crossing is at a location with only a few tamarisks of low stature that might provide marginal habitat for this species.

The loggerhead shrike (*Lanius ludovicianus*) is found in a variety of habitats, which generally include open country, thinly wooded or shrubby areas with clearings, meadows, pastures, agricultural fields, old orchards, and thickets along roadsides (Arizona Ornithological Union [AOU] 1998; Terres 1980). The loggerhead shrike is relatively common in the lower elevations of southern Arizona, including deserts, foothills, and the low elevation mountains along the project corridor. During surveys conducted in 1985 they were found to be occasional to uncommon permanent residents along the Arizona portion of the corridor. This species could be present at any location along the proposed Devers to Palo Verde transmission line corridor in Arizona.

The California leaf-nosed bat (*Macrotus californicus*) is primarily a resident of caves and mines in desertscrub habitat, generally below 3,280 feet in elevation (Barbour and Davis 1969; Hoffmeister 1986; National Bat Working Group [NBWG] 2002). Since the California leaf-nosed bat seldom forages far from its roost, bats are likely to be present only where portions of the line pass through areas with suitable mine habitat.

The Yuma myotis (*Myotis yumanensis*) is almost always associated with some kind of open water resource, where it forages over the water (Hoffmeister 1986). The Yuma myotis often roosts in manmade structures such as houses, porches or bridges, and its presence along some portions of the right-of-way is possible. However, since it forages over open water sources, its presence on the project site, other than at the Colorado River, would be restricted to non-foraging flyovers. There is a record of this species from Ehrenberg, Arizona (Hoffmeister 1986).

The cave myotis (*Myotis velifer*) is a bat of lower elevations in xeric habitats such as creosote bush or palo verde-mixed scrub plant associations (Barbour and Davis 1969; Hoffmeister 1986).

The cave myotis seldom occurs more than a few miles from a permanent water source (Hoffmeister 1986). The cave myotis most often inhabits mines and caves where colonies of several thousand may occur (Barbour and Davis 1969; Harvey et al. 1999; NBWG 2002). Since the cave myotis is seldom found more than a few miles from permanent water the only portion of the right-of-way where this species might occur would be within a few miles of the Colorado River. There is a record of the cave myotis from Ehrenberg, Arizona (Hoffmeister 1986).

The occult little brown bat (*Myotis lucifugus occultus*) is generally a bat of higher elevations, generally from the oak-pine zone up into ponderosa (*Pinus ponderosa*) forest. They are sometimes encountered in riparian habitats at somewhat lower elevations (Bat Conservation International [BCI] 2002; Hoffmeister 1986; NBWG 2002). The little occult brown bat seems to have a preference for foraging over water, and may require water available near its roost (Harvey et al. 1999; NBWG 2002). Being a bat of higher elevations, the occult little brown bat would probably not be present anywhere along the proposed transmission line route except along the Colorado River where its presence has been documented between Needles and Yuma.

The red bat (*Lasiurus borealis*) is a solitary species that roosts in large trees or shrubs along riparian habitats or the edges of fields and urban areas (Harvey et al. 1999). The red bat is a migratory summer resident in Arizona (AGFD 1996; Hoffmeister 1986). Due to a lack of large leafy trees such as cottonwoods on the right-of-way, the probability of the presence of the red bat along the transmission line route is low. This species may be present along the Colorado River within foraging distance of the crossing, and could be present there while foraging at night.

In the desert southwest the western yellow bat (*Lasiurus xanthinus*) has often been found roosting in the California fan palm (*Washingtonia filifera*). Other palm species are probably also utilized as roosts, and this bat has also been recorded from riparian areas where it utilizes leafy trees such as hackberry and sycamore as roosts (AGFD 1996; Hoffmeister 1986). The yellow bat could be present within the right-of-way during nocturnal foraging activity where palms or broad-leafed trees are present in the vicinity.

The spotted bat (*Euderma maculatum*) has been recorded from a wide range of habitats, but most often in dry desert environments, and from below sea level to high-elevation coniferous forest (NBWG 2002; Nowak 1994). The entire length of the proposed transmission line route in Arizona is within the known range of the spotted bat (BCI 2002; Harvey et al. 1999). While suitable roosting habitat (e.g., high cliffs) is very limited in the low desert ranges through which the transmission line would pass, there is a slight possibility that the spotted bat could occur within the right-of-way during nocturnal feeding flights.

The pale big-eared bat (*Plecotus townsendii pallescens*) is found from low desert up into coniferous forest where it normally roosts in mines or caves (Harvey et al. 1999; Hoffmeister 1986). These bats are highly sensitive to disturbance, and they will relocate within a mine or cave and eventually abandon a roost as a result of repeated disturbance (Barbour and Davis 1969; Schmidly 1991). The pale big-eared bat could be present along many sections of the right-of-way within foraging distance of mines or caves. The bats would be present only in the corridor during nocturnal foraging.

The river otter (*Lontra canadensis sonora*) was once found along the Colorado River, from the Utah line to the Mexican border and along the Verde River. At present, it is uncertain to what degree this subspecies persists (AGFD 1996). River otters were last reported at Lake Havasu and at Imperial Dam on the Colorado River in 1979 (Hoffmeister 1986). It is highly unlikely that the river otter could be found where the proposed Devers to Palo Verde transmission line corridor crosses the Colorado River into California.

The Yuma puma (*Puma concolor browni*) is a subspecies of the mountain lion that is found primarily along the Colorado River in Mohave, La Paz, and Yuma counties in Arizona (Hoffmeister 1986). The Yuma puma probably occurs in areas through which the proposed transmission line would traverse.

The desert bighorn sheep (*Ovis canadensis mexicana*) is considered to be particularly important to most state and federal land management agencies because of its status as a game species, limited distribution, and since it is a species that has declined or completely disappeared from many mountain ranges. The desert bighorn sheep is found in precipitous, desert mountain ranges in western Arizona and southern California. The proposed route for the DPV-2 transmission line would pass through occupied bighorn habitat in the vicinity of Copper Bottom Pass in the Dome Rock Mountains. The transmission line would also cross bighorn movement corridors from the Livingston Hills and Kofa Mountains to the New Water Mountains and Black Mesa (Dames & Moore 1994). Bighorn sheep are not known to cross Interstate 10 north of Black Mesa and the New Water Mountains.

POTENTIAL IMPACTS – PROPOSED ROUTE

A variety of special status wildlife and plant species may be found in the vicinity of the proposed project, but impacts from this project are not expected to be substantial.

Vegetation

Of the seven plant species that could potentially occur within the vicinity of the project, it is likely that there would be suitable habitat for only three species (Death Valley Mormon tea, crested saguaros, and scaly sandplant) within the project corridor. None of these species was observed during site visits to the project area. Land clearing activities and construction of towers and access roads could directly impact some individuals of this species if they were present in the project corridor. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, any of these three plant species.

Wildlife

There will be no impacts on fish or amphibians because construction and operation of the proposed transmission line will avoid any impacts to the river or the adjacent riparian zone.

Land clearing and construction activities could directly impact desert tortoises by crushing them or destroying their burrows. There also would be temporary impacts to habitats in construction areas and long-term habitat losses at tower sites and access roads, although the area of loss represents a very small fraction of available habitat. Indirect impacts could also result in increased mortality due to increased access from new spur roads and new perch sites for raptors. The transmission line would provide nesting and/or hunting perches for common ravens (*Corvus corax*), loggerhead shrikes (*Lanius ludovicianus*), golden eagles, and several species of hawks, all of which could prey on juvenile desert tortoises. Appropriate mitigation measures will be taken during construction and operation of the proposed transmission line. Such mitigation measures will include the following, for example: provide construction worker tortoise education, maintain speed limits of 25 MPH or less, and keep worksites clean to avoid attracting ravens. As a result, construction and operation of the project may affect, but is unlikely to adversely affect, the Sonoran desert tortoise or its habitat.

Land clearing and construction activities could directly impact chuckwallas, Gila monsters, and rosy boas by crushing them or destroying burrows or crevices used for shelter. There would also be temporary impacts to habitats in construction areas and long-term habitat losses at tower sites and access roads, although the area of loss represents a very small fraction of available habitat. Construction monitoring for desert tortoises could be extended to minimize impacts to these species. Appropriate mitigation measures will be taken (e.g., minimizing ground disturbance to the greatest extent practicable) to ensure that construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the Arizona chuckwalla, banded Gila monster, or the rosy boa.

The Mojave fringe-toed lizard, Arizona skink, and red-backed whiptail are not expected to occur in the project corridor due to lack of suitable habitat. No effects are anticipated for these species.

If tower construction and line installation avoid any impacts to areas of emergent vegetation and the Colorado River and its riparian zone, there would be no direct impacts on the western least bittern, great egret, snowy egret, white-faced ibis, western snowy plover, or western yellow-billed cuckoo. A potential indirect impact could result from additional public recreation access to the Colorado River on access and spur roads. There also is some potential collision hazard to birds flying up or down the Colorado River; however, matching the heights of the conductors with the existing transmission line will minimize collision probabilities. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the western least bittern, great egret, snowy egret, white-faced ibis, western snowy plover, or western yellow-billed cuckoo, or habitat for any of these species.

There are two primary threats to bald eagles related to the construction and operation of this transmission line. There is a risk of death or injury to an eagle resulting from collision with the towers or conductors. Because of the high visibility of these structures and acute vision of the eagles, collisions would be a very rare event. A second risk to bald eagles would be through

electrocution. However, the design of the transmission line is such that electrocutions are not expected because of the separation distance between energized conductors and grounded surfaces. Thus, construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the bald eagle or its habitat.

There is a potential for peregrine falcons to collide with conductors or towers, but these birds are extremely fast, agile flyers, and such collisions would be very unlikely. Because the peregrine falcon is unlikely to breed in the vicinity of the transmission line corridor, only wintering and migrating birds would be susceptible to impact. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the peregrine falcon or its habitat.

The Yuma clapper rail is not likely to be present at the crossing of the Colorado River due to lack of suitable habitat. If tower construction and line installation avoids any impacts to the river or the riparian zone, impacts on this species or its habitat would be very unlikely. Because Yuma clapper rails are relatively weak flyers that normally fly at low levels between marsh areas, collision with conductors are extremely unlikely. These birds could be affected by additional recreational use of the river area resulting from new entry points on access or spur roads. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the Yuma clapper rail.

If tower construction and line installation avoid any impacts to cactus ferruginous pygmy-owl habitat elements, particularly xeroriparian washes, impacts on this species or its habitat would be very unlikely. Surveys for pygmy-owls must be conducted in areas where suitable habitat for this species exists along the transmission line route in Maricopa County. Construction should not disturb habitat components, including large trees and saguaros, or preclude movements of pygmy-owls by habitat fragmentation or increasing levels of human activity (USFWS 2003).

Western burrowing owls could be directly impacted by land clearing and construction activities that could crush nest burrows with adults, chicks, or eggs. Construction of the transmission line would result in some loss of habitat for these owls, although this area would be a small fraction of the available habitat. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the western burrowing owl.

Because of the sensitivity of the southwestern willow flycatcher, surveys for this species may be required along the Colorado River at the proposed Devers to Palo Verde transmission line crossing. If construction activities avoid any impact to the zone of riparian vegetation adjacent to the river, and if construction is conducted during the period from mid-September through April when the birds are absent, impacts on this species or its habitat would be very unlikely. If flycatchers are detected during surveys, and appropriate mitigation measures will be taken (e.g. avoid construction during the nesting season; mid-May to mid-July), construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the southwestern willow flycatcher.

The loggerhead shrike is likely found all along the proposed transmission line corridor. Clearing and grading activities related to tower site preparation and access road construction could destroy nests or food caches of this species in thorny shrubs. There would be some long-term habitat loss for access roads and tower bases, although this area is a very small fraction of available habitat. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the loggerhead shrike.

Potential impacts to the California leaf-nosed bat from the construction of the proposed transmission line would be limited to removal of vegetation that supports insect prey species in the vicinity of roosts. Since most of the tower placements along this route will be along established utility corridors, and the footprint of each tower is small, potential impacts to the California leaf-nosed bat from vegetation removal should be minimal. If abandoned mines are present where they could be disturbed by construction activities, the mines should be inspected for evidence of use by bats. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the California leaf-nosed bat.

Bat species such as the Yuma myotis, cave myotis, occult little brown bat, and spotted bat would only be present in the study corridor during nocturnal foraging activities. Therefore, no impacts are anticipated for these species.

As long as the construction of the transmission line does not impact potential tree roost habitat (e.g. large cottonwood or willow trees) there would be no impacts on the red bat or the western yellow bat.

If abandoned mines are present and would be disturbed by construction of new portions of the right-of-way or placement of towers, the mines should be inspected for evidence of use by bats. If any abandoned mines are impacted by this project, the pale big-eared bat could be affected by loss of suitable roosting habitat. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the pale big-eared bat or its habitat.

If the transmission line is designed to avoid the river channel and the riparian areas, and because the southwestern river otter is unlikely to be present, construction and operation of the proposed transmission line would have no effect on this species or its habitat.

Although the Yuma puma probably occurs in the study corridor, their nocturnal activity pattern and wary nature would limit their susceptibility to impact. The project is unlikely to impact deer or other potential prey species of the puma. Construction and operation of the proposed transmission line may affect, but is unlikely to adversely affect, the Yuma puma or its habitat.

Potential impacts on the desert bighorn sheep could include disturbance from human presence during construction and construction related noise. Construction and operation of the proposed transmission line would have minimal effects on the sheep and its habitat, provided mitigation efforts are made during construction. This may include imposing seasonal limitations on construction activities to minimize conflict with bighorn sheep, specifically during lambing season (January 1 through April 30).

POTENTIAL IMPACTS – SUBALTERNATE ROUTES

Impacts associated with the Harquahala-West and Palo Verde Subalternate routes would be similar to those for the Proposed Route for special status plants and wildlife. The Palo Verde Subalternate Route will cross approximately 6½ miles of BLM designated Category 2 habitat for the desert tortoise; therefore, potential impacts to the tortoise are unchanged.

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EXHIBIT D
BIOLOGICAL RESOURCES

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As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"List the fish, wildlife, plant life and associated forms of life in the vicinity of the proposed site or route and describe the effects, if any, other proposed facilities will have thereon."

Exhibit D includes a summary of biological resources, as well as potential impacts the proposed route and subalternate routes may have on these resources in Arizona. For further information, refer to the PEA (Exhibit B-2), which addresses the entire length of the proposed transmission line in Arizona and California.

BIOLOGICAL RESOURCES

Introduction

A biological field crew surveyed portions of the proposed transmission line route in order to assess the plant communities and associated fauna affected by the project. Plants and animals were identified and noted along with major geographic features. Lists of potentially occurring species of animals were assembled from standard references for the state.

Vegetation

The project study area lies within the Lower Colorado River Valley Subdivision of the Sonoran Desert and is frequently referred to as the "Colorado Desert" (Jaeger 1941; Raven and Axelrod 1978; Turner and Brown 1994). The Lower Colorado River Valley Subdivision characteristically covers broad alluvial valley floors and is usually dominated by creosote bush (*Larrea tridentata*) in association with white bursage (*Ambrosia dumosa*) on gravelly soils and with big galleta grass (*Pleuraphis rigida*) on finer textured soils. Washes that dissect valley bottoms of creosote bush scrub may support woodland-like communities of blue paloverde (*Parkinsonia florida*), ironwood (*Olneya tesota*), and several species of shrubs where soils are coarse and rocky. Where soils are finer textured, mesquite (*Prosopis spp.*) may occur as a dominant. Washes may be dominated by shrubs such as white burrobrush (*Hymenoclea salsola*), smoketree (*Psorothamnus spinosus*), and sweetbush (*Bebbia juncea).*

In the western portions of the Sonoran Desert (i.e., western Arizona and eastern California), floral elements characteristic of the Lower Colorado River Valley Subdivision (e.g., creosote bush) are frequently the dominant species on rocky mountain slopes and bajadas as well as in the alluvial valleys. This dominance is particularly true on hills derived from young, volcanic rock (Turner and Brown 1994).

In Arizona, in the vicinity of mountain ranges (e.g., Dome Rock, New Water, Plomosa, and Eagletail Mountains and associated uplands), elements of the Arizona Upland Subdivision of the Sonoran Desert become an integral part of the flora as mixed paloverde-cacti communities. Desert mountain ranges in western Arizona (i.e., west of a line drawn between Buckeye and Gila Bend and south of Interstate 10 [I-10]) are largely ecotonal between the Lower Colorado River Valley and Arizona Uplands subdivisions of the Sonoran Desert. In these mountains characteristic Arizona Upland community types (i.e., mixed paloverde-cacti) are rather strongly restricted to drainageways with Lower Colorado River Valley Subdivision communities (i.e., creosote bush communities) dominating on interfluvial areas.

This distinction is clearly visible on the bajadas on the west sides of the Dome Rock and Plomosa mountains, on the north side of the New Water Mountains, and on the east side of the Eagletail Mountains. In each of these ranges, there tends to be well-developed communities of foothill paloverde (*Parkinsonia microphylla*), ironwood, and a variety of cacti, including saguaro (*Carnegiea gigantea*), on the bajadas. Examination usually reveals that these communities are almost wholly restricted to drainages, including the smallest runnels, rather than being evenly distributed. Between the drainageways, the landscape is dominated by Lower Colorado River Valley Subdivision communities of creosote bush and bursage, with several species of cholla (*Opuntia* spp.), small columnar cacti, and prickly pear cacti (*Opuntia* spp.). The arborescent communities tend to follow drainages upslope, frequently giving hillsides the appearance of being true mixed paloverde-cacti communities, when in fact the interstitial landscape is dominated by creosote bush, bursage, and white brittlebush (*Encelia farinosa*). Perhaps the finest example of this situation in the study area occurs on the west slope of the southern Plomosa Mountains (west New Water Mountains), between Gold Nugget Road and Quartzite, where one has the distinct impression that lands south of I-10 are wholly dominated by woodlands of paloverde, ironwood, and saguaro. Viewed from the air, however, it is clear that these species are totally riparian and do not occur on interfluvial sites.

Creosote bush communities in the Arizona study area strongly dominate alluvial valley bottoms and are often the dominant vegetation type on mountain slopes. In the western part of the Arizona study area, west from approximately the central Plomosa/New Water Mountain complex, creosote bush communities are found on highly varnished desert pavement, while in the eastern part of the study area (e.g., the Harquahala and Ranegras plains), they occur on fine textured to gravelly soils.

Wash communities in the Arizona study area vary in species dominance depending on soil type. Washes that traverse broad creosote bush flats on fine soils (e.g., Centennial Wash) tend to be dominated by mesquite. Washes traversing rockier soil types support communities of ironwood, paloverde, saguaro, and a variety of shrubs. Smoketree, white burrobrush, and sweetbush are common in larger washes away from major mountain masses. For example, the large washes that drain the west side of the Dome Rock Mountains are dominated by smoketree and burrobrush at their lower ends.

Cacti are a common feature within the Arizona study area. Most species are restricted to rocky upland conditions, although at least one, the night-blooming cereus (*Peniocereus greggii*), is

rather strongly restricted to creosote bush flats with fine soils. Mountain slopes, hills, and rocky outcrops provide habitat for several species of cholla, prickly pear, and columnar cacti. The saguaro tends to become less common from east to west in the study area, and it probably does not occur at all in the study area west of the Colorado River. This obvious decrease in saguaro density is probably related to the diminution of summer rainfall from east to west in Arizona.

Wildlife

The mammalian fauna of the study area is dominated by species of small, nocturnal rodents and bats including several species of mice and kangaroo rats. Big game species present include desert bighorn sheep (*Ovis canadensis mexicana*), mule deer (*Odocoileus hemionus*), and javelina (*Pecari tajacu*). Carnivores present likely include coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), bobcat (*Lynx rufus*), and skunks (*Mephitis mephitis and Spilogale gracilis).*

Typical avian species present include black-chinned sparrow (*Amphispiza bilineata*), roadrunner (*Geococcyx californianus*), Gambel's quail (*Callipepla gambelii*), Gila woodpecker (*Melanerpes uropygialis*), curve-billed thrasher (*Toxostoma curvirostre*), and mourning dove (*Zenaida macroura*).

Representative amphibian and reptiles include Sonoran green toad (*Bufo retiformis*), zebratail lizard (*Callisaurus draconoides*), whiptails (*Cnemidophorus* spp.), western diamondback rattlesnake (*Crotalus atrox*), desert tortoise (*Gopherus agassizii*), and horned lizards (*Phrynosoma* spp.).

POTENTIAL IMPACTS – PROPOSED ROUTE

Potential impacts to biological resources associated with the proposed route are related to activities likely to occur during the construction, operation, and maintenance of the line. Additional impacts could result if roads created for this project provide access to previously inaccessible areas. Overall impact levels were determined to be low to moderate, based on the review of the resources present, anticipated level of disturbance to those resources, and effectiveness of applied mitigation.

Vegetation

Impacts to native vegetation associated with construction of the proposed project are not expected to be significant. Removal of plants associated with the project is expected to be minimal. Native vegetation characteristic of the Sonoran Desert is extensive in southern Arizona. Therefore, removal of the relatively small amount of native vegetation present on the project site would not harm this vegetation community as a whole.

Indirect impacts associated with the construction of the proposed transmission line could include an increase in non-native weed establishment and recruitment, particularly at tower sites, crane pads, materials stockpile yards, and concrete batch plant sites.

Wildlife

In areas where native vegetation is cleared there would be a permanent loss of potential habitat for small mammals, reptiles, and birds. Construction activities may result in temporary disturbance of wildlife due to the presence of construction equipment and human activity. Another construction-related impact is the potential for incidental injury or mortality of reptiles and fossorial mammals, although such impacts are expected to be minimal. Fish present in the Colorado River would not be affected by this project. The proposed transmission line would span the river.

POTENTIAL IMPACTS – SUBALTERNATE ROUTES

Impacts associated with the Harquahala-West and Palo Verde Subalternate routes would be similar to those for the Proposed Route for vegetation and wildlife.

TABLE D-1
MAMMAL SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Desert shrew	*Notiosorex crawfordi*	Any area with ample ground cover including plant debris, trash, and lumber
California leaf-nosed bat	*Macrotus californicus*	Sonoran desertscrub with caves and mines
Yuma myotis	*Myotis yumanensis*	Areas with rivers, ponds, canals, or other permanent water
Cave myotis	*Myotis velifer*	Desertscrub with caves, mines, or bridges and water nearby
Occult little brown bat	*Myotis lucifugus occultus*	Found at higher elevations, generally from the oak-pine zone up into ponderosa
California myotis	*Myotis californicus*	Desertscrub with rock faces containing crevices, occasionally caves and mines
Western pipistrelle	*Pipistrellus hesperus*	Areas with canyon walls or cliff faces for roosting, streambeds, and tanks for foraging
Big brown bat	*Eptesicus fuscus*	Wooded areas, desertscrub
Red bat	*Lasiurus borealis*	Roosts in large trees or shrubs along riparian habitats or the edges of fields and urban areas
Western yellow bat	*Lasiurus xanthinus*	Roosts in palms or broad-leaved trees in riparian habitat
Spotted bat	*Euderma maculatum*	Uneven rocky cliffs near a riparian area
Townsend's big-eared bat	*Plecotus townsendii*	Areas with caves or mines, structures for night roosts
Pallid bat	*Antrozous pallidus*	Desertscrub with caves, mine, cliffs, bridges, or other structures for roosts
Brazilian free-tailed bat	*Tadarida brasiliensis*	Desertscrub and foothills with mines, caves, bridges or old buildings
Pocketed free-tailed bat	*Tadarida femorosacca*	Rocky cliffs and slopes, structures

TABLE D-1
MAMMAL SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Big free-tailed bat	*Tadarida macrotis*	Rocky cliffs with crevices
Desert cottontail	*Sylvilagus audubonii*	Desertscrub, semi-desert grassland
Black-tailed jack rabbit	*Lepus californicus*	Desertscrub and other areas with open ground cover
Harris' antelope squirrel	*Ammospermophilus harrisii*	Rocky areas of creosote bush/saltbush/bursage
Rock squirrel	*Spermophilus variegatus*	Rocky areas above 1,600 feet
Round-tailed ground squirrel	*Spermophilus tereticaudus*	Creosote bush/saltbush desert with sandy or gravelly soil
Botta's pocket gopher	*Thomomys bottae*	Any area with soil suitable for digging burrows
Little pocket mouse	*Perognathus longimembris*	Sandy or gravelly soils in broken or rolling country
Arizona pocket mouse	*Perognathus amplus*	Desertscrub
Rock pocket mouse	*Chaetodipus intermedius*	Rocky areas of desertscrub
Desert pocket mouse	*Chaetodipus penicillatus*	Sandy areas of desertscrub with sparse vegetation
Bailey's pocket mouse	*Chaetodipus baileyi*	Flats and lower slope areas of desertscrub
Merriam's kangaroo rat	*Dipodomys merriami*	Sandy areas of desertscrub
Desert kangaroo rat	*Dipodomys deserti*	Areas with deep sandy soil
Western harvest mouse	*Reithrodontomys megalotis*	Desertscrub or chaparral
Cactus mouse	*Peromyscus eremicus*	Desertscrub, rocky areas, chaparral
Deer mouse	*Peromyscus maniculatus*	Coniferous or riparian woodland, desertscrub adjacent to canals or intermittent creeks
Southern grasshopper mouse	*Onychomys torridus*	Desertscrub or semi-desert grassland with compact soil
Arizona cotton rat	*Sigmodon arizonae*	Mesquite scrub and weedy areas along canals and washes
White-throated wood rat	*Neotoma albigula*	Areas below the conifer belt, especially with *Opuntia* or paloverde
Desert wood rat	*Neotoma lepida*	Desertscrub
Muskrat	*Ondatra zibethicus*	Irrigation canals associated with the Gila River
House mouse	*Mus musculus*	Weedy areas and cultivated fields, usually near human habitation
Coyote	*Canis latrans*	Cosmopolitan, from spruce forest to low desert
Kit fox	*Vulpes macrotis*	Desertscrub and desert grassland with sandy or softer clay soils
Gray fox	*Urocyon cineroargenteus*	Open desertscrub, chaparral, lower elevation woodland
Raccoon	*Procyon lotor*	Areas with permanent water
Ringtail	*Bassariscus astutus*	Steep rocky areas near water
Badger	*Taxidea taxus*	Flats and drainages adjacent to mountains, grasslands
Western spotted skunk	*Spilogale gracilis*	Low and middle elevations, often in rocky areas or around human habitation
Striped skunk	*Mephitis mephitis*	From spruce/fir belt to sea level, usually near permanent water
Southwestern river otter	*Lontra canadensis sonora*	Rivers and lakes
Mountain lion	*Puma concolor*	Rocky or mountainous areas, especially with many deer
Bobcat	*Felis rufus*	Rocky upland areas interspersed with open desert, grassland or woodland

TABLE D-1
MAMMAL SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Collared peccary	*Tayassu tajacu*	Desertscrub, especially in thickets along creeks and old streambeds
Mule deer	*Odocoileus hemionus*	Pine forest, oak woodland, chaparral, upland desert
Desert bighorn sheep	*Ovis canadensis mexicana*	Found in precipitous desert mountain ranges

Source: Hoffmeister 1986 possibly include Rosenberg et al 1991?

TABLE D-2
BIRD SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Common loon	*Gavia immer*	Lakes, ponds, and aqueducts
Pied-billed grebe	*Podilymbus podiceps*	Lakes, ponds, streams, and canals
Eared grebe	*Podiceps nigricollis*	Lakes and ponds
Western grebe	*Aechmophorus occidentalis*	Lakes, ponds, and lagoons
Double-crested cormorant	*Phalacrocorax auritus*	Lakes, ponds, streams, and aqueducts
Western least bittern	*Ixobrychus exilis hesperis*	Marshy areas of emergent vegetation
Great blue heron	*Ardea herodias*	Lakes, ponds, streams, canals, and marshes
Great egret	*Ardea alba*	Ponds, streams, and marshes
Snowy egret	*Egretta thula*	Ponds, streams, and marshes
Green heron	*Butorides virescens*	Lakes, ponds, streams, marshes, and canals
Black-crowned night heron	*Nycticorax nycticorax*	Lakes, ponds, marshes, and streams
White-faced ibis	*Plegadis chihi*	Lakes, ponds, streams, marshes, and fields
Canada goose	*Branta canadensis*	Lakes, ponds, and fields
Gadwall	*Anas strepera*	Lakes, ponds, and streams
American wigeon	*Anas americana*	Lakes, ponds, and streams
Mallard	*Anas platyrhynchos*	Lakes, ponds, streams, and canals
Blue-winged teal	*Anas discors*	Ponds
Cinnamon teal	*Anas cyanoptera*	Ponds, streams, and canals
Northern shoveler	*Anas clypeata*	Lakes, ponds, and streams
Northern pintail	*Anas acuta*	Lakes, ponds, and streams
Green-winged teal	*Anas crecca*	Lakes, ponds, and streams
Redhead	*Aythya americana*	Lakes and ponds
Ring-necked duck	*Aythya collaris*	Lakes and ponds
Lesser scaup	*Aythya affinis*	Lakes and ponds
Bufflehead	*Bucephala albeola*	Lakes, ponds, and streams
Ruddy duck	*Oxyura jamaicensis*	Lakes and ponds
Turkey vulture	*Cathartes aura*	Open country, woodlands, farms
Osprey	*Pandion haliaetus*	Lakes and streams
Bald eagle	*Haliaeetus leucocephalus*	Lakes and rivers
Northern harrier	*Circus cyaneus*	Wetlands, open fields
Sharp-shinned hawk	*Accipiter striatus*	Generally distributed
Cooper's hawk	*Accipiter cooperii*	Broken woodlands or streamside groves
Swainson's hawk	*Buteo swainsoni*	Fields and desert
Red-tailed hawk	*Buteo jamaicensis*	Plains, prairie groves, desert
Ferruginous hawk	*Buteo regalis*	Dry, open country

TABLE D-2
BIRD SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
American kestrel	*Falco sparverius*	Open country, cities
Prairie falcon	*Falco mexicanus*	Dry, open country, prairies
Peregrine falcon	*Falco peregrinus*	Cliffs, generally distributed, tops of tall urban buildings
Gambel's quail	*Callipepla gambelii*	Desert scrublands and thickets
Yuma clapper rail	*Rallus longirostris yumanensis*	Cattail marshes and/or bulrush marshes
Western snowy plover	*Charadrius alexandrinus nivosus*	Beaches and dry mud or salt flats along the margins of rivers, lakes, and ponds
Common moorhen	*Gallinula chloropus*	Streams, marshes, and ponds
American coot	*Fulica americana*	Lakes, ponds, streams, and marshes
Killdeer	*Charadrius vociferus*	Ponds, streams, and fields
Greater yellowlegs	*Tringa melanoleuca*	Lakes, ponds, streams, and flooded fields
Spotted sandpiper	*Actitis macularia*	Lakes, ponds, streams, and canals
Western sandpiper	*Calidris mauri*	Ponds and streams
Least sandpiper	*Calidris minutilla*	Ponds and streams
Long-billed dowitcher	*Limnodromus scolopaceus*	Ponds and streams
Wilson's phalarope	*Phalaropus tricolor*	Lakes and ponds
Ring-billed gull	*Larus delawarensis*	Lakes, ponds, and streams
Rock dove	*Columba livia*	Parks, fields, urban settings
White-winged dove	*Zenaida asiatica*	Dense mesquite, mature citrus groves, riparian woodlands, saguaro-paloverde deserts
Mourning dove	*Zenaida macroura*	Wide variety of habitats
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Riparian areas
Greater roadrunner	*Geococcyx californianus*	Scrub desert and mesquite groves, less common in chaparral and oak woodland
Barn owl	*Tyto alba*	Dark cavities in city and farm buildings, cliffs, trees
Western screech owl	*Otus kennicottii*	Open woodlands, streamside groves, deserts, suburban areas
Great horned owl	*Bubo virginianus*	Common in wide variety of habitats
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	Mature cottonwood/willow, mesquite bosques, and Sonoran desertscrub
Elf owl	*Micrathene whitneyi*	Desert lowlands, canyons, foothills
Burrowing owl	*Athene cunicularia*	Open country, golf courses, airports
Lesser nighthawk	*Chordeiles acutipennis*	Dry, open country, scrubland, desert
Common poorwill	*Phalaenoptilus nuttallii*	Sagebrush and chaparral slopes
White-throated swift	*Aeronautes saxatalis*	Mountains, canyons, and cliffs
Black-chinned hummingbird	*Archilochus alexandri*	Lowlands and low mountains
Costa's hummingbird	*Calypte costae*	Desert washes, dry chaparral
Rufous hummingbird	*Selasphorus rufus*	Suburban and riparian areas
Belted kingfisher	*Ceryle alcyon*	Rivers and brooks, ponds and lakes, estuaries
Gila woodpecker	*Melanerpes uropygialis*	Towns, scrub desert, cactus country, streamside woods
Ladder-backed woodpecker	*Picoides scalaris*	Dry brushlands, mesquite and cactus country, towns and rural areas
Northern flicker	*Colaptes auratus*	Open woodlands, suburban areas
Gilded flicker	*Colaptes chrysoides*	Low desert woodlands, favors saguaro

TABLE D-2
BIRD SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Western wood-pewee	*Contopus sordidulus*	Riparian areas, wooded habitats, including suburban areas
Southwestern willow flycatcher	*Empidonax traillii extimus*	Brushy habitats in wet areas
Pacific-slope flycatcher	*Empidonax difficilis*	Migrant through lowlands
Black phoebe	*Sayornis nigricans*	Woodlands, parks, suburbs, prefers to nest near water
Say's phoebe	*Sayornis saya*	Dry, open areas, canyons, cliffs
Vermilion flycatcher	*Pyrocephalus rubinus*	Streamside shrubs, bottomlands, near small wooded ponds
Ash-throated flycatcher	*Myiarchus cinerascens*	Wide variety of habitats
Brown-crested flycatcher	*Myiarchus tyrannulus*	Saguaro desert, river groves, lower mountain woodlands
Western kingbird	*Tyrannus verticalis*	Dry, open country
Common raven	*Corvus corax*	Mountains, deserts, coastal areas
Bell's vireo	*Vireo bellii*	Riparian areas, especially in mesquite trees
Warbling vireo	*Vireo gilvus*	Migrant in lowlands
Horned lark	*Eremophila alpestris*	Dirt fields, gravel ridges, shores
Tree swallow	*Tachycineta bicolor*	Streams, ponds, and lakes
Violet-green swallow	*Tachycineata thalassina*	Riparian areas, streams, ponds, and lakes
Northern rough-winged swallow	*Stelgidopteryx serripennis*	Banks of streams and canals, streams, ponds, and lakes
Cliff swallow	*Petrochelidon pyrrhonota*	Lakeside, cliffs, and canals; nesting under nearby bridges, buildings, and other overhangs; streams and ponds
Barn swallow	*Hirundo rustica*	Streams, ponds, lakes, and agricultural areas
Verdin	*Auriparus flaviceps*	Southwestern desert
Cactus wren	*Campylorhynchus brunneicapillus*	Cholla cactus habitat
Rock wren	*Salpinctes obsoletus*	Arid and semiarid habitats
Canyon wren	*Catherpes mexicanus*	Canyons and cliffs, often near water
Bewick's wren	*Thryomanes bewickii*	Wooded riparian areas
House wren	*Troglodytes aedon*	Dense, brushy areas
Ruby-crowned kinglet	*Regulus calendula*	Woodlands, thickets
Black-tailed gnatcatcher	*Polioptila melanura*	Desert, especially washes
Western bluebird	*Sialia mexicana*	Woodlands, farmlands, orchards, deserts, especially in mesquite-mistletoe groves
American robin	*Turdus migratorius*	Generally distributed
Northern mockingbird	*Mimus polyglottos*	Variety of habitats
Bendire's thrasher	*Toxostoma bendirei*	Open farmlands, grasslands, brushy desert
Curve-billed thrasher	*Toxostoma curvirostre*	Cholla deserts and suburban areas
Crissal thrasher	*Toxostoma crissale*	Riparian areas and washes
American pipit	*Anthus rubescens*	Fields, ponds, pastures, riparian areas
Cedar waxwing	*Bombycilla cedrorum*	Riparian and suburban areas
Phainopepla	*Phainopepla nitens*	Riparian areas, especially in trees with mistletoe
Loggerhead shrike	*Lanius ludovicianus*	Generally distributed
European starling	*Sturnus vulgaris*	Generally distributed
Orange-crowned warbler	*Vermivora celata*	Riparian and suburban areas in lowlands
Lucy's warbler	*Vermivora luciae*	Mesquites and cottonwoods along watercourses
Yellow warbler	*Dendroica petechia*	Wet habitats, open woodlands, gardens, orchards
Yellow-rumped warbler	*Dendroica coronata*	Riparian and suburban areas

TABLE D-2
BIRD SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Townsend's warbler	*Dendrioca townsendi*	Lowland riparian and suburban areas
Common yellowthroat	*Geothlypis trichas*	Marshes and suburban areas
Wilson's warbler	*Wilsonia pusilla*	Dense, moist woodlands, bogs, streamside tangles
Yellow-breasted chat	*Icteria virens*	Dense thickets and brush
Summer tanager	*Piranga rubra*	Riparian areas
Western tanager	*Piranga ludoviciana*	Transient in lowlands
Green-tailed towhee	*Pipilo chlorurus*	Brushy areas, riparian, and suburban areas
Spotted towhee	*Pipilo maculates*	Brushy areas, riparian and suburban areas
Canyon towhee	*Pipilo fuscus*	Sonoran Desertscrub
Abert's towhee	*Pipilo aberti*	Riparian areas, suburban areas
Chipping sparrow	*Spizella pallida*	Brushy edges and riparian areas
Brewer's sparrow	*Spizella breweri*	Deserts, field edges, and suburban areas
Vesper sparrow	*Pooecetes gramineus*	Open weedy fields, roadsides, and grassy areas
Lark sparrow	*Chondestes grammacus*	Brushy, weedy areas, riparian areas, and field edges
Black-throated sparrow	*Amphispiza bilineata*	Desert scrub
Lark bunting	*Calamospiza melanocorys*	Brushy desert and field edges
Savannah sparrow	*Passerculus sandwichensis*	Open fields, roadsides, and grassy areas
Song sparrow	*Melospiza melodia*	Riparian areas, marshes, and vegetated lakesides
Lincoln's sparrow	*Melospiza lincolnii*	Riparian areas, marshes, brushy fields, and hedgerows
White-crowned sparrow	*Zonotrichia leucophrys*	Suburban, riparian, and other brushy areas
Dark-eyed junco	*Junco hyemalis*	Desertscrub
Black-headed grosbeak	*Pheucticus melanocephalus*	Transient in lowlands
Northern cardinal	*Cardinalis cardinalis*	Woodland edges, swamps, streamside thickets, suburban gardens
Pyrrhuloxia	*Cardinalis sinuatus*	Thorny brush, mesquite thickets, desert, woodland edges, ranchlands
Blue grosbeak	*Guiraca caerulea*	Riparian areas
Lazuli bunting	*Passerina amoena*	Weedy and shrubby areas along irrigation ditches and other bodies of water and suburban areas
Red-winged blackbird	*Agelaius phoeniceus*	Riparian areas, irrigated fields, marshes, and feedlots
Western meadowlark	*Sturnella neglecta*	Fields and other open areas, deserts
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	Marshes, fields, feedlots
Brewer's blackbird	*Euphagus cyanocephalus*	Fields, farmyards, feedlots, ponds, and riparian areas
Great-tailed grackle	*Quiscalus mexicanus*	Riparian areas, marshes, ponds, farmyards, and suburban areas
Bronzed cowbird	*Molothrus aeneus*	Riparian and suburban areas
Brown-headed cowbird	*Molothrus ater*	Suburbs and agricultural areas
Hooded oriole	*Icterus cucullatus*	Riparian and suburban areas
Bullock's oriole	*Icterus bullockii*	Riparian areas
House finch	*Carpodacus mexicanus*	Riparian and suburban areas, farmland, desert
Lesser goldfinch	*Carduelis psaltria*	Riparian areas
House sparrow	*Passer domesticus*	Associated with human presence

Sources: National Geographic Society 1999; Witzeman, et al. 1997

TABLE D-3 REPTILE AND AMPHIBIAN SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT		
Common Name	**Scientific Name**	**Habitat**
Sonoran desert toad	*Bufo alvarius*	Ranges from arid mesquite-creosote bush lowlands and arid grasslands into the oak-sycamore-walnut groves in mountain canyons, often found near permanent water of springs, reservoirs, canals, and streams, but also frequents temporary pools
Great plains toad	*Bufo cognatus*	Inhabits prairies or deserts, often breeding after heavy rains in summer in shallow temporary pools or quiet water of streams, marshes, irrigation ditches, and flooded fields, frequents creosote bush desert, mesquite woodland, and sagebrush plains
Red-spotted toad	*Bufo punctatus*	Desert streams and oases, open grassland and scrubland, oak woodland, rocky canyons and arroyos, in crevices among rocks for shelter, breeds in rain pools, reservoirs, and temporary pools of intermittent streams
Southwestern woodhouse toad	*Bufo woodhousei australis*	Grassland, sagebrush flats, woods, desert streams, valleys, floodplains, farms, and city backyards, in sandy areas, breed in quiet water of streams, marshes, lakes, freshwater pools, and irrigation ditches
Couch spadefoot	*Scaphiopus couchii*	Frequents shortgrass plains, mesquite savannah, creosote bush desert, thornforest, tropical deciduous forest, and other areas of low rainfall
Bullfrog	*Rana catesbeiana*	Highly aquatic, remaining in or near permanent water, frequents prairie, woodland, chaparral, forests, desert oases, and farmland, enters marshes, ponds, lakes, reservoirs, and streams – usually quiet water with thick growth of cattails or other aquatic vegetation
Lowland leopard frog	*Rana yavapaiensis*	Frequents desert, grassland, oak and oak-pine woodland, in permanent pools of foothill streams, overflow ponds and side channels of major rivers, permanent springs, and in drier areas – more or less permanent stock tanks
Sonoran mud turtle	*Kinosternon sonoriense*	Stream-dwelling turtle that frequents springs, creeks, ponds, and the water holes of intermittent streams, inhabits woodlands, or oaks and piñon-juniper or forests of ponderosa pine and Douglas fir, also occasionally inhabits foothill grasslands and desert
Sonoran desert tortoise	*Gopherus agassizii*	Completely terrestrial desert species requiring firm but not hard ground for construction of burrows, frequent desert oases, riverbanks, washes, and rocky slopes
Spiny softshell	*Trionyx spiniferus*	River turtle attracted to quiet water with bottom of mud, sand, or gravel, also enters ponds, canals, and irrigation ditches
Great Basin collared lizard	*Crotaphytus bicinctores*	Rock-dwelling lizard that frequents canyons, rocky gullies, limestone ledges, mountain slopes, and boulder-strewn alluvial fans, usually where vegetation is sparse
Long-nosed leopard lizard	*Gambelia wislizenii wislizenii*	Arid and semiarid plains grown to bunch grass, alkali bush, sagebrush, creosote bush, or other scattered low plants, ground may be hardpan, gravel, or sand
Western banded gecko	*Coleonyx variegatus*	Variety of habitats, often associated with rocks
Gila monster	*Heloderma suspectum cinctum*	Canyon bottoms and washes in desert or desert grassland

TABLE D-3 REPTILE AND AMPHIBIAN SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT		
Common Name	**Scientific Name**	**Habitat**
Desert iguana	*Dipsosaurus dorsalis*	Creosote bush desert to subtropical scrub, most common in sandy habitats but also occurs along rocky streambeds, on bajadas, silty floodplains, and on clay soils
Common chuckwalla	*Sauromalus ater*	Rock-dwelling, herbivorous lizard, widely distributed in the desert
Zebra-tailed lizard	*Callisaurus draconoides*	Frequents washes, desert pavements of small rocks, and hardpan
Desert horned lizard	*Phrynosoma platyrhinos*	Arid lands on sandy flats, alluvial fans, along washes, and at the edges of dunes, associated with creosote bush, saltbush, greasewood, cactus, and ocotillo in the desert
Regal horned lizard	*Phrynosoma solare*	Frequents rocky and gravelly habitats of the arid and semiarid plains, hills, and lower slopes of mountains, often with cactus, mesquite, and creosote bush
Mojave fringe-toed lizard	*Uma scoparia*	Aeolian sand habitats, at elevations from 300 to 3,000 feet
Arizona skink	*Eumeces gilberti arizonensis*	Found in a wide variety of generally mesic habitats, including cottonwood and mesquite riparian areas, chaparral, pinyon-juniper woodland, and conifer forest
Western whiptail	*Cnemidophorus tigris*	Inhabits deserts and semiarid habitats, usually where plants are sparse, also found in woodland, streamside growth, and in the warmer, drier parts of forests
Red-backed whiptail	*Cnemidophorus xanthonotus*	Found in habitats ranging from the Arizona Upland Subdivision of the Sonoran Desert up to canyons and hills in juniper woodlands
Desert spiny lizard	*Sceloporus magister*	Arid and semiarid regions on plains and lower slopes of mountains, found in Joshua tree, creosote bush, and shad-scale deserts, mesquite-yucca grassland, juniper and mesquite woodland, subtropical thornscrub, and along rivers grown to willows and cottonwoods
Brush lizard	*Urosaurus graciosus*	Desert species, frequents areas of loose sand and scattered bushes and trees, creosote bush, burrobush, galleta grass, catclaw, mesquite, and paloverde
Tree lizard	*Urosaurus ornatus*	Frequents mesquite, oak, pine, juniper, alder, cottonwood, and non-native trees such as tamarisk and rough-bark eucalyptus, but may occur in treeless areas, especially attracted to river courses
Side-blotched lizard	*Uta stansburiana*	Arid or semiarid regions with sand, rock, hardpan, or loam with grass, shrubs, and scattered trees, often found along sandy washes
Western blind snake	*Leptotyphlops humilis*	Desertscrub and brush covered hillsides with loose soils
Banded sand snake	*Chilomeniscus cinctus*	Loose soils in low desert or upland
Rosy boa	*Charina trivirgata*	Rocky shrublands and desert, particularly near water source
Western glossy snake	*Arizona occidentalis*	Below 6,000 feet in sparsely vegetated woodland, chaparral, grassland or desertscrub with loose soil
Western shovel-nosed snake	*Chionactis occipitalis*	Sparsely vegetated desert areas with pockets of loose soil
Night snake	*Hypsiglena torquata*	Various upland and desert habitats used

TABLE D-3 REPTILE AND AMPHIBIAN SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT		
Common Name	**Scientific Name**	**Habitat**
Coachwhip	*Masticophis flagellum*	Sparsely vegetated areas from juniper woodland to low desert
Spotted leaf-nosed snake	*Phyllorhynchus decurtatus*	Open desert with finer loose soils, especially creosote bush (*Larrea tridentata*)
Gopher snake	*Pituophis catenifer*	Various habitats from mountain to low desert and coastal
Long-nosed snake	*Rhinocheilus lecontei*	Desertscrub, prairie, tropical woodland to 5,500 feet
Western patch-nosed snake	*Salvadora hexalepis*	Piñon-juniper woodland to low deserts on variety of soil types
Glossy snake	*Arizona elegans*	Sandy or loamy open areas – light shrubby to barren desert, sagebrush flats, grassland, chaparral-covered slopes, and woodland
Common kingsnake	*Lampropeltis getulus*	Woodland, swampland, coastal marshes, river bottoms, farmland, prairie, chaparral, and desert
Ground snake	*Sonora semiannulata*	Wide range of habitats in loose soil with some subsurface moisture
Southwestern black-headed snake	*Tantilla hobartsmithi*	In loose soil or plant litter in desert grassland and wood land habitats
Checkered garter snake	*Thamnophis marcianus*	Low elevation rivers, streams, ponds, and canals, and adjacent areas.
Western coral snake	*Micruroides euryxanthus*	Wide range of arid habitats including grassland, woodland, scrub and agricultural lands, particularly upland desert in washes and river bottoms.
Western diamondback rattlesnake	*Crotalus atrox*	Wide range of habitats below 7,000 feet
Sidewinder	*Crotalus cerastes*	Desert areas with fine loose sand, often near small shrubs
Southwestern speckled rattlesnake	*Crotalus mitchellii*	From juniper woodland to succulent desert, often in rocky areas
Black-tailed rattlesnake	*Crotalus molossus*	Upland desert to pine-oak woodland
Mojave rattlesnake	*Crotalus scutulatus*	Mostly in upland desert and lower mountain slopes
Source: Prival 1999; Stebbins 2003		

TABLE D-4
FISH SPECIES THAT MAY OCCUR IN THE VICINITY OF THE PROPOSED PROJECT

Common Name	Scientific Name	Habitat
Threadfin shad	*Dorosoma petenense*	Lakes, ponds, larger rivers, estuaries, canals, and reservoirs; often in moderate current, frequently congregating below swift riffles, in circular eddies, or in open flowing pools
Carp	*Cyprinus carpio*	Streams, natural lakes, and manmade impoundments, over all types of bottoms and in clear or turbid waters
Bonytail chub	*Gila elegans*	Flowing pools and backwaters, usually over mud or rocks
Razorback sucker	*Xyrauchen texanus*	Silt- to rock-bottomed backwaters near strong currents and deep pools in medium to large rivers
Red shiner	*Notropis lutrensis*	Wide variety of low gradient habitats, especially in backwaters, creek mouths and medium-sized streams with sand/silt bottoms
Fathead minnow	*Pimephales promelas*	Wide range of habitats from ponds to flowing streams
Channel catfish	*Ictalurus pounctatus*	Clear, medium to large rivers with swift currents over sand or gravel-rocky bottoms, may enter brackish waters
Black bullhead	*Ictalurus melas*	Ponds, pools of all sizes in streams and rivers, and in swampy habitats
Yellow bullhead	*Ictalurus natalis*	Clear, rocky-bottomed, medium-sized streams
Mosquitofish	*Gambusia affinis*	Vegetated ponds, lakes, drainage ditches, and backwaters and oxbows of sluggish streams; often in brackish or marine situations
Sailfin molly	*Poecilia latipinna*	Springs, lakes and ponds, rivers and streams, drainage ditches, and salt marshes
Largemouth bass	*Micropterus salmoides*	Clear, quiet waters with aquatic vegetation
Green sunfish	*Lepomis cyanellus*	Varied habitats, usually near cover such as brushy banks, cliffs, or piles of rubble; not normally in brackish water
Bluegill	*Lepomis macrochirus*	Shallow warm lakes, ponds, and slow-flowing rivers and creeks often with abundant aquatic vegetation
Black crappie	*Pomoxis nigromaculatus*	Quiet warm waters, usually associated with abundant aquatic vegetation and sandy to muddy bottoms in large ponds and shallow areas of lakes
Mozambique mouthbrooder	*Tilapia mossambica*	Slow or still, weedy waters; in canals and backwaters

Source: Lee, et al. 1980; Minckley 1973

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EXHIBIT E
SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

EXHIBIT E
SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

As stated in Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon."

Exhibit E includes summaries of existing visual and cultural resources, as well as the potential impacts associated with the construction, operation, and maintenance of the proposed route. For further information refer to Exhibit B-2, Devers-Palo Verde No. 2 Transmission Line Project PEA (Volume I).

SCENIC AREAS/VISUAL RESOURCES

The visual resource study for the DPV2 project was based on the Bureau of Land Management's (BLM's) Visual Resource Management (VRM) System and addresses the potential visual effects of the proposed project on landscape scenic quality, sensitive viewers, and compliance with VRM classes. The visual resource studies were conducted by EPG investigators from August 2003 to March 2004, and updated in 2005 by reviewing aerial photography, maps and planning documents; contacts with agencies; and field reconnaissance of the proposed route.

Methods and Results

Data were collected within 2 miles on either side of the centerline of the proposed transmission line route in order to characterize the visual resources in the study area. The impact analysis was based on the BLM's VRM System (8400 series, 1984). The study also tiers off of previous environmental studies completed for the DPV2 project including the DPV2 PEA (SCE 1988) and Final SEIS (BLM 1988). The complete methodology is described in Exhibit B-2, PEA (Vol. I, p.4-113). Following is a summary of the results of the study for the portion of the project within Arizona.

Existing Conditions

Landscape Character

Landscapes within the study area that would be crossed by the proposed transmission line route consist of six distinct landscape character types including: desert mountains, desert foothills, bajadas, desert plains, riparian, and agricultural. Each landscape character type is described below.

The desert mountains are generally north and northwest trending ridges that are steep, rugged, rocky, and surrounded at lower elevations by alluvial fans. These alluvial fans coalesce to form the bajada, a gentle rolling terrain dissected by arroyos that exhibit a rock soil and diversity in vegetation. Foothills typically occur adjacent to or within the bajada, exhibiting rolling land forms and a variety of vegetation and color.

Between the mountain ridges and foothills/bajada lies the contrasting landscape of the broad relatively flat alluvial basins or desert plains. Ephemeral streams or arroyos with their xeroriparian vegetation traverse the plains, providing texture and interest in the often sparsely vegetated plain along drainages

The Colorado River, which forms the Arizona/California border is a unique and distinct visual feature in the desert landscape.

Cultural Modifications

Cultural modifications adjacent to the proposed 500kV transmission line were identified through mapping and field review in order to determine those locations where landscape alterations would influence landscape scenery and views. In this regard, the presence of existing 500kV transmission lines (to be immediately paralleled by the proposed 500kV line) has created an existing utility corridor that has modified the local landscape setting along the entire length of the proposed route.

Scenic Quality

Rating Forms were developed for the landscape types described above consistent with BLM methods and used to evaluate the Scenic Quality of the areas affected by the project. Areas designated as Class A scenery (distinctive quality) include mountainous terrain consisting of a variety of rock formations, including Burnt Mountain, Dome Rock Mountain, and the KOFA and Plomosa mountains. The Colorado River, with its flowing waters and associated riparian vegetation, is also considered Class A scenery in an otherwise arid landscape

Class B scenery is associated with landscapes having less visual variety (e.g., the southern portion of the Plomosa, Eagletail, Big Horn, and Saddle mountains) and the foothills of the KOFA National Wildlife Refuge, where special features such as saguaro cactus are present. The local variety represented through color contrast, texture, and visual interest associated with agricultural use in a desert landscape resulted in a Class B scenic designation for the agricultural lands located near the Harquahala Switchyard.

Class C landscapes (those considered to be common, with minimal variety) are generally associated with low, isolated desert hills and desert plains (typically with a low diversity of vegetation). Examples of Class C scenery include the Ranegras and Harquahala plains.

Sensitive Viewers

Visual sensitivity reflects the degree of concern for change from sensitive viewing locations within the project area. Sensitive viewers within the study area include residential, recreation, and travel route viewers as described below.

Residential Viewers

Residential viewers are limited to isolated dispersed residences located only along Link 1a (agricultural lands within Harquhala Valley) and Link 2 (one residence within the KOFA National Wildlife Refuge). These viewers were determined to have high visual sensitivity.

Recreational Viewers

High visual sensitivity was identified for all dispersed recreation associated with wilderness areas including Hummingbird Springs, Big Horn Mountains, Eagletail Mountains, KOFA National Wildlife Refuge, and New Water Mountains. Additionally, the La Posa Recreation Area and the Colorado River are identified as high sensitivity recreation areas.

Areas of moderate sensitivity include the proposed equestrian trail along the CAP.

Travel Route Viewers

No high sensitivity travel routes were identified within the study area. I-10, Buckeye-Salome Road, and State Route (SR) 95, were all identified as moderately sensitive travel routes.

Agency Management Objectives

Visual resources on lands administered by the BLM are managed based on established Resource Management Plans (RMPs), including VRM classes. In this regard, the VRM classes assist in defining the acceptable degree of visual change in the natural landscape on public lands. There are four VRM classes (I, II, III, and IV). Class I areas are afforded the highest level of protection and Class IV the lowest.

The proposed Devers-Harquahala transmission line route does not cross any Class I lands (predominantly wilderness areas). However Class I areas identified within the project area, that would not be affected by the proposed project, include the KOFA National Wildlife Refuge and New Water Mountains, Eagletail Mountains, Big Horn Mountains, and Hummingbird Springs.

Areas designated as Class II include the KOFA Mountains, Wildlife Refuge, and the Colorado River and would be crossed by the proposed route within a designated BLM utility corridor.

Areas designated as class III include portions of the La Posa, Ranegras, and Harquahala plains; Tonopah Desert; Dome Rock and Plomosa mountains; and Plomosa Pass. In addition, Class III designated areas are interspersed among the agricultural lands near the Harquahala Generating Station, Plomosa and Saddle mountains, in a small portion of the Dome Rock Mountains, and in the Colorado River Riparian Zone. Again, within these areas the proposed route would be located in a designated BLM utility corridor on lands managed by the BLM. The remainder of the proposed route crosses lands designated as class IV within a designated BLM utility corridor.

Potential Impacts

Potential impacts consist of effects on scenic quality, views from sensitive viewing locations (residences, travel routes, and recreation areas) and compliance with VRM. The majority of impacts that would result from the construction of the proposed project are predicted to be minimal because (1) the proposed Devers-Harquahala 500kV transmission line would be constructed using existing access roads within a designated BLM utility corridor; (2) the proposed transmission line would be constructed parallel to existing 500kV transmission lines with similar structures and spans where applicable; (3) high sensitivity viewers (residences) are limited and occur in dispersed isolated areas along the proposed route; and (4) viewers from I-10 travel at a high rate of speed (short viewing duration) and the proposed route would be backdropped for the majority of the length of the corridor. In evaluating potential impacts, simulations were produced for the proposed project from key viewpoints along the proposed route and the Harquahala-West Subalternate Route (Exhibit B-2 – Proponent's Environmental Assessment).

Impacts to scenic quality, sensitive viewers, and compliance with agency management objectives (VRM classes) are summarized below.

Scenic Quality

Potential impacts to scenic quality are anticipated to be minimal as the Devers-Harquahala line would parallel the existing DPV 1 500kV transmission line within a designated BLM utility corridor primarily in Class C landscapes. In areas of higher scenic quality (e.g., in areas of Class A and B scenery) impacts again, would be reduced based on the modified setting and presence of the existing transmission line. In specific locations, (in Copper Bottom Pass, within the Dome Rock Mountains) the proposed new line (conductors) has been previously installed on existing double-circuit lattice tower structures within a designated BLM utility corridor, resulting in minimal change.

Sensitive Viewers

Residential Viewers

Impacts to residential viewers would occur in the agricultural lands of the Harquahala Valley, north of the Eagletail Mountains, and to an isolated residence within the KOFA National Wildlife Refuge. These impacts would be minimized because the proposed route would parallel an existing 500kV transmission line with similar structures/spans and use existing access roads within a designated BLM utility corridor. This would apply to both existing viewers and viewers associated with potential planned future use.

Recreational Viewers

Potential impacts to recreation viewers are anticipated to be minimal as the proposed Devers-Harquahala transmission line route parallels the existing 500kV transmission line within a designated BLM utility corridor. These impacts would be associated with views from recreation users along the Colorado River and recreation areas near the river, in the KOFA National Wildlife Refuge, at the La Posa Visitor Area, and in the Big Horn and Eagletail mountains, and future CAP trail users.

Travel Route Viewers

Potential impacts to travel routes within the project area are anticipated to be minimal because the proposed line would parallel an existing 500kV transmission line within a designated BLM utility corridor. Furthermore, the proposed transmission line would be backdropped and intermittently screened by topography and/or vegetation from viewers using I-10 and Buckeye-Salome Road. While impacts are anticipated to occur where the proposed route crosses I-10, these impacts would be reduced because the proposed route would parallel the DPV1 line and the future TS5 500kV transmission lines with similar structures and spans. SR 95 would be crossed by the proposed route adjacent to an existing 161kV H-frame transmission line at approximately a 90-degree angle, effectively reducing viewing duration, thus further minimizing impacts.

Agency Management Objectives

The proposed route would cross lands considered to be of Class II, Class III, and Class IV within a designated BLM utility corridor adjacent to the existing 500kV transmission line. Therefore, the project is expected to be in compliance with VRM objectives.

Harquahala-West Subalternate Route

In general, impacts to scenic quality are anticipated to be minimal because the route would occur in primarily Class C landscapes adjacent to disturbance created by an existing pipeline corridor that would be paralleled for portions of the subalternate route.

Several residences occur within ½ to 1 mile of the route with open direct views of the subalternate project route. Because this route would not parallel an existing linear facility, impacts to those residences would be greater than in areas where existing facilities would be paralleled along the proposed route.

Impacts would result to sensitive recreation viewers using the trail in the Eagletail Wilderness. In this area, the views of the subalternate route, however, are partially screened and back-dropped and would occur approximately 1 mile away from the trail, resulting in minimal impacts. A simulation (Exhibit B-2 – Proponent's Environmental Assessment, Figure 5-8) was prepared to depict the project as it would appear from the trail viewpoint. Transportation views are from minor and secondary local roads.

Palo Verde Subalternate Route

Impacts to scenic quality (primarily Class C scenery) are anticipated to be minimal for this alternative as the existing conditions along the subalternate route have been modified by existing transmission lines and associated access roads.

Impacts to sensitive viewers are also anticipated to be minimal and limited to an isolated residence as well as travelers using the Buckeye-Salome Road and minor and secondary roads (in the vicinity of Palo Verde Nuclear Generation Station) as the proposed transmission line would be constructed adjacent to two 500kV transmission lines for the majority of the route. No recreational viewers were identified in the context of this alternative.

HISTORIC SITES AND STRUCTURES AND ARCHAEOLOGICAL SITES

Overview

A cultural resources investigation was conducted to determine whether or not any historic sites and structures or archaeological sites are in the vicinity of the proposed Devers-Harquahala 500kV transmission line, and how they might be affected by the construction of the line. The investigation included a records review and a Class III cultural resource pedestrian survey of potentially affected tower sites and spur roads associated with the proposed DPV2 transmission line project (Dobschuetz et al. 2004; Dobschuetz principal investigator). The records review included research at the following agencies and institutions:

- Arizona State Historic Preservation Office

- Arizona State Museum
- Department of Anthropology at Arizona State University
- Museum of Northern Arizona
- State and Phoenix and Yuma field offices of the BLM

The goal of the review was to identify any prior cultural resource surveys and recorded archaeological and historical sites within approximately 1 mile of the proposed and alternative transmission line routes.

In consultation with the BLM, it was decided that an update of the previous cultural resource studies was appropriate given the length of time that had passed since they were conducted. SCE hired EPG to conduct the update by revisiting proposed tower locations and spur roads for those portions of the project located in Arizona. A 220- by 750-foot area was also surveyed for a proposed series capacitor bank site adjacent to the Devers-Harquahala right-of-way.

EPG also conducted studies for two subalternate routes, the Palo Verde Subalternate Route and the Harquahala West Subalternate Route. The Palo Verde Route study included intensive pedestrian survey of an alternative route that would terminate at the Palo Verde Nuclear Generating Station. The Harquahala West Route Study included a research review and limited sample survey of the route that would extend from a point near the El Paso Natural Gas Wenden Compressor Station to the Harquahala Switchyard. These alternatives will be discussed below within their respective sections.

Based on the cultural resource studies, we recommend a finding of no adverse effect to the historic properties for the proposed project.

Proposed Route

The intensive pedestrian survey of the proposed tower locations, associated spur roads, and the five-mile segment from the original Proposed Route to the Harquahala Generation Switchyard resulted in the observation of (Dobschuetz et al. 2004) the following:

- 29 isolated occurrences

- 11 previously recorded sites; AZ R:7:49 (ASM), AZ R:8:37 (ASM), AZ R:8:44 (ASM), AZ R:8:60 (ASM), AZ S:5:15 (ASM), AZ S:6:21 (ASM), AZ S:7:1 (ASM)/AZ S:7:1 (ASU), AZ S:7:15 (ASM), AZ S: 8:1 (ASM), AZ S:8:10 (ASM)/AZ S:8:12 (ASU), and AZ S:8:17 (ASM)

- 1 newly recorded site, AZ R:7:113 (ASM)

The isolated occurrences do not meet the criteria necessary for listing on the National Register of Historic Places (NRHP).

A total of nine of the eleven previously recorded sites (AZ R:7:49 [ASM]; AZ R:8:37 [ASM]; AZ R:8:44 [ASM]; AZ R:8:60 [ASM]; AZ S:5:15 [ASM]; AZ S:6:21 [ASM];AZ S:7:1 [ASM]/AZ S:7:1 [ASU]; AZ S:7:15 [ASM]; and AZ S:8:10 [ASM]/AZ S:8:12 [ASU]) were recommended as not eligible for listing on the National Register of Historic Places. None of these previously recorded sites was relocated during our intensive pedestrian survey of the proposed tower locations. Previous studies on these sites noted that some of the sites (AZ R:8:37 [ASM]; AZ R:8:44 [ASM]; AZ S:6:21 [ASM]; and AZ S:7:1 [ASM]) were surface collected (Carrico and Quillen 1982; Swartz and Dongoske 1987). The remaining sites that were not subjected to surface collection were small sites (less than $5m^2$) or those sites that consisted of several small loci distributed over a larger area. It is most likely that these sites no longer exist within the proposed tower location.

Two of the previously recorded sites AZ S:8:1 (ASM) and AZ S:8:17 (ASM), were recorded as eligible for listing on the NRHP. Site AZ S:8:1 (ASM) is described as a lithic artifact workshop loci consisting of primarily rhyolite materials generally extending over a 1 square mile area. The survey identified two chert flaking stations, a deflated rock cairn, and a few isolated artifacts within the tower locations that are located within the site. Previous testing and data recovery was conducted at the site as part of the Granite Reef Aqueduct project and as part of the original DPV1 survey. Subsurface testing within the proposed tower locations by the original DPV1 project did not identify any subsurface artifacts. Artifacts were collected and analyzed from the site as part of the original DPV1 project. The site artifacts identified during the survey, conducted by EPG were similar to material types already collected and analyzed from the site during the original DPV1 survey. EPG recommended that the recording of these artifacts and the confirmed lack of subsurface remains within the tower locations have exhausted the information potential for this portion of the site.

Site AZ S:8:17 (ASM) is a series of lithic workshops areas located on desert pavement along the northern base of Burnt Mountain. The survey could not relocate any portion of AZ S:8:17 (ASM) within the proposed tower location or the adjacent tower locations. Since the site could not be relocated within the APE, the proposed project is not anticipated to have any impacts to the site.

One newly recorded site was identified within the APE. Site AZ R:7:113 (ASM) consists of an artifact scatter of domestic trash and three features that are probably associated with nearby mining activities. The site assemblage dates to the 1950s and 1960s. It was recommended that this site is not eligible for the NRHP because recordation of the site has exhausted its information potential.

Given the previous cultural resource clearance work completed for the project and the results of this review, a finding of no adverse effect to the historic properties for the proposed DPV2 project is recommended.

Palo Verde Subalternate Route

The intensive pedestrian survey for the Palo Verde Subalternate route resulted in the observation of the following:

- 38 isolated occurrences
- 5 previously recorded sites; AZ T:9:12 (ASM), AZ T:9:13 (ASM), AZ T:9:21 (ASM), AZ T:9:64 (ASM), and AZ S:12:32 (ASM)
- 4 newly recorded sites; AZ T:9:86 (ASM), AZ T:9:87 (ASM), AZ S:12:35 (ASM), and AZ S:12:36 (ASM)

The isolated occurrences do not meet the criteria necessary for listing on the NRHP.

Based on the fieldwork, EPG recommends four of the ninesites to be eligible for listing on the NRHP. The register eligible sites are listed below:

- AZ T:9:12 (ASM)
- AZ T:9:21 (ASM)
- AZ T:9:64 (ASM)
- AZ S:12:36 (ASM)

If avoidance of the sites is possible, then SCE will develop a monitoring plan to avoid any indirect affects to the register eligible sites during construction. A monitoring plan would involve pre-site field visit for the barricading of the sites, a pre-construction meeting with the workers to advise the avoidance of these environmental sensitive areas, pre-construction photo documentation, and on site monitoring during construction. A monitoring report will be compiled at the end of the project documenting the results of the monitoring efforts.

If, however, avoidance of those sites that are recommended as eligible for inclusion on the NRHP is not possible, SCE will develop a mitigation plan in consultation with the BLM, ASLD, and the Arizona State Historic Preservation Office (SHPO) and implement it prior to project construction. In any case, an appropriate archaeological monitoring program will be developed for the subalternate route.

Harquahala West Subalternate Route

This route consists of a tie-in to the proposed Devers-Harquahala 500kV transmission line corridor from the vicinity of the EPNG Wenden Compressor Station to the Harquahala Switchyard (Luhnow 2004; Dobschuetz principal investigator). The archaeological investigations for this route consisted of a detailed records review and a sample pedestrian survey of a 2-mile by a 300-foot-wide right-of-way corridor. A total of four sites were identified within or directly adjacent to the proposed route during the records review. During the sample

survey, the area where the sites were located was investigated, but none of the previously recorded sites could be relocated. No other sites were identified during the sample survey.

REFERENCES

Carrico, Richard L. and Dennis K. Quillen

1982 *Cultural Resource Inventory and National Register Assessment of the Southern California Edison Devers-Palo Verde Transmission Line Corridor (Arizona Portion),* WESTEC Services, San Diego, California.

Dobschuetz, Kris, Glennda Gene Luhnow, Scott Wilcox, Elizabeth Alter and Glenn P. Darrington

2004 *A Cultural Resource Survey of Tower Locations and Associated Spur Roads for the Devers-Palo Verde No. 2, Maricopa and La Paz Counties, Arizona.* EPG Cultural Resource Services Technical Paper No. 2003-43.

Luhnow, Glennda Gene

2004 *A Class I and Class II Cultural Resource Survey for the Harquahala West Alternative Route for the Devers-Palo Verde No. 2 Transmission Project, La Paz and Maricopa Counties, Arizona.* EPG Cultural Resource Services Technical Paper No. 2004-1419.

Luhnow, Glennda Gene and Joseph Harkins Dickinson

2004 *A Cultural Resource Survey for the Palo Verde Subalternate Route, Devers-Palo Verde No. 2 Transmission Project, Maricopa County, Arizona.* EPG Cultural Resource Services Technical Paper No. 2003-1389.

Rogge, A.E. (Gene), Matthew E. Hill, Jr. and Rachel Davis

2000 *Cultural Resource Survey for the Proposed Harquahala Generating Project.* Intermountain Cultural Resource Services Research Paper No. 58. Dames & Moore, Phoenix.

Swartz, Deborah and Kurt Dongoske

1987 *Cultural Resource Assessment of Construction Locations and Towers Along the Devers-Palo Verde No. 2 Transmission Line, Western Arizona.* IAR Technical Report No. 87-7I, Institute for American Research, Arizona.

EXHIBIT F
RECREATIONAL PURPOSES AND ASPECTS

EXHIBIT F
RECREATIONAL PURPOSES AND ASPECTS

As stipulated in the Arizona Corporation Commission Rules of Practice and Procedure, R14-3-219:

"State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route."

There are no plans at present to formally designate land within the requested right-of-way for public recreational purposes. The Applicant shall affirmatively offer to work with the affected jurisdictions to join in long-range plans for the corridor. Portions of both the proposed route and subalternate routes would be located on land managed by the BLM as utility/multiple-use corridors including dispersed and informal recreation uses. The location of the transmission line facilities would not restrict continued recreational activities on public lands.

EXHIBIT G
CONCEPTS OF TYPICAL FACILITIES

EXHIBIT G
CONCEPTS OF TYPICAL FACILITIES

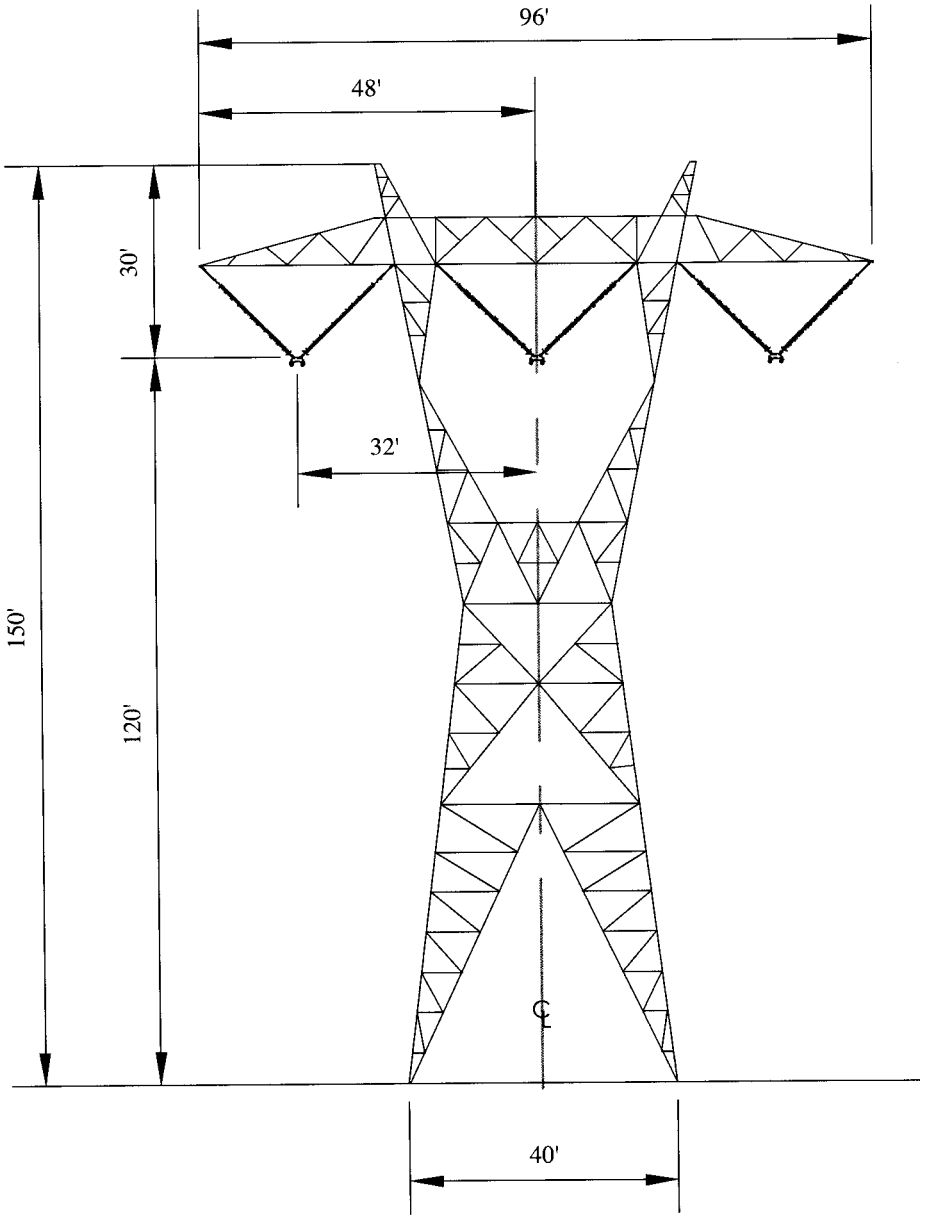
As stipulated in the Arizona Corporation Commission Rules of Practice and Procedure, R14-3-219:

"Attach any artist's or architect's conception of the proposed plant or transmission line structures and switchyards, which applicant believes may be informative to the Committee."

Contained in this exhibit are diagrams illustrating the proposed structures.

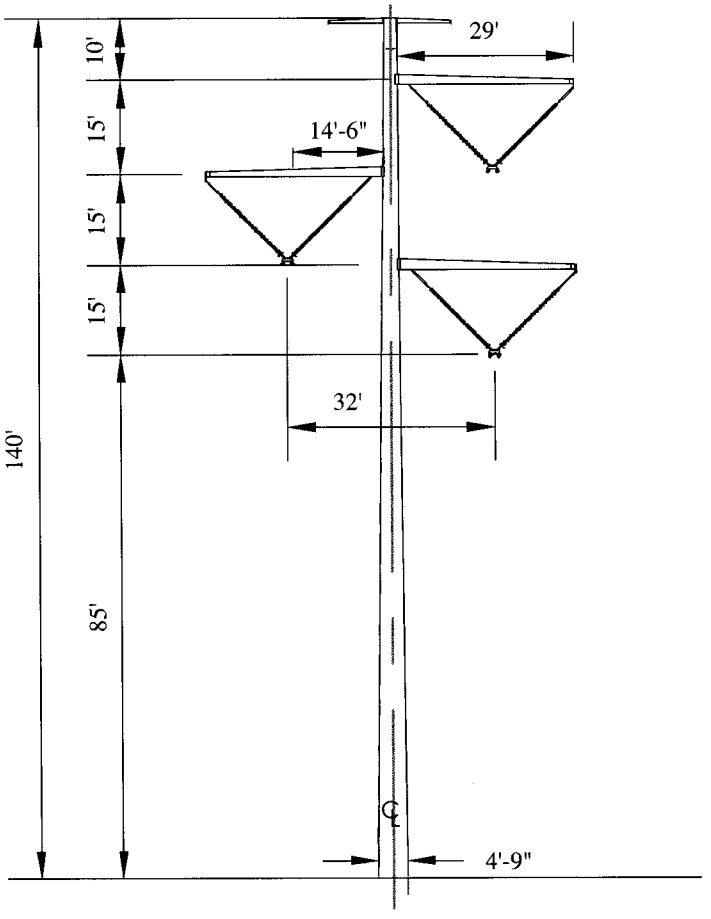
Exhibit G-1 – Typical Lattice Tower Structure
Exhibit G-2 – Typical Tubular Steel Pole
Exhibit G-3 – Typical Double-Circuit Structure

Simulations of the proposed transmission line are included in Exhibit B-2, PEA (Volume I, Part 2 of 2, Chapter 5).



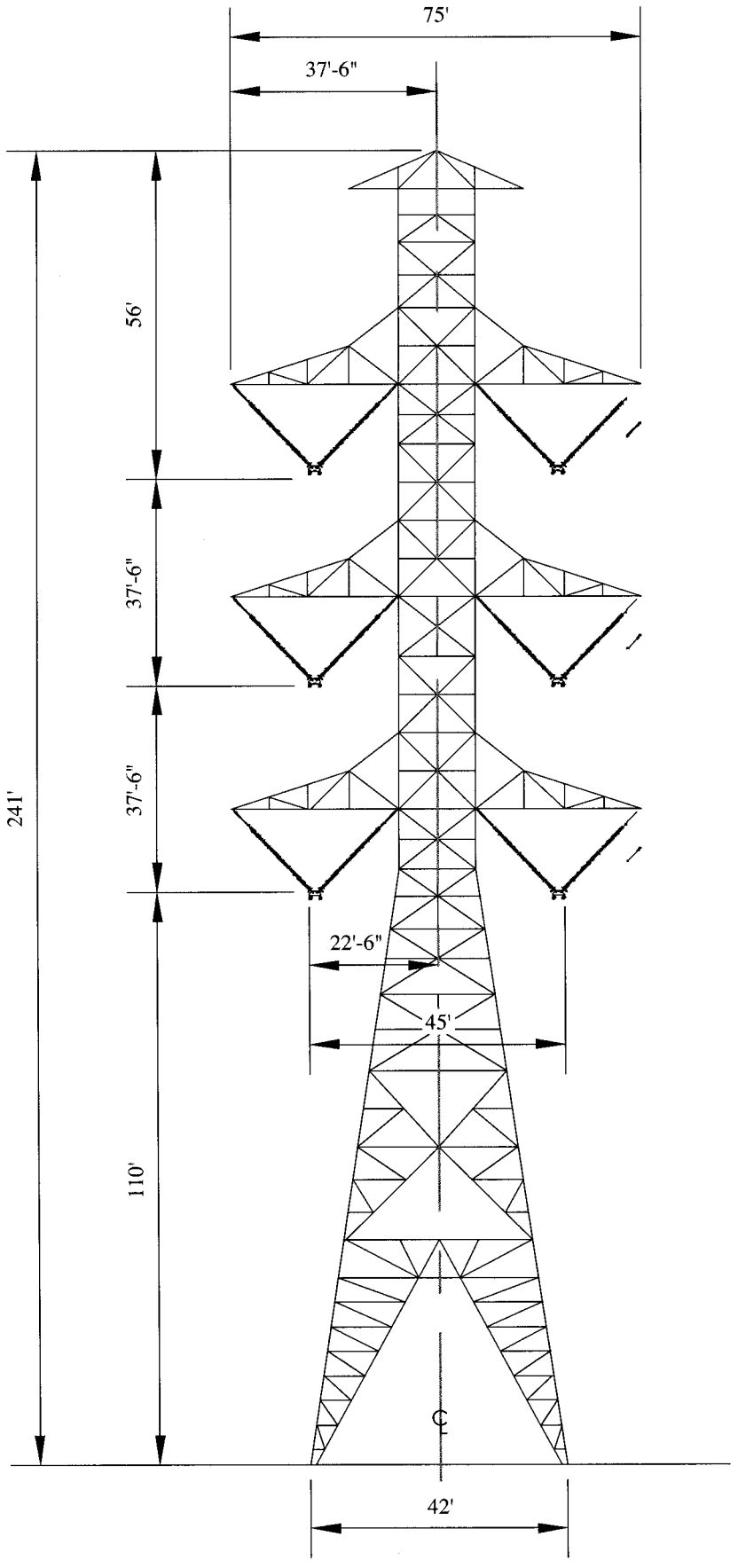
Note:
Dimensions are approximate and may vary with site conditions.

Exhibit G-1
Proposed 500kV Single-Circuit
Lattice Steel Tower



Note:
Dimensions are approximate and may vary with site conditions.

Exhibit G-2
Proposed 500kV Single-Circuit
Tubular Steel Pole



Note:
Dimensions are approximate and may vary with site conditions.

Exhibit G-3
Existing 500kV Double-Circuit
Lattice Steel Tower

EXHIBIT H
EXISTING PLANS

EXHIBIT H
EXISTING PLANS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"To the extent applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route."

Existing and planned land uses in the vicinity of the proposed route are shown on the map (Exhibit A-3) and described in the PEA (Exhibit B-2), Volume I – Part 1, Chapter 4, Section 4.1.2.1.

As part of the land use study for the Project, existing plans were gathered from jurisdictions within the study area that includes the proposed route. A contact program was conducted to provide information on existing plans and receive input from federal, state, and local government agencies, as well as private entities. Results of the study indicated that the proposed transmission line route would be compatible with existing plans of the BLM and Maricopa County, and would not conflict with any development plans in the vicinity of the proposed route.

The proposed route does not cross any incorporated cities or towns in Arizona; land use plans include those of the Bureau of Land Management and Maricopa County. The following table lists plans for those jurisdictions within the Project study corridor.

TABLE H-1
LAND MANAGEMENT AND GENERAL PLANS FOR THE PROPOSED DEVERS-HARQUAHALA STUDY CORRIDOR IN ARIZONA

Agency	Plan Title	Managing Jurisdiction	Date of Adoption
BLM	Final Amendment and Environmental Assessment to the Lower Gila North Management Framework Plan and the Lower Gila South Resource Management Plan	Phoenix District	Feb 2000
	Lower Gila North Management Framework Plan	Phoenix District	May 1985
	Lower Gila South Resource Management Plan	Phoenix District	Aug 1985
	Lower Gila South Final Wilderness Environmental Impact Statement	Phoenix District	Apr 1987
	Yuma District Resource Management Plan	Yuma District	Aug 1985
	Yuma District Resource Management Plan Amendment	Yuma District	Jan 1992
	Proposed Yuma District (Havasu) Resource Management Plan Amendment and Final Environmental Assessment	Yuma District	Sept 1994
	Final Yuma District (Lands) Resource Management Plan Amendment	Yuma District	Mar 1996
	Final Ehrenberg-Cibola Recreation Area Management Plan	Yuma District	Jan 1994
Maricopa County	Maricopa County 2020 Comprehensive Plan	Maricopa County	Oct 1997
	Maricopa County 2020 Tonopah/Arlington Area Plan	Maricopa County	Sept 2000

In March 2006, letters were sent to the entities listed in Table H-2 to provide project an information update and to request additional information on planned developments as necessary. Exhibit H-3 provides a copy of the letter that was sent; Exhibit H-4 contains written responses.

TABLE H-2
LETTER RECIPIENTS

Contact Name and Title	Address
Camille Champion, Project Manager	BLM, Phoenix Field Office 21605 N. 7th Avenue Phoenix, AZ 85027
Stephen Fusilier, Lands and Minerals Team Lead	BLM, Yuma Field Office 2555 Gila Ridge Road Yuma, AZ 85365
Paul Cornes, Refuge Manager	USFWS, Kofa National Wildlife Refuge 356 West First Street Yuma, AZ 85364
James E. Gross, Rights of Way Administrator	Arizona State Land Department 1616 W. Adams St. Phoenix, AZ 85007
Gerry Ramirez, Yuma District Permits	Arizona Department of Transportation Intermodal Transportation Division 2243 E. gila Ridge Road Yuma, AZ 85364
Matthew Bilsbarrow Compliance Specialist	SHPO Arizona State Parks 1300 W. Washington Phoenix, AZ 85007
Bob Broscheid, Habitat Branch Chief	Arizona Game & Fish Department Habitat Branch 2221 West Greenway Road Phoenix AZ 85023
Daniel Field, Town Manager	Town of Quartzsite P.O. Box 2812 265 N. Plymouth Avenue Quartzsite, AZ 85346
Millard Johnson, Director, Planning and Zoning	La Paz County 1112 Joshua, Suite 202 Parker, AZ 85344
Matthew Holm, Planner	Maricopa County Planning and Development 501 N. 44th St. Phoenix, AZ 85008
Michael Sabatini, Manager, Planning Division	Maricopa County Department of Transportation, Transportation Planning Division 2901 W. Durango Phoenix, AZ 85009

TABLE H-2 LETTER RECIPIENTS	
Contact Name and Title	**Address**
Dennis Smith, Executive Director	Maricopa Association of Governments 302 N. 1st Avenue, Suite 300 Phoenix, AZ 85003
Rusty Mitchell, Director, Community Initiatives Team	Luke Air Force Base 14185 W. Falcon Street Luke AFB, AZ 85309
Cindy Lester, Chief, Arizona Section Regulatory Branch	U.S. Department of Army, USACOE 3636 N. Central Avenue, Suite 900 Phoenix, AZ 85012
Sharon Hood, Supervisor, Lands & Engineering Records Division	Central Arizona Project 23636 N. 7th Street Phoenix, AZ 85024 PO Box 43020 Phoenix, AZ 85080-3020
Jim Marler, Realty Office	U.S. Department of Army, Yuma Proving Ground U.S. Army Garrison Yuma Attn: Public Works – J. Marler 301 C Street Yuma, AZ 85365-9498

EXHIBIT H-1
EXAMPLE LETTER

EXHIBIT H-1

EXAMPLE

Date: March 29, 2006

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

Dear Ms. Champion,

SCE proposes to build a new 500-kilovolt (500kV) transmission line connecting the Harquahala Switchyard, located approximately 40 miles west of Phoenix, Arizona, to SCE's existing Devers Substation located approximately 10 miles north of Palm Springs, California. The majority of the transmission line will be constructed within existing SCE rights-of-ways and designated utility corridors. (see enclosed fact sheet).

The proposed transmission line is approximately 230 miles long, of which approximately 102 miles are in Arizona. The majority of the proposed transmission line would parallel the existing Devers-Palo Verde No. 1 (DPV1) 500kV transmission line. SCE proposes to construct this segment using lattice steel towers similar to the existing DPV1 towers. Approximately five miles of the proposed line would parallel an existing transmission line between the DPV1 right-of-way and the Harquahala Switchyard. This segment would be constructed using tubular steel poles. Additional transmission facilities would be constructed west of Palm Springs, California to complete this project.

Alternatives to SCE's proposed route include the Harquahala-West alternate, which would extend directly west from the Harquahala Generating station to the DPV1 right-of- way, and the Palo Verde alternate that would require construction of 10 miles of new transmission line that would connect to the Palo Verde Generating Station Switchyard. Project construction is scheduled to begin in 2007 and be completed in 2009.

The purpose of this letter is to request information regarding development plans in the vicinity of the proposed transmission line route in Arizona. Your response will be included in Exhibit H of the Application for a Certificate of Environmental Compatibility. Submittal of this application to the Arizona Power Plant and Transmission Line Siting Committee of the Arizona Corporation Commission is in compliance with Arizona Revised Statute 40-360 (Article 6.2).

We respectfully request your response in writing as to whether or not you are aware of any planned developments or activities in the vicinity of the proposed transmission line that should be brought to our attention.

We would appreciate your response by April 14, 2006 so that we can evaluate the information prior to the submittal of the application. Thank you in advance for your reply. Should you have any questions, please do not hesitate to call the DPV2 project office at 714-626-4666

Sincerely,

Fred Salzmann
Project Manager

Enclosure

EXHIBIT I
ANTICIPATED NOISE LEVELS AND INTERFERENCE WITH COMMUNICATION SIGNALS

EXHIBIT I
ANTICIPATED NOISE LEVELS AND INTERFERENCE WITH COMMUNICATION SIGNALS

As stated in Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

"Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities."

Certain electromagnetic effects are inherently associated with overhead transmission of electrical power at extra high voltage. These effects are produced by the electric and magnetic fields of the transmission line with one of the primary effects being corona discharge. Corona effects are manifest as audible noise, radio interference, and television interference. These particular effects will be minimized by line location, line design, and construction practices.

CORONA

Corona is a luminous discharge due to ionization of the air surrounding a conductor and is caused by a voltage gradient, which exceeds the breakdown strength of air. Corona is a function of the voltage gradient at the conductor surface. This voltage gradient is controlled by engineering design and is a function of voltage, phase spacing, height of conductors above ground, phase geometry, and meteorological conditions. In particular, irregularities on the surface of the conductor such as nicks, scratches, contamination, insects, and water droplets increase the amount of corona discharge. Consequently, during periods of rain and foul weather, corona discharges increase. For the various transmission designs considered for this project, the average calculated voltage gradient at the conductor surface was 14.3kV root mean square (rms)/centimeter (cm). The maximum calculated voltage gradient at the conductor surface is 16.45kV rms/cm. For comparison purposes, the breakdown strength of air is 21.1kV rms/cm at 25°C and 76 millimeter (mm) barometric pressure.

Corona represents power loss on the transmission line and creates transmission line noise. Successful operation of 500kV lines with similar gradients indicates that this transmission line will not create adverse corona effects.

TRANSMISSION LINE AUDIBLE NOISE

Construction

The noise associated with the construction activities would be due to equipment operation. The noise levels produced within the corridor would depend on the number of operating machines and the distance to the nearest sensitive receiving source property line. Typical noise levels

associated with construction equipment falls in the range of 80 to 100 dBA (at a range of 50 feet from the active construction site). For the proposed transmission line, most of the corridor is in vacant desert land; however, there are isolated areas with residences within 350 feet of construction. Noise associated with construction would be masked by other sources of noise (i.e., I-10 and other high volume streets) and would be inaudible at large distances.

The proposed Devers-Harquahala construction would comply with local noise ordinances. Typical municipal ordinances stipulate that activities producing ambient noise should not exceed 55-50 dBA during nighttime hours (10 p.m. to 7 a.m.) and 60-55 dBA during daytime hours (7 a.m. to 10 p.m.) at residential property lines or sensitive areas. However, exemptions include temporary construction during daytime hours except on Sundays and federal holidays. There may be a need to work outside of the aforementioned local ordinances in order to take advantage of low electrical draw periods during the nighttime hours. SCE would comply with variance procedures established by local authorities if a variance is required.

Operation

The major sources of ambient noise in the area are due to I-10, aircraft flyovers, local traffic, activities at business locations, various recreational activities, and the existing DPV1 transmission line. The proposed Devers-Harquahala 500kV transmission line would slightly increase the noise level within the corridor. However, the increase would not be audible at the nearest sensitive receptors relative to the existing ambient noise levels and the distance from the source. There are no residences or other sensitive receptors located within audible range of the proposed series capacitor stations.

Audible noise is created by corona discharge along the transmission line. As a result, the amount of audible noise is directly related to the amount of corona, which in turn is affected by meteorological conditions, most notably rain. Transmission line audible noise is categorized into broadband high frequency sounds, which can be described as hissing or sputtering, and low-frequency tones, which are best described as humming sounds.

The highest calculated audible noise levels for the transmission line design during foul weather (rain) may reach 47 decibels (dB) measured on an "A" weighted scale (dBA) at the edge of the right-of-way. This noise level will occur during heavy rain, which will serve to mask the noise. During fair weather the audible noise at the edge of the right-of-way is significantly reduced (18.5 dBA).

Due to the expected low audible noise levels, the line noise will normally be inaudible at the edge of the right-of-way during fair weather. Considering the relatively few hours of audible noise producing weather, the location of the line with respect to neighboring land uses, and the calculated audible noise levels during foul weather, no serious audible noise problems are expected even during foul weather.

RADIO INTERFERENCE

Radio interference is the reception of spurious energy not generated by the transmitting station. This energy affects the amplitude modulated radio band, but not the frequency modulated radio band. Transmission line radio interference is caused by corona and by gap discharges. Gap discharges are electrical discharges across a small gap with the most common cause being loose hardware. Gap discharges comprise a large percentage of all interference problems and are easily remedied. Experience shows that gap discharges are not a problem with steel structures, but are more prevalent with wood structures due to the expansion and contraction of the wood causing hardware to loosen.

Corona-caused radio interference impact is dependent on various factors including distance from the line to the receiver, radio signal strength, ambient radio noise level, receiving antenna orientation, and weather conditions. A common practice of determining the expected level of radio interference is to calculate and plot a lateral profile of the transmission line radio interference at a frequency of 1 megahertz (MHz). In addition, a frequency spectrum plot of radio interference can be used to see how the radio interference varies at a particular location through the frequency spectrum.

Comparison of the calculated radio noise levels for the transmission line design shows fair weather radio noise levels in the range of 34.3 decibel (dB) (above 1 microvolt [μV]/meter) at a distance of 100 feet from the outside phase. This compares favorably with the maximum recommended noise level of 40 dB, above 1 μV/meter (Institute of Electrical and Electronic Engineers 1980; Tucson Electric Power 1980). During inclement weather, transmission line noise levels increase to levels in the range of 60 dB, above 1 μV/meter 100 meters from the outside phase. Even though radio reception quality is reduced during periods of rainy weather, the impact is expected to be minimal due to the low frequency of inclement weather. In addition to these comparisons of calculated and recommended interference values, transmission line experience for lines of similar design traversing similar terrain has shown radio interference to be insignificant. Should radio interference caused by the transmission line become unacceptable in a given situation, mitigating techniques can be applied on an as-needed basis between the Applicant and the complainant.

Television Interference

Traditional television broadcasts occur in three ranges:

- 54 - 88 MHz (Channels 2 - 6)
- 174 - 216 MHz (Channels 7 - 13)
- 470 - 890 MHz (Channels 14 - 83)

Transmission line interference reduces with increasing frequency above 100 MHz. Consequently, television interference only affects the lower VHF band (Channels 2 - 6) and no interference will be experienced in the upper VHF (Channels 7 - 13) and UHF bands (Channels

14 - 83) even during foul weather. Television interference noise levels can potentially affect amplitude modulated signals; therefore, the picture quality, which is amplitude modulated, can be affected, but not the sound quality as these signals are frequency modulated.

Comparisons of expected television interference levels at the edge of the right-of-way show levels consistent with values calculated for other 500kV lines which traverse similar terrain (Arizona Public Service and San Diego Gas & Electric 1981). Foul weather television interference at the edge of the right-of-way for a typical span is calculated at 12.9 dB above 1 μV/m. Consequently, no transmission line generated television interference is expected along the line, even during periods of inclement weather.

Where transmission line generated television interference has been found to be a problem, it is generally the result of induced voltage on fences, conductors, and hardware, which are adjacent to the right-of-way. In these situations, the interference can be easily corrected by grounding the objects, or by realigning, relocating, or providing higher gain television antennas. The Applicant is prepared to assist affected parties in resolving television interference problems resulting from the operation of the proposed facilities. However, with the increasing popularity of newer technologies such as cable, satellite, and digital television, transmission line television interference problems warranting any sort of corrective action are even more unlikely.

ELECTRIC AND MAGNETIC FIELDS (EMF)

SCE has developed "EMF Design Guidelines" to evaluate and implement various magnetic field reduction measures for each application.

SCE's plan for reducing magnetic fields for the proposed project is consistent with the recommendations made by the U.S. National Institute of Environmental Health Sciences. Furthermore, the recommendations meet all national safety standards for new electric facilities. SCE has prepared a Field Management Plan (FMP) to inform the public and others about the steps SCE will take to reduce the magnetic fields for the proposed DPV2 project at a reasonable cost. The FMP includes a brief introduction to EMF characteristics, scientific research activities related to possible health affects, and conclusions from various agencies and organizations about EMF, policy, and the evaluation of "no- and low-cost" magnetic field reduction measures applicable to the project.

The recommendations are listed below.

- Utilize a typical horizontal 500kV tower height of 150 feet. (Magnetic field models are based on 140-foot tower heights, and the 150-foot towers would result in lower magnetic field strength at the edge of the right-of-way.)

- Install 500kV transposition towers near the same locations as existing transposition towers for the DPV1 500kV transmission line. (Transposition towers are used to re-

arrange the phase conductors on a transmission line, and they enable magnetic field reduction as well as phase impedance equalization across the line route.)

- Phase the proposed Devers-Harquahala 500kV transmission line with the existing DPV1 500kV transmission line to reduce the magnetic field

- Use the existing right-of-way.

EXHIBIT J
SPECIAL FACTORS

EXHIBIT J
SPECIAL FACTORS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R-14-3-219:

"Describe any special factors not previously covered herein, which applicant believes to be relevant to an informed decision on its application."

Exhibit J-1 Summary of Public Involvement Activities

SCE conducted public outreach activities for the DPV2 project to encourage communication with local communities, local businesses, elected and appointed officials, and other interested parties. In October 2003, SCE began public outreach and information activities that included distribution of a project fact sheet, in-person interviews, and meetings with individuals and small groups. The project fact sheet was mailed to all property owners within 300 feet of the proposed DPV2 project, and to elected and appointed officials, and other interested parties in the project area. The fact sheet provided basic information about the project scope and purpose. It also provided the names and contact information for local SCE region managers as sources for additional information.

In August 2004, SCE provided a project update to those persons in the project area that received the 2003 project fact sheet, as well as to those who asked to be added to the project mailing list.

On April 11 and 12, 2006, SCE held open houses in Quartzsite, Phoenix, and Tonopah. Invitations were mailed to property owners within one-half mile of the proposed DPV2 project (proposed and alternative routes) and to elected and appointed officials and other interested parties in the project area. The invitation was also sent to persons who attended the public scoping meetings held in Arizona on January 18 and 19, 2006.

Copies of fact sheets, open house materials, and the invitation are included in Exhibit J-2.

In the fall of 2005, public scoping was initiated by BLM and CPUC as part of the EIS/EIR process. This process included scoping meetings, a Notice of Preparation (per California Environmental Quality Act guidelines), and other public outreach activities. Public scoping meetings were held in Avondale, Tonopah, and Quartzite, Arizona. The Notice of Preparation stated the intention to prepare a joint EIR/EIS, requested comments from interested parties, and included notice of the scoping meetings. Other public outreach activities included a project information hotline, email address, and internet website.

Scoping comments included several overall key issues and more specific issues associated with each as listed below.

- Human environment issues and concerns
  - EMFs
  - Construction impacts
  - Safety issues and fire risk
  - Impacts to property values
  - Conflicts with existing or planned land uses

- Physical environment issues and concerns
  - Biological resources issues

- Alternatives
  - Alternatives suggested
  - Government agency and tribal government suggestions
  - Private organization and company suggestions
  - Private citizen suggestions

- Cumulative projects

- Environmental review and decision-making process
  - Public involvement

Exhibit J-2 Public Information Materials

Included in the exhibit.

EXHIBIT J-2
PUBLIC INFORMATION MATERIALS

- Fact Sheet
- Open House Invitation
- Open House Presentation Materials
- Newspaper Articles

OPEN HOUSE INVITATION

Southern California Edison Company (SCE) SCE proposes to build a new 500 kilovolt (500kV) transmission line connecting the Harquahala Switchyard, located approximately 40 miles west of Phoenix, Arizona, to SCE's existing Devers Substation located approximately 10 miles north of Palm Springs, California. The project is called the Devers Palo Verde No. 2 Project (DPV2).

The proposed transmission line is approximately 230 miles long, of which approximately 102 miles would be built in Arizona. The majority of the transmission line will be constructed within existing SCE rights of ways and designated utility corridors parallel to the existing Devers-Palo Verde No. 1 (DPV1) 500kV transmission line. SCE proposes to construct this segment using lattice steel towers similar to the existing DPV1 towers. Approximately five miles of the proposed line would parallel an existing transmission line between the DPV1 right of way and the Harquahala Switchyard. This segment would be constructed using tubular steel poles. Additional transmission facilities would be constructed west of Palm Springs, California to complete this project.

Alternatives to SCE's proposed route include the Harquahala West alternate, which would extend directly west from the Harquahala Generating station to the DPV1 right-of- way, and the Palo Verde alternate that would connect to the Palo Verde Generating Station Switchyard. SCE's evaluation of these routes determined that they are not environmentally or technically preferred over the proposed route.

SCE invites you to join the DPV2 Project Team at an open house in your community. The purpose of the open house is to provide information to property owners, area residents and other interested parties about the proposed project, and answer your questions. The Project Team will have project maps and photo simulations available for viewing. SCE welcomes your attendance at any one of the open houses listed below.

Tuesday, April 11
4:00 p.m. – 8:00 p.m.

Quartzsite Elementary School – Cafeteria

930 W. Quail
Quartzsite AZ, 85346

Wednesday, April 12
9:00 a.m. – 12:00 noon

Best Western Central Phoenix Inn – Classic Room

1100 North Central Ave
Phoenix, AZ 85004

Wednesday, April 12
4:00 p.m. – 8:00 p.m.

Ruth Fisher Elementary School – Cafeteria

38201 W. Indian School Road
Tonopah, AZ 85354

For more information please call (602) 499-9888
or visit *www.sce.com/dpv2*

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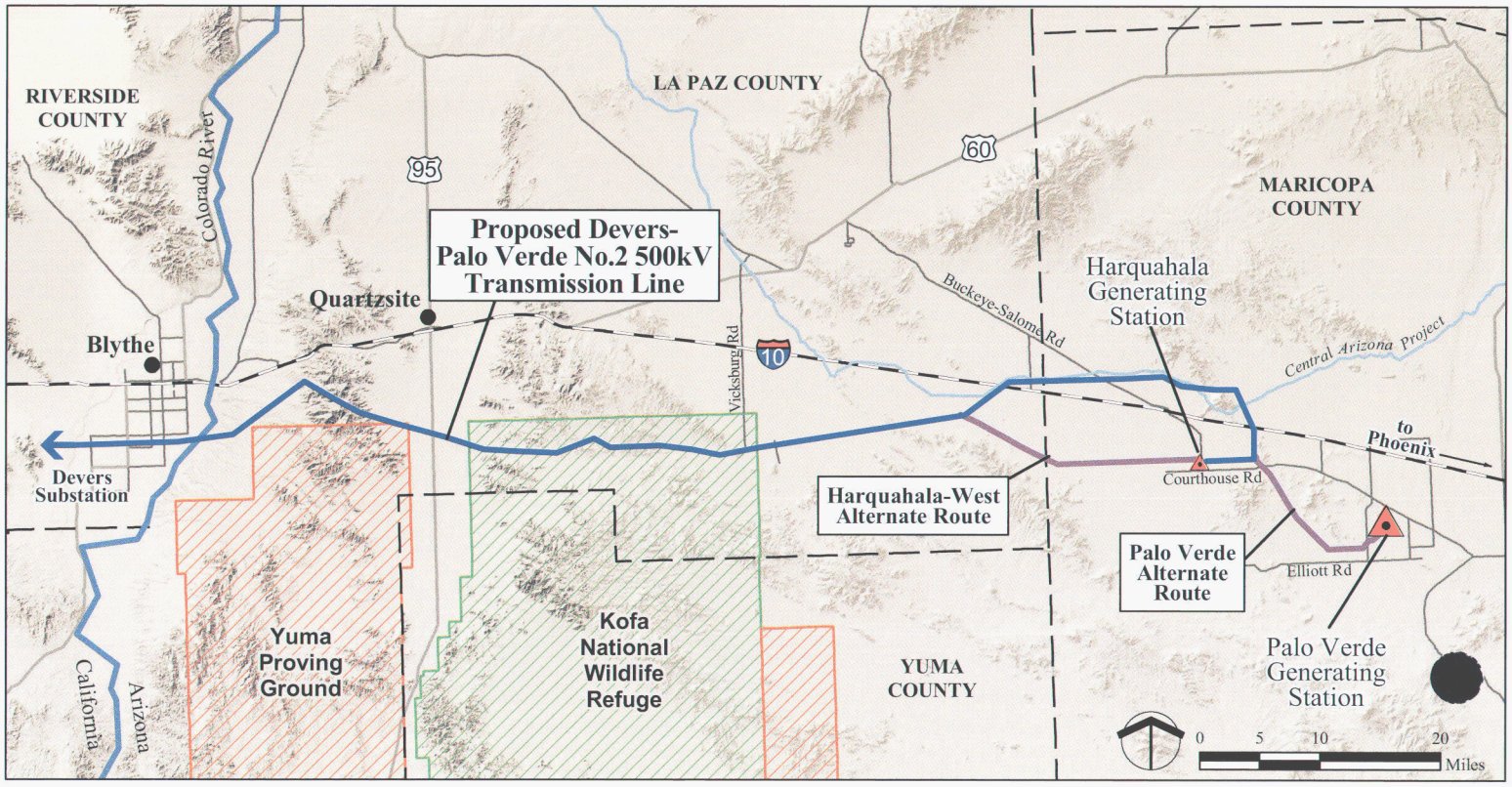
DPV2 Project Office
1321 State College Blvd.
Fullerton, CA 92831

SAVE THE DATE

Proposed Devers-Palo Verde No. 2 Transmission Project – OPEN HOUSE

Devers-Palo Verde No. 2 Transmission Project



Fact Sheet

Devers – Palo Verde No. 2

April 2006

Important information concerning a proposed Southern California Edison transmission line project in Arizona.

Southern California Edison Company (SCE) is proposing to construct a new 230-mile-long, high-voltage electric transmission line between California and Arizona. The project is called Devers-Palo Verde No. 2 (DPV2) and will be paid for by the customers of California electric utilities.

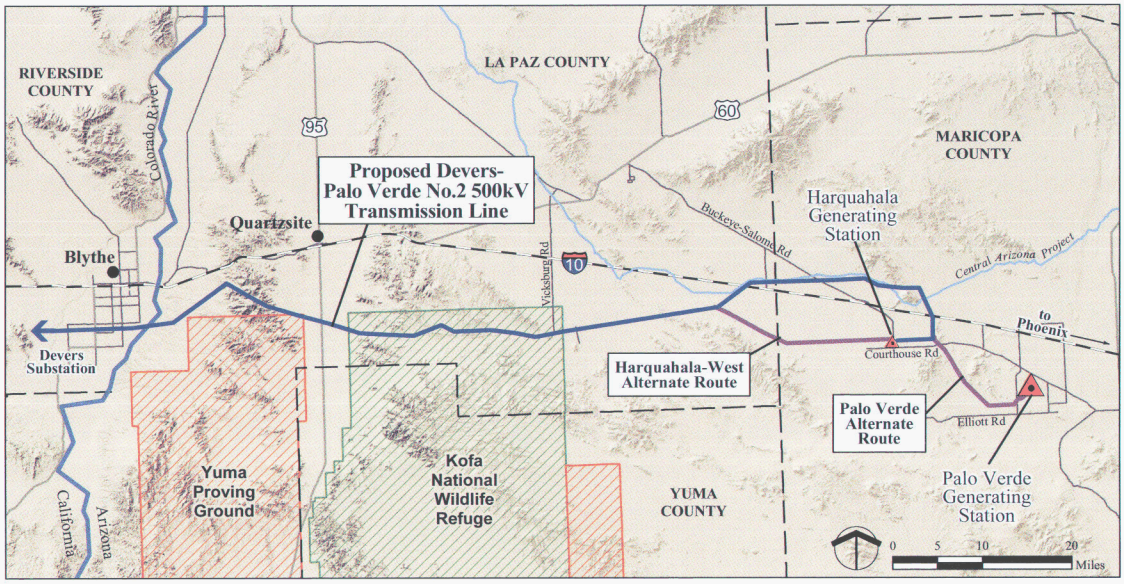


Figure 1

PROJECT DESCRIPTION

SCE proposes to build a new 500 kilovolt (500 kV) transmission line connecting the Harquahala Switchyard, located approximately 40 miles west of Phoenix, Arizona, to SCE's existing Devers Substation located approximately 10 miles north of Palm Springs, California. The majority of the transmission line will be constructed within existing SCE rights-of-way and designated utility corridors (see Figure 1).

The proposed transmission line is approximately 230 miles long, of which approximately 102 miles are in Arizona. The majority of the proposed transmission line would parallel the existing Devers-Palo Verde No. 1 (DPV1) 500 kV transmission line. SCE proposes to construct this segment using lattice steel towers similar to the existing DPV1 towers (see Figure 2). Approximately five miles of the proposed line would parallel an existing transmission line between the DPV1 right-of-way and the Harquahala Switchyard. This segment would be constructed using tubular steel poles.

Continued on next page

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Existing Condition - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona.

Additional transmission facilities would be constructed west of Palm Springs, California to complete this project.

The transmission line siting and approval process of the Arizona Corporation Commission (ACC), the Bureau of Land Management (BLM) and the California Public Utilities Commission (CPUC) requires SCE to identify and evaluate alternative routes to the proposed project. Alternatives to SCE's proposed route include the Harquahala West alternative, which would extend directly west from the Harquahala Generating Station to the DPV1 right-of-way, and the Palo Verde alternative that would connect to the Palo Verde Generating Station Switchyard. SCE's evaluation of these routes determined that they are not environmentally or technically preferred over the proposed route.

PROJECT BENEFITS

The DPV2 project would be an important part of the western states' transmission system. DPV2 would be used to deliver power purchased and sold among the western states utilities. Further, it would provide increased operational flexibility for dealing with unexpected outages of major generation and transmission facilities and would reduce transmission congestion between Arizona and California which otherwise would prevent available power from being used. DPV2 would increase energy producers' access to the California energy market and increase competition among energy suppliers throughout the southwest.

The project is expected to lower the cost of electricity purchased by California utilities to serve California customers. In addition, DPV2 would help offset price increases that could result from events such as droughts that reduce supplies of low-cost hydroelectricity and heat waves that create high peak demand for electricity.

DPV2 would also benefit Arizona by strengthening the southwest power grid and providing economic benefits to the state including new jobs and increased tax revenues. By improving the ability to transfer electricity between Arizona and California, DPV2 would provide utilities in both states access to more sources of electricity.

The electrical systems of Arizona and California are part of the larger Western Interconnection, which encompasses 1.8 million square miles and includes members operating in 14 states in the Western United States, two Canadian provinces and Baja Norte, Mexico. At particular times throughout the year, states, including Arizona, import and export electricity depending on the state's demand for electricity.

During the two year construction of DPV2, SCE will have approximately 150 people working on the project. The construction activity will provide a positive economic impact of $85 million to Arizona's economy. State and local governments in Arizona will also receive approximately $24 million in tax revenues during the construction period and the first 10 years of operation.

Simulation - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona with proposed Devers-Palo Verde No. 2 500kV lattice steel structure transmission line.

PROJECT APPROVAL PROCESS

SCE has collected and evaluated environmental, technical, and financial data required by the state and federal regulatory agencies that must approve the project before it can be built. This information is analyzed and presented in SCE's applications filed with each of the regulatory agencies for authorization to construct the project.

These agencies will review SCE's application and either approve the project as filed, approve it with modifications, or deny it. The lead state and federal agencies with approval authority for DPV2 are listed below:

- Arizona Corporation Commission (ACC) and the Arizona Power Plant and Transmission Line Siting Committee (ASC) Reviews project for compliance with Arizona environmental laws and analyzes project purpose and need.
- Bureau of Land Management (BLM) - Reviews project for compliance with federal environmental laws and issues right-of-way grant on federal lands.
- California Public Utilities Commission (CPUC)–Reviews project for compliance with California environmental laws, analyzes project purpose and need, and determines cost effectiveness.

In addition, the following organizations must review and/or approve the project:

- Western Arizona Transmission System (WATS) – Reviews project reliability and other technical issues as part of its electric power grid oversight function for western Arizona.
- California Independent System Operator (CAISO) – Reviews and approves technical and economic aspects of the project as part of its responsibility for managing the California electric power grid.
- Western Electricity Coordinating Council (WECC) – Reviews project reliability and other technical issues as part of its electric power grid oversight function for the western United States, Canada, and Mexico.

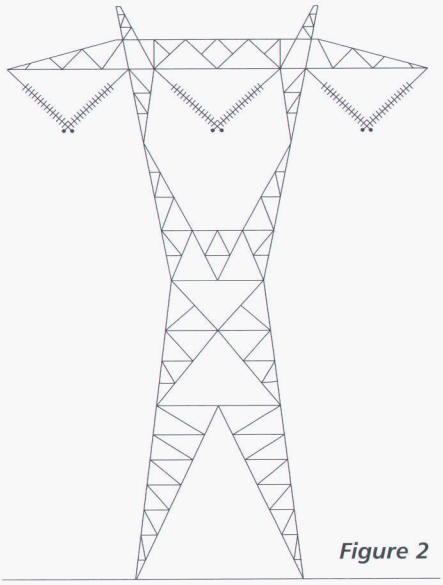

Figure 2

Typical 500kV Transmission Tower

PROJECT TIMELINE

February 24, 2005 – CAISO issued a report which found the DPV2 project to be a necessary and cost-effective addition to the western states electrical grid.

April 11, 2005 – SCE submitted an application to the CPUC requesting authorization to construct DPV2.

May 20, 2005 – SCE submitted an application to the BLM requesting all necessary approvals to construct those portions of the DPV2 project that are on BLM land.

July 25, 2005 – WATS approves the project based on technical studies performed by SCE.

August 25, 2005 – WECC approves project rating based on technical studies performed by SCE.

November 2005 and January 2006– Public Scoping meeting were held in California and Arizona to solicit public input on SCE's application.

April 2006 – SCE will submit a Certificate of Environmental Compatibility Application to the ACC.

May 2006 – CPUC and BLM are expected to issue Draft Environmental Impact Report/ Environmental Impact Statement.

Late 2006 – ACC, ASC, BLM, and CPUC are expected to conclude review and approval activities.

Early 2007 – SCE expects to start construction of DPV2 upon receipt of all required approvals.

2009 – SCE expects to complete construction of DPV2.

SCE is one of the nation's largest electric utilities, serving a population of more than 13 million in a 50,000-square-mile service area within central, coastal, and southern California. SCE owns 16% of the Palo Verde Nuclear Generating Station.

SCE is currently the nation's leading purchaser of renewable energy. SCE estimates that between 16% and 17% of the power it purchases and delivers to customers in 2006 will be from renewable sources.

SCE is a national leader in developing, promoting and implementing energy efficiency programs for its customers. Between 2006 and 2008, SCE will spend over $1 billion on energy efficiency programs, self-generation incentives, and solar energy programs.

If you have any questions or comments about the project, please contact the SCE DPV2 Arizona office at:

602-499-9888
One North Central Ave., Suite 1120
Phoenix, AZ 85004

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Devers – Palo Verde No. 2

WELCOME

TO

SOUTHERN CALIFORNIA EDISON'S

DPV2 OPEN HOUSE

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SOUTHERN CALIFORNIA EDISON COMPANY WELCOMES YOU TO THE DPV2 OPEN HOUSE

How is the open house organized?

- This open house is designed to introduce you to the DPV2 project and to answer your questions.
- The open house is informal – feel free to move around the room at your own pace and talk with the DPV2 project team about your issues and questions.
- Each topic table represents an issue or question that your local officials and neighbors told us they wanted to know more about.
- We welcome your comments and questions. Comment cards are available at each table.

SOUTHERN CALIFORNIA EDISON INFORMATION

SCE is one of the nation's largest electric utilities, serving a population of more than 13 million in a 50,000 - square - mile service area within central, coastal, and southern California. SCE owns 16% of the Palo Verde Nuclear Generating Station.

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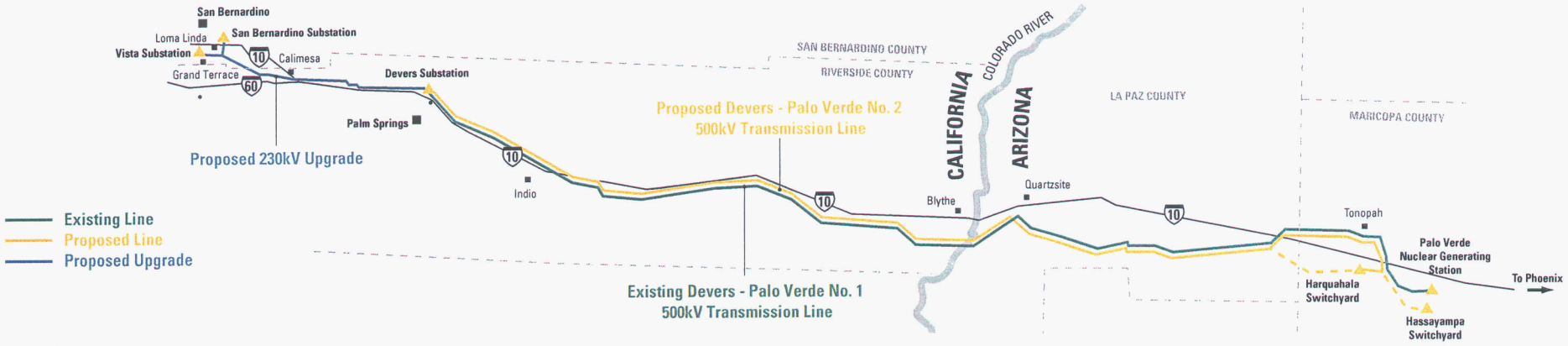
PROJECT OVERVIEW



Southern California Edison is proposing to construct a new 230-mile long, high-voltage electric transmission line between California and Arizona, parallel to an existing transmission line. The new line would also require upgrades to some of SCE's electrical facilities in California. The project is known as Devers-Palo Verde No. 2. It will be paid for by the customers of California electric utilities.

PROJECT UPDATE SCHEDULE

February 2005	– CAISO approved DPV2
April 2005	– SCE submitted application to the CPUC
May 2005	– SCE submitted application to BLM
Spring 2006	– SCE submits application to ACC
	– CPUC issues Draft EIR/EIS
Late 2006	– CPUC, BLM, and ACC complete permitting activities
2007	– Start of construction of DPV2 upon receipt of all required approvals
2009	– Complete construction and commercial operation of DPV2

THE WESTERN STATES ELECTRIC GRID

The electrical systems of Arizona and California are part of the larger western states' electric grid. This grid encompasses 1.8 million square miles and operates in 14 states in the western United States, two Canadian provinces and Baja Norte, Mexico. Depending on seasonal demand for electricity, utilities import and export electricity over the grid.

AZ

PROJECT BENEFITS

The DPV2 project would be an important part of the western states' transmission system.

- DPV2 would increase energy producers' access to the California energy market, increasing competition among southwest energy suppliers. This is expected to lower the cost of electricity purchased by California utilities for their customers.
- DPV2 would be used to deliver power purchased and sold among the western states' utilities.
- DPV2 would improve the ability to transfer electricity between Arizona and California and would provide utilities in both states access to more sources of electricity.
- DPV2 would provide increased operational flexibility for dealing with unexpected outages of major generation and transmission facilities.
- DPV2 would reduce transmission congestion between Arizona and California which otherwise would prevent available power from being used.
- DPV2 would help offset price increases that could result from events such as droughts that reduce supplies of low-cost hydroelectricity and heat waves that create high peak demand for electricity.

ARIZONA ECONOMIC AND FISCAL IMPACT

SCE estimates DPV2 will result in:

- 150 new jobs during construction of DPV2
- $85 million in positive economic impacts to Arizona's economy
- $24 million in tax revenues to state and local governments during the construction phase and the first 10 years of operation

APPROVAL PROCESS

ARIZONA CORPORATION COMMISSION (ACC) AND ARIZONA SITING COMMITTEE (ASC)

- SCE will file an application for a Certificate of Environmental Compatibility (CEC) with the ACC in Spring 2006.
  - The ASC will conduct hearings and review evidence of environmental compatibility and project need and benefits.
  - The ASC will issue an order granting or denying the CEC.
  - The ACC will then review and either approve, modify or reject the ASC order.

BUREAU OF LAND MANAGEMENT (BLM)

- SCE applied to the BLM for approval to construct DPV2 on federal lands.
  - The BLM issued a right-of-way grant for DPV2 in 1989.
  - BLM is working with the CPUC to coordinate environment review of the project and to issue a joint Environmental Impact Report / Environmental Impact Statement.

CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)

- SCE filed an application for a Certificate of Public Convenience and Necessity (CPCN) in April, 2005.
  - The CPUC will grant the CPCN, following environmental review under the California Environmental Quality Act, if it determines the project is needed and is cost-effective.

WHAT ARE THE KEY STATE AND FEDERAL LAWS THAT PROTECT THE ENVIRONMENT IN ARIZONA?

- Arizona Facility Siting Law
- Arizona Native Plant Law
- National Environmental Policy Act
- Clean Water Act
- Endangered Species Act
- National Historic Preservation Act
- Archaeological Resources Protection Act

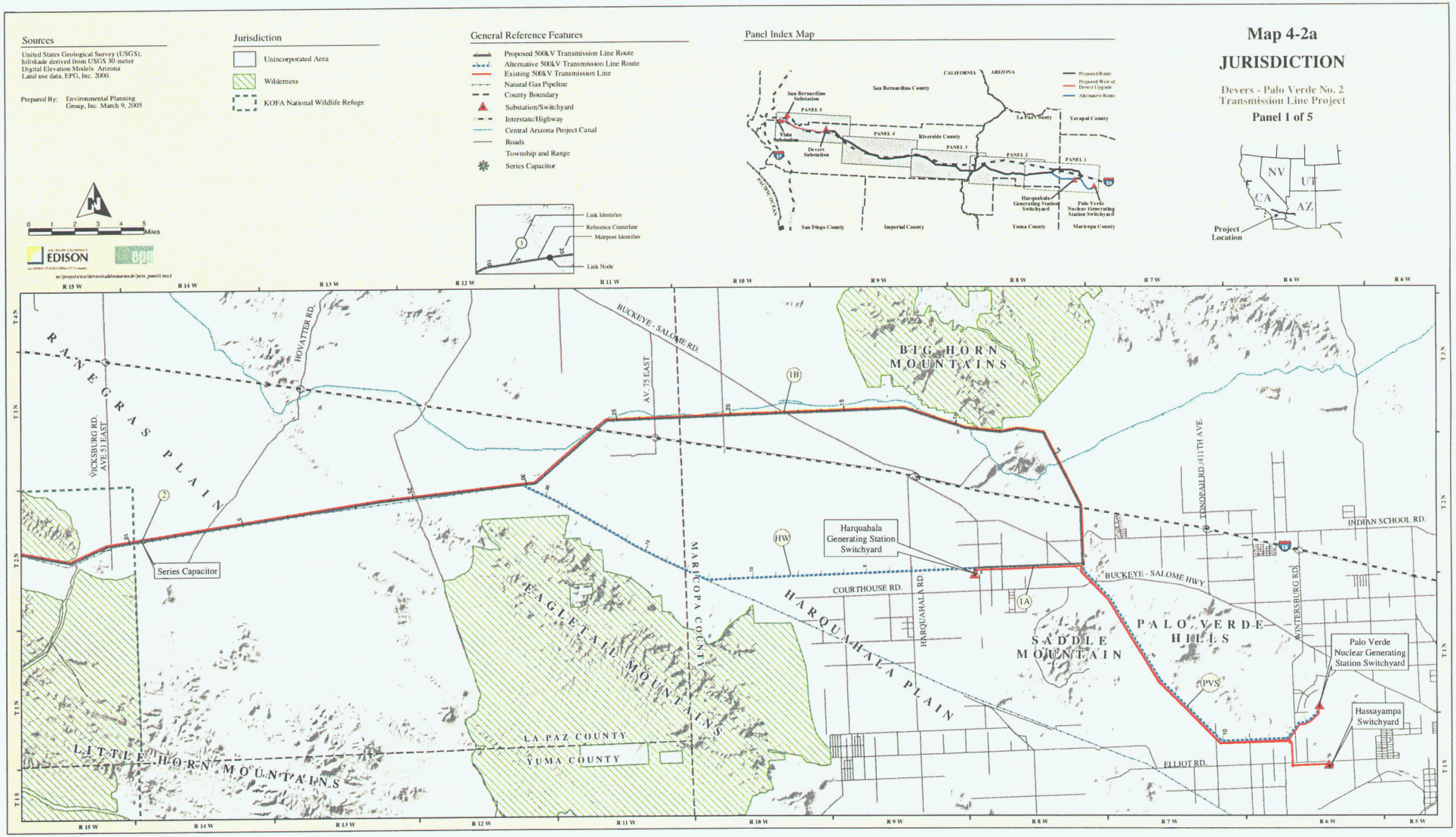
HOW DOES SCE COMPLY WITH ENVIRONMENTAL LAWS AND REGULATIONS?

- SCE files applications in accordance with applicable laws and regulations.
- State and federal agencies review the applications and either approve, disapprove, or approve the project with modifications or required mitigation measures.
- If approved, SCE constructs project with applicable modifications and mitigation measures to reduce or avoid environmental impacts.

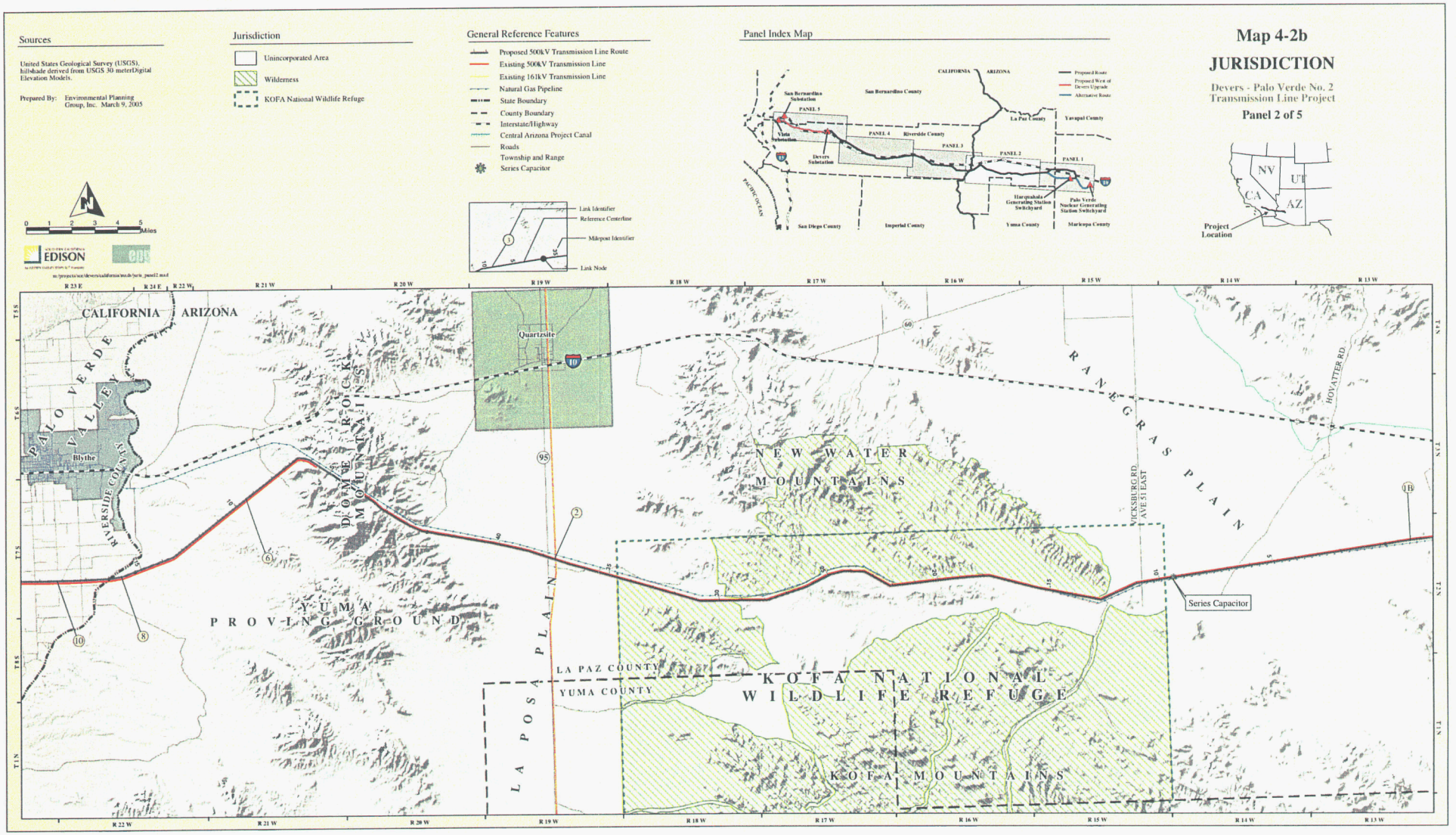
WHAT KINDS OF ACTIONS DOES SCE TAKE TO MITIGATE ENVIRONMENTAL IMPACTS?

- Require environmental education program for all construction workers
- Provide on-site monitors
- Schedule construction to avoid critical life-cycles for certain species
- Locate and design towers to match existing structures wherever possible to minimize visual impacts
- Use existing roads for construction and maintenance wherever possible
- Use construction techniques that minimize sensitive habitat disturbance
- Identify and avoid cultural resource sites

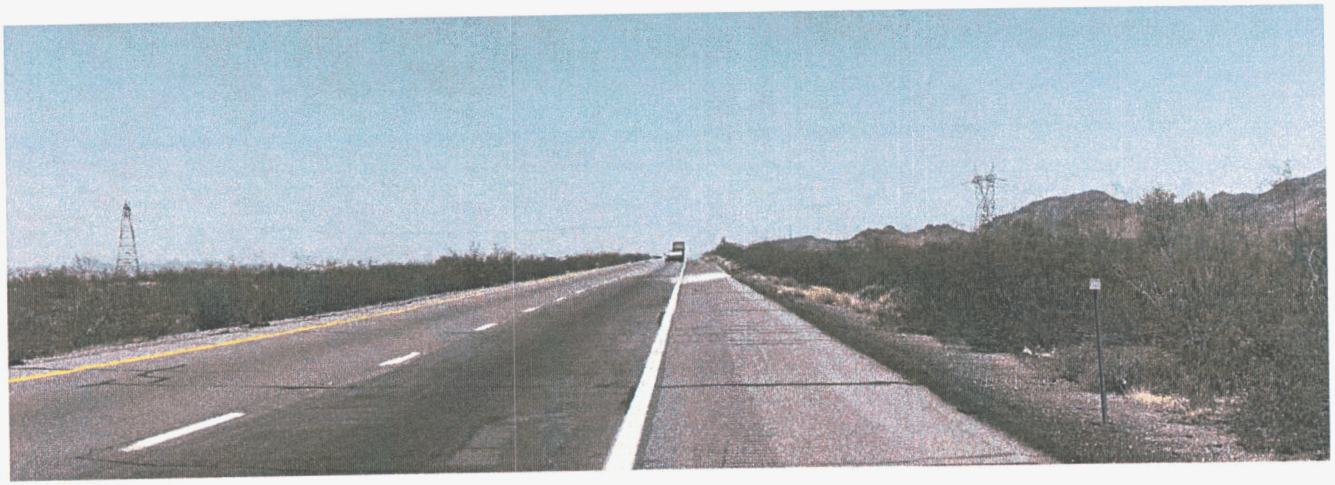
Devers – Palo Verde No. 2



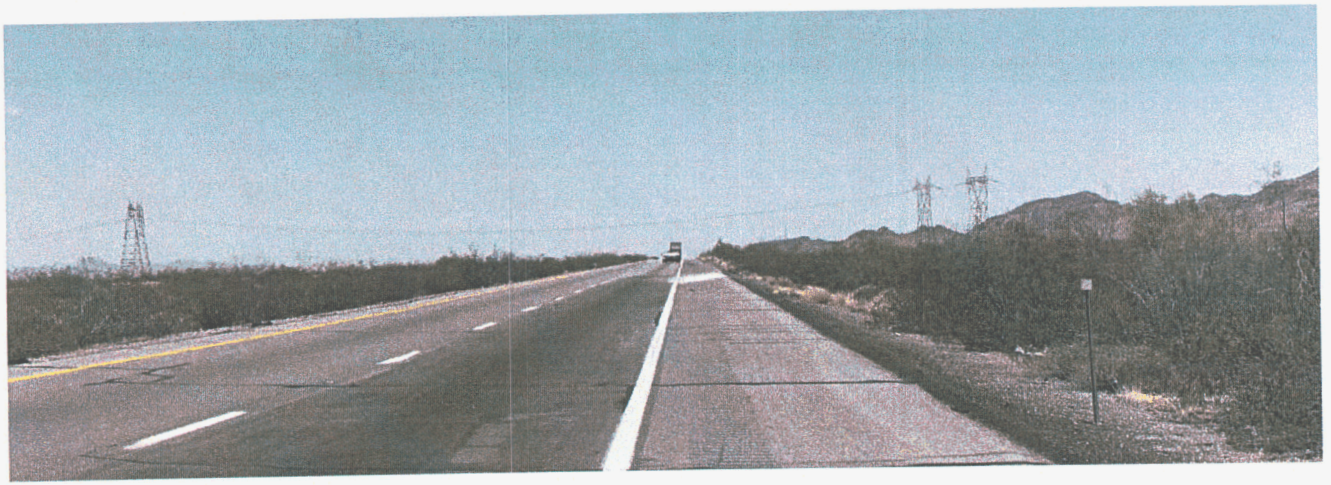
Devers – Palo Verde No. 2



Devers – Palo Verde No. 2



Existing Condition - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona.



Simulation - Transmission line corridor crossing Interstate 10 west of Tonopah, Arizona with proposed Devers-Palo Verde No. 2 500kV lattice steel structure transmission line.

PRIOR TO CONSTRUCTION

- SCE will obtain project approval from all relevant agencies prior to commencing construction.
- SCE will notify Arizona property owners within one-half mile of the proposed route prior to filing an application with the ACC.
- SCE will notify local officials before construction begins.
- SCE will conduct final surveys and other field activities before construction begins.

ONCE CONSTRUCTION BEGINS

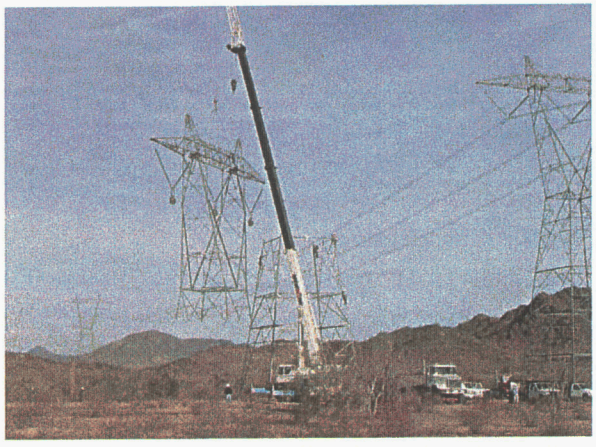
- Most construction activities will occur within SCE's existing right-of-way and access roads.
- Temporary access roads and staging areas for equipment and supplies will be needed.
- SCE expects to be in your community several times during the two-year construction period.
  - Typically a few days to several weeks in length

Devers – Palo Verde No. 2

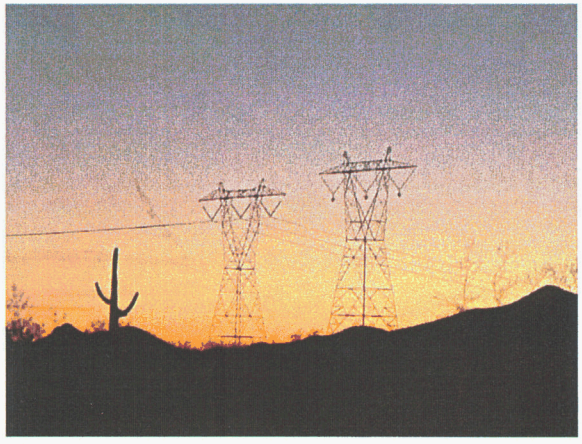
SURVEY

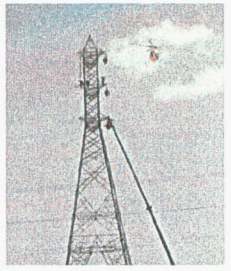
BUILD FOUNDATIONS

ERECT TOWERS



STRING WIRE

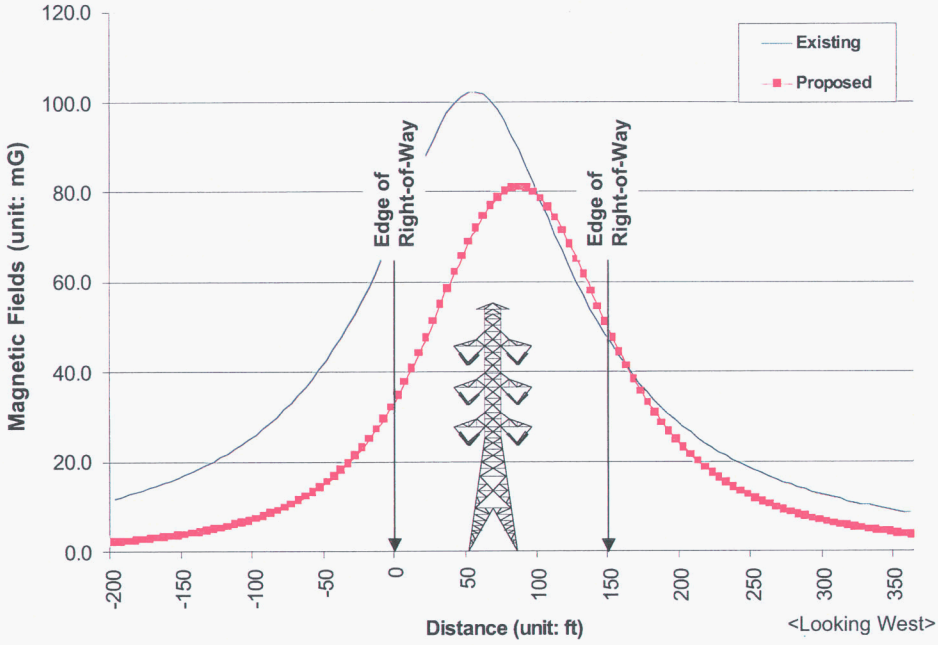




WHAT ARE ELECTRIC AND MAGNETIC FIELDS (EMF)?

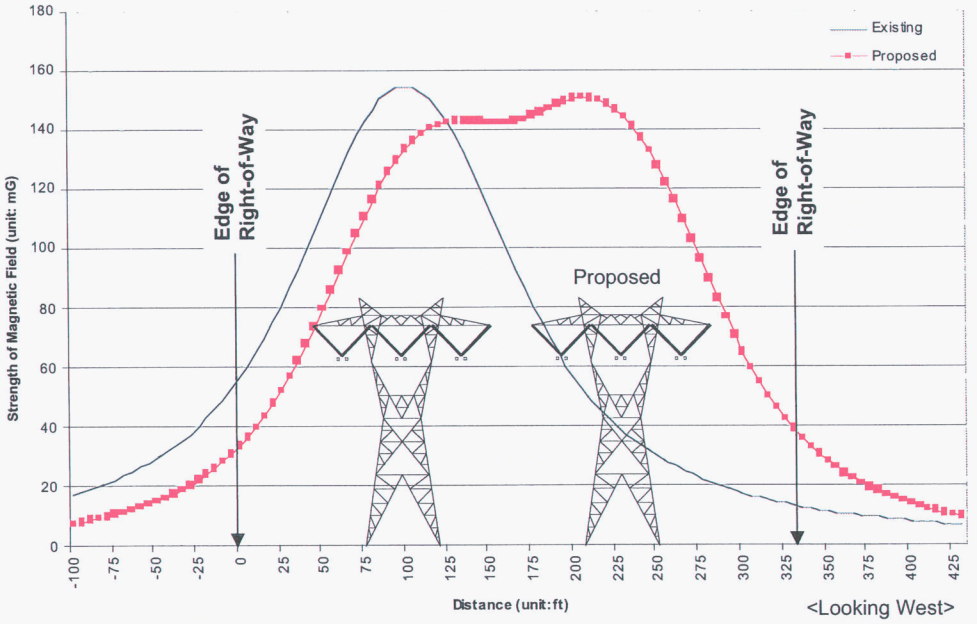
- Electric and magnetic fields (EMF) surround every wire that carries electricity, including those in electric power lines, electrical machinery, and common household and office appliances
- Electric fields are created by voltage
- Magnetic fields occur wherever electrical current flows
- The strength of these fields decreases rapidly with distance from the voltage or current source

Typical Magnetic Fields in Copper Bottom Pass of Dome Rock Mt., Arizona



Note: Calculation is based upon Year 2008 Forecasting Loadings and Avg. Sagging

Typical Magnetic Fields in Arizona



Note: Calculation is based upon Year 2008 Forecasting Loadings and Avg. Sagging

BEFORE YOU LEAVE

- Sign up for the project mailing list.
- If you have additional questions or desire additional information, please fill out a comment card.

Southern California Edison - DPV2 Project

COMMENT CARD

Comments or question:

Comments on the usefulness of the handouts and the SCE team member providing assistance at this table today:

(Optional)
I would like to be on the mailing list to receive updates Y/N

Name: _____

Address: _____

City _____ State _____ Zip ____

Thank you for your time and interest in providing us with your comments

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

THANKS FOR COMING!

PARKER PIONEER

Parker, AZ

Southern Cal. Edison plans new transmission line

Monday, April 17, 2006

A leading California utility wants to build a new power transmission line that will roughly double their capacity for delivering power to Southern California from Arizona.

Southern California Edison wants to build a 500-kilovolt line from the Palo Verde Nuclear Generating Station in Arizona to the their Devers Substation north of Palm Springs, Calif. This line will use the same right-of-ways and easements used by a similar 500-kilowatt line which was built in the 1980s.

The new line will be used in addition to the old one, and it will run parallel to the old line. The estimated cost is $550 million over a two-year construction period.

Paul Klein, Southern California Edison project manager, said the new line was needed because the older line is operating at full capacity. He said benefits to Arizona included 150 jobs and an additional $24 million over the next 10 years in property tax revenues.

In addition to using power from Palo Verde, of which their company is a 16 percent owner, Klein said they will be purchasing power from power plants in the Harquahala Valley which are currently under-utilized. Most of these plants are fired by natural gas, and this will generate more revenues for the state through excise taxes on gas.

The line will be 203 miles long, with 102 miles in Arizona. It will pass through La Paz County south of Interstate 10. It will reach the northern end of the Kofa National Wildlife Refuge.

Bob Steins, Southern California Edison project manager, said the company had applied for permits with Bureau of Land Management, the Arizona Corporation Commission, and the California Public Utilities Commission.

In addition to Southern California Edison, the line will be available to other utilities for transmitting power, Klein said.

"It's been described as a freeway for energy," he said.

The La Paz County Board of Supervisors held a worksession with representatives from Southern California Edison on Thursday, April 7. One emphasis of the worksession was the potential economic benefits to La Paz County.

Steins said the new line will provide benefits for Arizona residents as well as Californians.

"It will lower the cost of power for California," Steins said, "It will have possible economic impacts for Arizona. We estimate $85 million in economic impacts. In the first 10 years, we estimate $24 million in tax revenue to the state of Arizona."

He said La Paz County will receive about $12 million of this revenue in that period, allowing the county an

estimate of about $1 million per year, with excise tax being paid on natural gas.

Steins said the company has sent notices to property owners within half-a-mile of the proposed line.

"There are less than 500 property owners within a half-mile of the line," he said. He added Southern California Edison is hoping for approval by the end of the year, with construction to begin in early 2007. Public hearings are currently set for late June and early July.

"If you look close, you don't even notice the change," District 2 Supervisor Cliff Eddy said of the project, referring to the power line itself. The new line will have access roads to it and will be right next to the presently-existing line. Due to new technology, the circuit towers that accompanied the old line will not be needed for the new line.

District 3 Supervisor Mary Scott said the project appears to have good planning.

"Everybody gets a benefit," District 1 Supervisor Gene Fisher said of the fiscal and economic impacts to result from the power line being built.

Steins stated the company is known for promoting efficiency. He said they generate 16 percent of their power through renewable resources. He said the company expected to spend $1 billion over the next three years on energy efficiency programs, and they will be spending funds to develop solar and wind power.

Southern California Edison is one the nation's largest utilities, serving over 13 million people in over 4.6 customer accounts. Their service area covers 50,000 square-miles in central, coastal and Southern California.

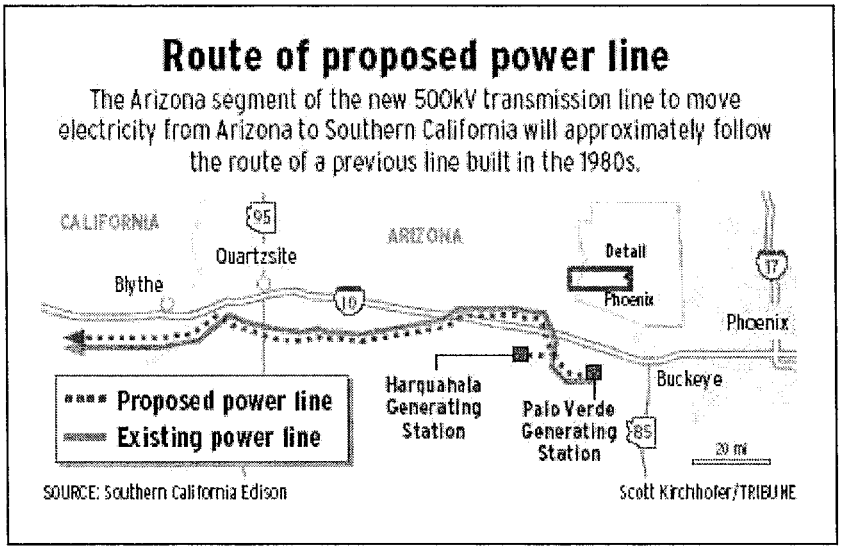
EAST VALLEY TRIBUNE

Scottsdale/Mesa/Tempe/Gilbert/Chandler/Queen Creek, AZ

$1.1B in electric lines proposed

Planned routes slated for Valley area and into California

By ED TAYLOR
April 10, 2006



A total of $1.1 billion in new high-voltage electric lines are in the advanced planning stages in Arizona and adjacent states as utilities attempt to keep up with population and economic growth and increase the reliability of the Western transmission grid.

While power companies have rushed to build electric generators fueled by natural gas, construction of the transmission lines to move that energy to growing metropolitan areas is still catching up.

"There are more plans than we've had in the past. It's tied to the high growth in our area," said Paul Herndon, project manager for a new Arizona Public Service line planned from the Palo Verde nuclear plant hub west of Phoenix to Yuma.

Among the major transmission projects planned in Arizona:

- A $250 million, 115-mile line from Palo Verde to Yuma will provide additional power to the growing Yuma area. APS, which plans to follow the route of an existing line between those two points, expects to begin construction in 2009 and place the line in service in 2012.

- A 25-mile West Valley to Pinnacle Peak transmission line planned across the north side of the Valley by APS will bring additional power supplies to the Valley from coalfired plants in northern Arizona and other sources. The $100 million project is expected to be under construction in late 2008 or early 2009 and be completed in mid-2010.

- A 160-mile line from Palo Verde through Pinal County and looping north to the Browning substation in east Mesa is under construction and expected to be completed in 2011. A joint project of Salt River Project, Tucson Electric Power and the Santa Cruz Water and Power Districts Association, the $160 million line is intended to supply power to growing areas in Pinal County and eastern Maricopa County.

- Another major project is a $600 million, 230-mile line planned by Southern California Edison from the Palo Verde switch yard to a substation near Palm Springs, Calif. The purpose of the 500-kilovolt line is to move electricity generated at several new natural gas-fired plants built by independent power producers near the Palo Verde nuclear plant in the last few years to the Los Angeles area.

The route will follow approximately the route of an existing high-power transmission line built in the early 1980s, which moves electricity from the Palo Verde plant to Southern California.

"Recently it became apparent the economics were right to build the second line," said Marco Ahumada, project manager for SCE.

The new natural gas plants have the capacity to produce more electricity than Arizona needs, and that excess power can be sold to California, he said.

"These plants are very efficient," Ahumada said, adding that they would hold down the cost of electricity in California. "Power producers in California would have to lower their prices to match the price of these plants."

If regulatory approvals are forthcoming, the line could be under construction early next year and completed in 2009, he said.

The project is expected to employ 150 people in Arizona during construction, providing a $85 million economic impact, said SCE spokesman Paul Klein. Also, state and local governments in Arizona will receive $24 million in sales and property taxes during construction and first 10 years of operation, he said.

The entire cost of the project will be covered by SCE's California customers with Arizona electric users having no cost responsibility, he said.

A series of public meetings to explain the project have been scheduled.

They will be from 4 to 8 p.m. Tuesday at the Quartzite Elementary School, 930 W. Quail, Quartzite; 9 a.m. to noon Wednesday at the Best Western Central Phoenix Inn, 1100 N. Central Ave., Phoenix; and 4 to 8 p.m. Wednesday at Ruth Fisher Elementary School, 38201 W. Indian School Road, Tonopah.

Also there is a feasibility study on a $2 billion to $4 billion TransWest Express power line that would run from coal and wind generation plants in Wyoming to Arizona.

The route is still being studied, but it would probably run through Utah and enter Arizona at the Navajo Generating Station near Page, the Four Corners area, or the Las Vegas-Hoover Dam area.

From any of those points, the electricity could move to the Valley through existing power lines or through new lines that follow existing power-line corridors, said Bob Smith, manager of the project for APS.

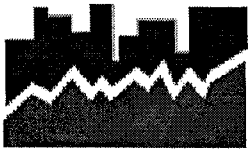
A decision on whether the project is feasible is expected to be made in June, and construction could begin in 2010 with completion in 2013, Smith said. The major question is if it would be cheaper to generate power near the source of the fuel and import the electricity through the power lines or transport the coal by rail to plants in or near Arizona, he said.

EXHIBIT J-3
ECONOMIC AND FISCAL IMPACT OF THE DPV2 POWER LINE
(April 2006)

Economic and Fiscal Impact of the DPV2 Power Line

Prepared For:
Southern California Edison

Prepared By:



Elliott D. Pollack & Company
7505 East Sixth Avenue, Suite 100
Scottsdale, Arizona 85251

April 2006

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Executive Summary

Introduction

Elliott D. Pollack & Company has been retained to perform an economic and fiscal impact analysis on the State of Arizona related to the construction of a second Devers to Palo Verde (DPV2) electric transmission power line. The line will run along the current DPV1 transmission line, through Maricopa and La Paz Counties and into California.

Methodology

Economic impact analysis examines the regional implications of an activity in terms of three basic measures: output, wages, and job creation. Fiscal impact analysis, on the other hand, evaluates the public revenues and costs created by a particular activity. In fiscal impact analysis, the primary revenue sources of government entities are analyzed to determine how the activity may financially affect them.

Economic impacts are categorized in this study as either direct, indirect or induced. For instance, direct employment consists of jobs held by a project's or company's employees. Indirect employment is those jobs created by businesses that provide goods and services essential to the operation or construction of a project or company. Finally, the spending of the wages and salaries of the direct and indirect employees on items such as food, housing, transportation, and medical services creates induced employment in all sectors of the economy.

Multipliers have been developed to estimate the indirect and induced impacts of various direct economic activities. The Minnesota IMPLAN Group developed the multipliers used in this study.

This report also provides an estimate for the fiscal impact on Maricopa and La Paz Counties. The inclusion of county impacts was required because the state does not collect a property tax and the exclusion of counties would greatly understate the total regional fiscal impact.

Economic and Fiscal Impact Summary

The construction of the DPV2 power line will generate an estimated 488 jobs (over the course of two years) and provide a two year economic impact of $86.3 million.[1] During this construction phase, the State of Arizona will receive an estimated $5.2 million in tax revenues.[2] Furthermore, Maricopa County will collect an estimated $1.0 million in tax revenues and La Paz County will also collect about $1.0 million in tax receipts.[3] Combined, state and county tax receipts will total $7.2 million.

In addition to the economic and fiscal impacts created during the construction phase, benefits will be realized if the state's current merchant power plants ramp up production and purchase

[1] See Page 9; Table 2 for additional detail.
[2] See Page 10; Table 3 for additional detail.
[3] See Pages 10, 11; Tables 4, 5 for additional detail.

additional supplies of natural gas. For every additional $10 million in natural gas purchases that occur in Arizona, the state will collect an additional $560,000 in use taxes.

When the construction phase is completed, Maricopa and La Paz Counties will continue to collect property taxes related to the power lines. In year one, as an example, Maricopa County is expected to receive approximately $835,000 in related property taxes while La Paz County is expected to receive approximately $1.25 million.[4]

Southern California Edison
DPV2
Economic and Fiscal Impact - Arizona
Summary

Construction Phase

Economic Impact

	Year 1	Total Over 2 Years
Jobs Created		
Direct	150	250
Indirect & Induced	143	237
Total	293	488
Economic Output ($ millions)	$48.4	$86.3

Fiscal Impact ($ millions)

State of Arizona	$5.16
Maricopa County	$1.03
La Paz County	$1.03
Total State and Counties	$7.22

On-Going (Post Construction)

Fiscal Impact ($ millions)*	Year 1	Total Over 10 Years
Maricopa County Property Taxes	$0.83	$6.81
La Paz County Property Taxes	$1.25	$10.18
Total On-Going Property Taxes	$2.08	$17.00

* Figures do not include use tax collections by the State of Arizona as a result of additional purchases of natural gas by local merchant power plants. For perspective, this would amount to $560,000 for every additional $10M in purchases.

Source: Elliott D. Pollack & Company; IMPLAN; Southern California Edison

[4] See Page 13; Table 6 for additional detail.

1.0 Introduction, Methodology, and Assumptions

1.1 Background

Elliott D. Pollack & Company has been retained to perform an economic and fiscal impact analysis of the impacts on the State of Arizona related to the construction of a Devers to Palo Verde 2 (DPV2) electric transmission line. The power line would run along the DPV1 corridor. This analysis does not consider economic impacts related to environmental issues.

1.2 Economic Impact Methodology

Economic impact analysis examines the economic implications of an activity in terms of sales or output, earnings, and employment. For this study, the analysis focuses on the activity related to the construction of the DPV2 power line. On-going operations would only relate to minimal, sporadic maintenance. Thus, the resulting on-going economic impact related to power line maintenance is similarly negligible and is excluded from the analysis.

For additional background, the different types of economic impacts are known as direct, indirect, and induced, according to the manner in which the impacts are generated. For instance, direct employment consists of permanent jobs held by a project's or company's employees. Indirect employment is those jobs created by businesses that provide goods and services essential to the operation or construction of the project or company. Finally, the spending of the wages and salaries of the direct and indirect employees on items such as food, housing, transportation and medical services creates induced employment in all sectors of the economy. These secondary effects are captured in the analysis conducted in this study.

Multipliers have been developed to estimate the indirect and induced impacts of various direct economic activities. The Minnesota IMPLAN Group developed the multipliers used in this study. The multipliers relate to economic activity in Arizona only. The economic impact is categorized into four types of impacts:

- Employment Impact – the total wage and salary and self employed jobs in a region. Jobs include both part time and full time workers.

- Earnings Impact – the personal income, earnings or wages, of the direct, indirect and induced employees. Earnings include total wage and salary payments as well as benefits of health and life insurance, retirement payments and any other non-cash compensation.

- Economic Output – the economic output, also referred to as sales or activity, relates to the gross receipts for goods or services generated by the project's operations. This may be thought of as the GDP of a particular operation within Arizona.

Economic impacts are by their nature regional in character. In this report, economic impacts are calculated for Arizona only (i.e. estimates related to impacts on surrounding states is not considered).

1.3 Fiscal Impact Methodology

Fiscal impact analysis studies the public revenues associated with a particular economic activity. The primary revenue sources of local, county, and state governments (i.e. taxes) are analyzed to determine how an activity may affect the various jurisdictions. This study will focus on the fiscal benefits derived from the construction of the DPV2 power line, as well as the on-going property taxes that will be collected in subsequent years.

The fiscal impact figures cited in this report have been generated from information provided by a variety of sources including the U.S. Bureau of the Census; the U.S. Department of Labor; the Internal Revenue Service; the Arizona Department of Revenue; the Arizona Tax Research Association; and the U.S. Consumer Expenditure Survey.

Elliott D. Pollack and Company has relied upon Southern California Edison for estimates of construction cost and employment. Unless otherwise stated, all dollar values are expressed in 2006 dollars.

Following is a description of the typical revenue sources of the various jurisdictions that are considered in economic and fiscal impact analyses. This report focuses on the fiscal impacts on the State of Arizona, Maricopa and La Paz Counties.

- Construction Sales Tax
  The state, counties, and cities levy a sales tax on materials used in the construction of buildings or development of land improvements. That tax is calculated by state law under the assumption that 65% of the construction contract are related to construction materials, with the remaining 35% devoted to labor. The sales tax rate is then applied to the 65% figure. The sales tax on construction materials is a one-time collection by the governmental entity. Construction sales tax is generated during any new construction as well as from improvements.

  The state currently levies a 5.6% sales tax on construction activity. Maricopa County levies a sales tax of 0.7%. La Paz County levies a sales tax of 1%.

- Sales and Use Tax
  The state, counties and local cities also charge sales taxes at similar rates on retail goods and services. These tax rates are applied to direct sales at the private retail establishments. Likewise, sales taxes are collected on the spending of direct, indirect and induced employees.

- State Income Tax
  The State of Arizona collects taxes on personal income. The tax rate used in the analysis averages about 1.6% for earnings. These percentages are based on the most recently available income tax data from the state and the projected wage levels of jobs created by the construction and operations impact. This tax is applied to the wages and earnings of direct, indirect and induced employment.

- State Unemployment Tax
  Unemployment insurance tax for employees is 2.7% on the first $7,000 of earned income. This factor is applied to the projected wages and earnings of direct and indirect employees.

- HURF Tax
  The State of Arizona Highway User Revenue Fund collects a motor vehicle fuel tax of $0.18 per gallon. The tax revenue is calculated based on a vehicle traveling 12,000 miles per year at 20 miles per gallon. These factors are applied to the projected direct and indirect employee count. Portions of this tax are distributed to cities and counties throughout Arizona based on a formula that includes population and the origin of gasoline sales.

- Vehicle License Tax
  The vehicle license tax is a personal property tax placed on vehicles at the time of annual registration. This factor is applied to the projected direct, indirect and induced employee count. The average tax used in this analysis is $148 and funds are shared between the cities, county and state in accordance with population-based formulas.

- State Shared Revenues
  Each city in Arizona receives a portion of state revenues from four different sources - state sales tax, state income tax, vehicle license tax, and highway user tax. The formulas for allocating these revenues are primarily based on population. Counties share in the revenue sources of the state, with the exception of the income tax.

- Property Taxes
  Property taxes on utility lines are paid during construction as well as annually (at a depreciated rate) once the line is operating. During construction, the property tax is calculated on a base that is equal to 50% of the total construction contract value multiplied by the assessment ratio (25%). Once the line is operating, the net assessed value is based on a deprecation rate each year. The net assessed value is then multiplied by the assessed value ratio. Historically, the centrally assessed ratio has been at a 25% rate compared to the residential assessment rate of 10%. However, the State Legislature enacted legislation in 2005 that reduces the assessment rate for commercial real estate by ½% per year over a next ten years. This legislation will reduce the property taxes paid by commercial properties over the long term.

Revenues are further categorized in this analysis as either primary or secondary, depending on their source and how they flow through the economy into tax accounts. For instance, some revenues, such as construction sales taxes, are straightforward calculations based on the cost of construction. The State of Arizona and local governments collect the construction sales tax directly from contractors and others on the project. These revenues are described in this study as primary revenues.

Secondary revenues, on the other hand, flow from the wages of those direct, indirect and induced employees who are supported by a company or project. Estimates of revenue generation to governmental entities are based on typical wages of the employees working on the project, their

spending patterns, projections of where they might live, and other assumptions outlined in this report.

Again, this report provides an estimate for the fiscal impact on the State of Arizona, Maricopa and La Paz Counties. The inclusion of county impacts was required because the state does not collect a property tax and the exclusion of these counties would greatly understate the total regional fiscal impact. A map displaying the power line's route through Maricopa and La Paz Counties is provided in Appendix A.

1.4 Assumptions

Table 1 displays the primary assumptions included in this review related to the development of the DPV2 power line. All data pertaining to the development of the transmission line was provided by Southern California Edison (SCE). The provided values are apportioned to both Maricopa and La Paz Counties according to reported line miles in each area.

SCE reports that the total power line market value (i.e. book value) will equal $201 million in Arizona. This value is used for calculating property tax impacts. However, specific construction contract values are used to determine construction sales tax payments. According to SCE, the value of the construction contract is estimated at $143 million. This smaller figure will be used by the Arizona Department of Revenue to determine tax liability. The provided construction value, excluding materials and overhead, equals $62.3 million.

Table 1 displays the assumptions that drive the economic and fiscal impacts provided in this report.

Table 1

Assumptions of Analysis
Southern California Edison DPV2

Construction and Value of DPV2	
Market Value	($ mil)
Transmission line	$152.0
Substation & related facilities*	$43.0
Land	$6.0
Total value of project	**$201.0**
Construction Contract Value	($ mil)
Transmission line	$107.0
Substation & related facilities*	$30.0
Land	$6.0
Total value of project	**$143.0**
Construction only (excluding materials and overhead)	($ mil)
Transmission line	$56.5
Substation & related facilities*	$5.8
	$62.3
Percent of line in Maricopa County	55%
Percent of line in La Paz County	45%

* Substation does not include transformation.

Source: Southern California Edison; Elliott D. Pollack & Compnay

2.0 Economic and Fiscal Impact - DPV2

2.1 Construction of Power Line

The development of the transmission line is expected to take up to two full years, while the substation construction will be completed within one year. Therefore, the economic and fiscal impacts associated with the construction of the power line will also be spread over two full years, while the substation is a one-year impact only. In the first year of construction, the project will result in employment of 150 direct jobs, 49 indirect jobs, and 93 induced jobs, for a total of 293. During the second year, substation construction will not produce jobs, so there will be only 195 total jobs created in the second year of construction. These job counts are calculated through use of Implan multipliers.

Based on the provided assumptions, economic output from all direct, indirect, and induced employment related to the construction of the power line will total an estimated $86.3 million over the two years. This is derived by summing $37.9 million in economic output each year for two years related to the transmission line (i.e. $37.9 x 2), and another $10.6 million related to substation construction.

Table 2
Economic Impact of Construction
Southern California Edison DPV2
State of Arizona
(2006 Dollars)

Impact Type	Jobs	Wages ($ mil)	Economic Output ($ mil)
Transmission line (each year over two years)			
Direct	100	$5.0	$28.3
Indirect	33	$1.5	$3.8
Induced	62	$2.4	$5.8
Total	195	$8.8	$37.9
Substation (one year only)			
Direct	50	$2.5	$5.8
Indirect	16	$0.7	$1.9
Induced	31	$1.2	$2.9
Total	98	$4.4	$10.6

Source: Elliott D. Pollack & Company; IMPLAN; Southern California Edison

The construction of the power line will also result in tax revenues for the state and counties. Table 3 displays that during the two year construction period, a total of $4.4 million in construction sales taxes will be generated for the State of Arizona. When adding tax revenues from other categories such as employee spending sales taxes, income taxes, etc., tax revenues to the state sum to an estimated $5.2 million.

Table 3
Fiscal Impact of Construction
Southern California Edison DPV2
State of Arizona
(2006 Dollars)

Total Fiscal Impact During 2 Years of Construction

	Primary Revenues	Secondary Revenues from Employment					
Impact Type	Construction Sales Tax	Employees Spending Sales Tax	Income Tax	Vehicle License Tax	Unemp. Tax	HURF Tax	**Total Revenues**
Direct Revenues	$4,403,300	$148,700	$196,500	$9,000	$47,300	$18,200	**$4,823,000**
Indirect Revenues	N/A	$46,200	$58,800	$2,900	$15,400	$5,900	**$129,200**
Induced Revenues	N/A	$79,600	$86,200	$5,600	$29,500	$11,300	**$212,200**
Total Revenues	**$4,403,300**	**$274,500**	**$341,500**	**$17,500**	**$92,200**	**$35,400**	**$5,164,400**

NOTES
1 The figures for the State of Arizona are net of revenues distributed to counties, cities, and towns.
The figures are intended only as a general guideline as to how the State could be impacted by the project.
2 The above figures are based on the current economic structure and tax rates of the State of Arizona.

Source: Elliott D. Pollack & Company; IMPLAN; Arizona Department of Revenue; Arizona Tax Research Association; Southern California Edison

Tables 4 and 5 display the fiscal impacts related to the construction of the power line at the county level. Table 4 identifies that for Maricopa County, total tax revenues during the two year construction phase will equal approximately $1.0 million. Table 5 identifies that for La Paz County, total tax revenues will similarly equal about $1.0 million.

Table 4
Fiscal Impact of Construction
Southern California Edison DPV2
Maricopa County

Total Fiscal Impact During 2 Years of Construction

	Primary Revenues		Secondary Revenues from Employment			
Impact Type	Construction Sales Tax	Property Tax (During Const.)	Employees Spending Sales Tax	Residents Property Tax	State Shared Revenues	**Total Revenues**
Direct Revenues	$342,800	$299,130	$15,600	$36,000	$264,300	**$957,830**
Indirect Revenues	N/A	N/A	$4,900	$11,800	$10,000	**$26,700**
Induced Revenues	N/A	N/A	$8,500	$22,400	$18,100	**$49,000**
Total Revenues	**$342,800**	**$299,130**	**$29,000**	**$70,200**	**$292,400**	**$1,033,530**

NOTES
1 The figures include revenues collected by the State and shared with counties.
The figures are intended only as a general guideline as to how the County could be impacted by the project.
2 The above figures are based on the current economic structure and tax rates of the County.

Source: Elliott D. Pollack & Company; IMPLAN; Arizona Department of Revenue; Arizona Tax Research Association; Southern California Edison

State shared revenues represented in Tables 4 and 5 include the construction sales taxes collected by the state at the 5.6% sales tax rate and then distributed to counties based on population. For

Maricopa County, state shared construction sales tax is about $230,000 of the $264,000, or 88% of the direct shared revenues. For La Paz County, on the other hand, the portion of the state's construction sales tax shared is much lower because of the population-based formula. La Paz County's state shared construction sales tax is $1,090.

Table 5
Fiscal Impact of Construction
Southern California Edison DPV2
La Paz County

Total Fiscal Impact During 2 Years of Construction

Impact Type	Primary Revenues: Construction Sales Tax	Primary Revenues: Property Tax (During Const.)	Secondary Revenues from Employment: Employees Spending Sales Tax	Secondary Revenues from Employment: Residents Property Tax	Secondary Revenues from Employment: State Shared Revenues	Total Revenues
Direct Revenues	$489,800	$447,209	$16,000	$30,100	$1,200	**$984,309**
Indirect Revenues	N/A	N/A	$5,000	$9,800	$50	**$14,850**
Induced Revenues	N/A	N/A	$8,700	$18,800	$100	**$27,600**
Total Revenues	**$489,800**	**$447,209**	**$29,700**	**$58,700**	**$1,350**	**$1,026,759**

NOTES
1 The figures include revenues collected by the State and shared with counties.
The figures are intended only as a general guideline as to how the County could be impacted by the project.
2 The above figures are based on the current economic structure and tax rates of the County.

Source: Elliott D. Pollack & Company; IMPLAN; Arizona Department of Revenue; Arizona Tax Research Association; Southern California Edison

2.2 On-Going Operations of New Power Line

Documents provided by SCE indicate that only a minimal number of employees will be required to maintain the power line on a rotational basis once constructed. Therefore, this activity is excluded from the calculations.

Once the construction phase is completed, the counties will continue to receive significant property tax payments. Table 6 on the following page displays this on-going tax collection by both Maricopa and La Paz Counties for the ten years following the construction of the power line. The assessment ratios were supplied by the Arizona Department of Revenue.

Beginning in year one, Maricopa County will receive approximately $835,000 in property taxes. La Paz County will receive just under $1.25 million in year one. La Paz County displays higher revenues because the county imposes a higher property tax rate. The tax payments decline over time as depreciation is counted and the assessment ratio is lowered. Nonetheless, this represents a significant gain for the local governments.

2.3 Additional Operations at Current Plants

It is also possible that the construction of DPV2 will result in additional power generation at Arizona's current merchant power plants that are not operating at full capacity. If this occurs, additional natural gas supplies will be purchased and use taxes will be collected by the State of Arizona.

For perspective, for each $10 million in new natural gas purchases that occur locally, the state will collect $560,000 in use tax payments. This would occur every year that the natural gas is purchased. County tax rates would not apply to these purchases.

Table 6

Property Tax Impact of Transmission Line
Southern California Edison DPV2

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total value less depreciation	$195,000,000	$190,125,000	$185,371,875	$180,737,578	$176,219,139	$171,813,660	$167,518,319	$163,330,361	$159,247,102	$155,265,924
Assessment ratio	24.5%	24.0%	23.5%	23.0%	22.5%	22.0%	21.5%	21.0%	20.5%	20.0%
Maricopa County Property Tax	$834,500	$797,000	$760,900	$726,100	$692,600	$660,300	$629,100	$599,100	$570,200	$542,400
La Paz County Property Tax	$1,247,600	$1,191,600	$1,137,600	$1,085,600	$1,035,400	$987,100	$940,500	$895,700	$852,500	$810,900

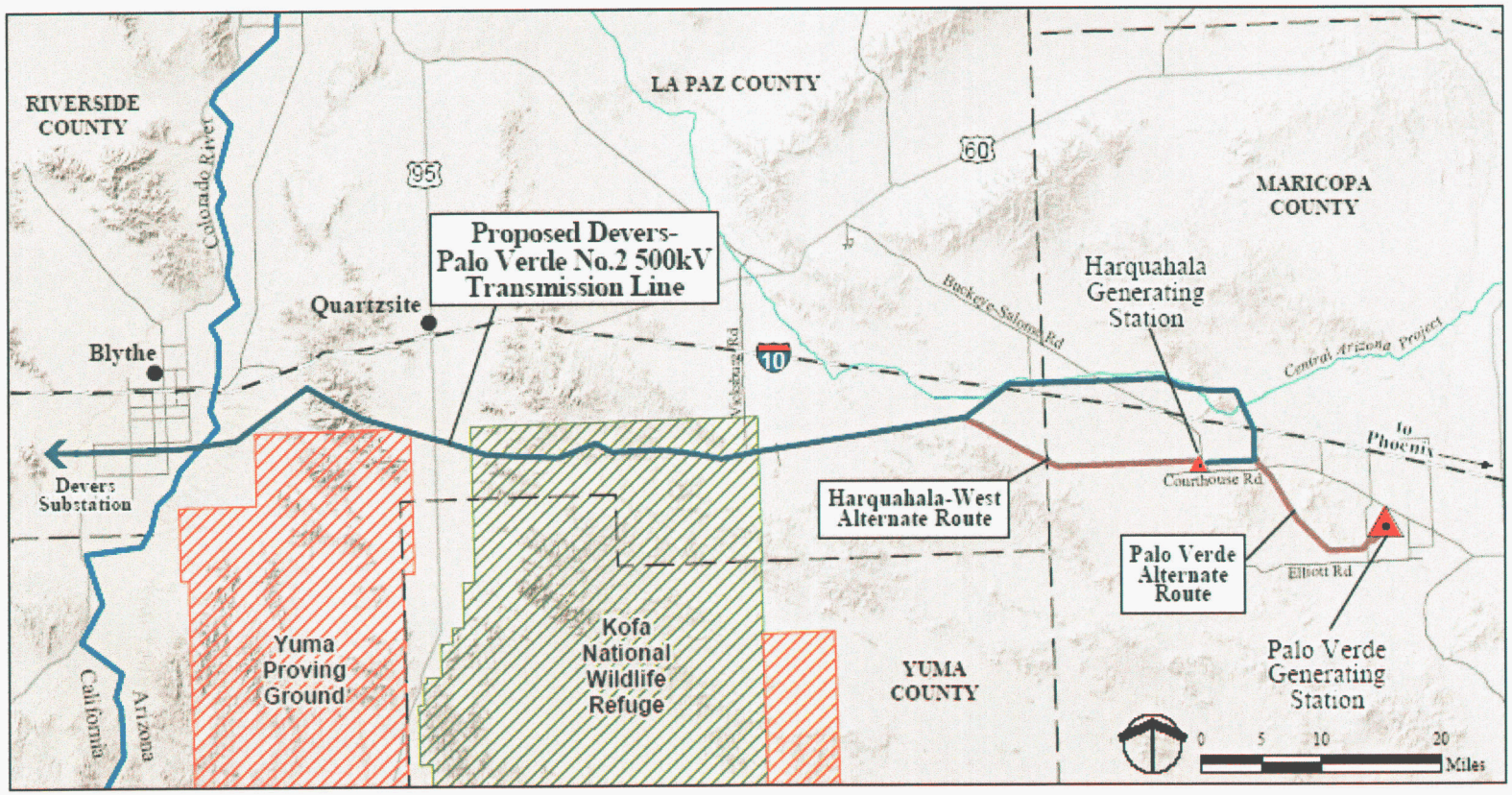
NOTES

1 The total may not equal the sum of the impacts due to rounding.
2 All dollar figures are in constant dollars. Inflation has not been included in these figures.
3 Depreciation set at 2.5% per year for purpose of this analysis.
4 The above figures are based on the current economic structure and tax rates of the county.

Source: Elliott D. Pollack & Company; IMPLAN; Arizona Department of Revenue; Arizona Tax Research Association; Southern California Edison.

Appendix A

DPV2


RIVERSIDE COUNTY
Colorado River
LA PAZ COUNTY
95
60
MARICOPA COUNTY
Proposed Devers-Palo Verde No.2 500kV Transmission Line
Quartzsite
Blythe
Buckeye-Salome Rd
Harquahala Generating Station
Central Arizona Project
10
Vicksburg Rd
To Phoenix
Courthouse Rd
Devers Substation
Harquahala-West Alternate Route
Palo Verde Alternate Route
Elliott Rd
Yuma Proving Ground
Kofa National Wildlife Refuge
YUMA COUNTY
Palo Verde Generating Station
California
Arizona
0 5 10 20
Miles

DATE: May 1, 2006
CASE NO.: 130
DOCKET NO.: L-00000A-06-0295-00130

EXHIBIT B-1

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

October 1988

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

FINAL
SUPPLEMENTAL
ENVIRONMENTAL IMPACT STATEMENT

Southern California Edison Company's

DEVERS - PALO VERDE No. 2
500 kV TRANSMISSION LINE PROJECT

Prepared by:
Western Ecological Services Company, Inc. (WESCO)

OCTOBER 1988

Final Supplemental Environmental Impact Statement (SEIS) For the Devers-Palo Verde No. 2 Transmission Line Project Riverside County, California and Yuma and Maricopa Counties, Arizona

Prepared by:

Western Ecological Services Company, Inc. (WESCO)

for

the Bureau of Land Management

Southern California Edison Company, in concert with several other western utility companies, proposes to construct a 500 kV transmission line from the Devers Substation near Palm Springs, California to the vicinity of the Palo Verde Nuclear Generating Station about 40 miles west of Phoenix, Arizona. A Draft Supplemental Environmental Impact Statement, published in May of 1987, described and evaluated four routing alternatives and the no-action alternative with respect to the proposed transmission line. This Final Supplemental Environmental Impact Statement includes all comments received during the public review period for the Draft SEIS, and provides the BLM's responses and required mitigation measures. Southern California Edison Company's proposed route, parallel to the existing Devers-Palo Verde #1 500 kV transmission line, is the preferred alternative of the Bureau of Land Management.

Ed Hastey

STATE DIRECTOR
CALIFORNIA STATE OFFICE

For further information contact: Doug Romoli
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, CA 92507
(714) 351-6428

FINAL SEIS USER'S GUIDE

The Final Supplemental Environmental Impact Statement (Final SEIS) for the Devers-Palo Verde #2 500 kV Transmission Line Project has been prepared in an abbreviated format under Council on Environmental Quality regulations (40 CFR 1503.4 (3)(c). This document should be used in conjunction with, rather than in place of, the Draft SEIS that was released for public review on May 15, 1987.

The Final SEIS contains three chapters. The first chapter (Summary) is a summary of the transmission line project that briefly describes the project, areas of controversy, major impact conclusions, and the Federal preferred alternative.

The second chapter (Consultation and Coordination) presents the results of agency and public review of the Draft SEIS. Comments received at public hearings and by letter, and responses to those comments, are presented.

The third chapter (Modifications and Corrections) includes changes made to the text of the Draft SEIS. These have been made in response to public comments and are referenced to the appropriate page number in the Draft SEIS.

The appendices discuss a variety of topics. Appendix A contains an updated and modified set of the mitigation measures and agency stipulations from those presented in the Draft SEIS. Appendix B is a summary of bighorn sheep studies that have been conducted in some areas of concern. Appendix C contains information concerning consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act.

Copies of the Draft SEIS can be obtained by writing to the following address:

District Manager
Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

GLOSSARY OF ACRONYMS AND ABBREVIATIONS USED IN THE FINAL SEIS

ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
APS	Arizona Public Services Company
ASAE	American Society of Agricultural Engineers
BLM	U.S. Dept. of the Interior, Bureau of Land Management
CAAA	California Agricultural Aircraft Association
CDCA	California Desert Conservation Area
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers
CPCN	Certificate of Present and Future Public Convenience and Necessity
CPUC	California Public Utilities Commission
CRC	Cultural Resource Contractor
CRIT	Colorado River Indian Tribes
CVP	Coachella Valley Preserve
dB	decibals
Edison	Southern California Edison Company
EIR	Environmental Impact Report
FSEIS	Final Supplemental Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FWS	U.S. Dept. of the Interior, Fish and Wildlife Service
HCP	Habitat Conservation Plan
LTVA	Long-term Visitor Area
M-S-R	Modesto-Santa Clara-Redding Public Power Agency
MW	megawatts
NWR	National Wildlife Refuge
PEA	Proponent's Environmental Assessment
PVNGS	Palo Verde Nuclear Generating Station
ROW	right-of-way
RMP	Resource Management Plan
SCE	Southern California Edison Company
SCPPA	Southern California Public Power Authority
SDG&E	San Diego Gas and Electric Company
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
WSA	Wilderness Study Area

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1.0 SUMMARY AND BLM PREFERRED ALTERNATIVE

1.0 SUMMARY AND BLM PREFERRED ALTERNATIVE

1.1 INTRODUCTION

Southern California Edison Company (SCE or Edison) has applied to the U.S. Department of the Interior, Bureau of Land Management (BLM) for a right-of-way grant and to the California Public Utilities Commission (CPUC) for a Certificate of Present and Future Public Convenience and Necessity (CPCN) to construct and operate a 500 kV transmission line that originates from the existing Palo Verde Nuclear Generating Station (PVNGS) switchyard in Maricopa County, Arizona and extends to the existing Devers Substation near Palm Springs, California (BLM Application No. CA-17905 and CPUC Application No. 85-12-012).

The Draft Supplemental Environmental Impact Statement (SEIS) addressed the potential impacts of the project, provided an analysis of alternative routes to the project, and recommended measures to mitigate adverse impacts. The focus of the SEIS is on the potential environmental consequences of the portions of the project in Arizona, although potentially significant effects/ issues in the California portions of the project are discussed. A more detailed analysis of the California portion is presented in the CPUC's Environmental Impact Report (EIR) for the project. A copy of Volume 1 of the CPUC EIR which addresses the project specific impacts of the Devers-Palo Verde #2 transmission line is included as an accompanying report to the Draft SEIS. The Final EIR was published by the CPUC on August 5, 1987.

1.2 PURPOSE AND NEED FOR THE PROJECT

The proposed Devers-Palo Verde #2 500 kV transmission line is a joint participation project that includes Edison, members of the Southern California Public Power Authority (SCPPA) and the Modesto-Santa Clara-Redding Public Power Agency (M-S-R). The SCPPA participants have 442 megawatts (MW) of firm entitlements in the PVNGS, and M-S-R has 150 MW of firm entitlements in San Juan Unit 4, located in New Mexico. Both SCPPA and M-S-R need transmission from the Phoenix area to California to deliver power from these committed resources.

The existing Devers-Palo Verde #1 transmission line does not have sufficient firm transfer capability to accommodate SCPPA's and M-S-R's firm resource entitlements in addition to Edison's Palo Verde share. Edison is

proposing to build the Devers-Palo Verde #2 project to meet these regional transmission needs. Edison also states that the proposed project provides the most cost-effective solution for its customers in terms of short- and long-term energy needs.

1.3 ALTERNATIVES

Five alternatives are evaluated in the SEIS and include the project as proposed by SCE, three additional alternative routes, and a no-action alternative. Alternatives were developed considering several issues including prime farmland, BLM-designated utility corridors, routing around the Kofa National Wildlife Refuge, visual effects, land use, biological resources, Native American lands, and cultural resources. Following are brief descriptions of the alternative routes.

1.3.1 Proposed Project

The proposed transmission line is similar to other 500 kV transmission lines in the United States. The transmission line would consist of overhead wires (conductors). These conductors would be supported by lattice steel structures and would be electrically isolated from the structures by insulators. In addition to the conductors, structures, and insulators, the proposed transmission line would contain hardware and overhead groundwires.

The proposed transmission line is designated as a "500 kV" line, a designation consistent with the present standards in the United States. The line is designed to operate at a nominal voltage of 525 kV phase to phase and a maximum voltage of 550 kV phase to phase. The line would be capable of transferring nominally 1,200 MW of power on a continuous basis and 2,000 MW under emergency conditions.

The total project includes 238 miles of new transmission line between PVNGS, located about 40 miles west of Phoenix in Arizona, and the Devers Substation near Palm Springs in California. The proposed route would parallel SCE's existing 238-mile 500kV Devers-Palo Verde #1 line, of which 112 miles is located in Arizona and 126 miles is located in California.

The proposed transmission line would terminate at two existing facilities, the Devers Substation in California and the PVNGS switchyard in Arizona. In addition, the line would connect to two series compensation banks, which would be located along the transmission line route. One facility would be

located in Arizona, 61 miles west of the Palo Verde Switchyard, and the second would be in California about 64 miles east of the Devers Substation. The facilities would be located adjacent to the approved locations for the Devers-Palo Verde #1 series compensation banks. They would be located under the proposed Devers-Palo Verde #2 line and generally within the right-of-way. They would require a 221 x 320-foot area.

The proposed Devers-Palo Verde #2 transmission line would also require modification or reinforcement of Edison's existing 220 kV transmission system west of the Devers Substation. The existing system west of Devers includes four 220 kV transmission circuits connecting the Devers and Vista substations and the San Bernardino Generating Station. The reinforcement required for the 220 kV system includes reconductoring some of the existing circuits and rearranging the circuits (Figure 2.4-4). As planned, seven towers of the approximate 370 existing structures may be replaced in close proximity to the existing towers, two towers may be removed, and three towers may be added. The final placement of the towers, if any, will be defined after final engineering is complete. However, it is expected that the major work will take place in the vicinity of Cottonwood Canyon, near Break Estates, and immediately west of Banning.

No new telecommunications sites or structures would be required in conjunction with the Devers-Palo Verde #2 transmission line. It will only be necessary to install additional channels in the existing system to meet requirements for the new line.

Major issues with respect to the proposed route are the potential effects of the alignment through the Kofa National Wildlife Refuge (NWR) (wildlife, vegetation, visual, land use and planning) and agricultural lands in the Palo Verde Valley south of Blythe (agricultural land use, safety). This route is entirely within a BLM-designated utility corridor and generally avoids sensitive cultural resource areas.

1.3.2 Northern Alternative 1

The total length of the Northern Alternative 1 route is 243 miles. This alternative shares common segments with the proposed route, parallel to the Devers-Palo Verde #1 line, for the first 51 miles in Arizona (PVNGS to the eastern edge of the Ranegras Plain) and 118 miles in California (eastern edge of the Chuckwalla Valley to Devers Substation). This alternative route turns northwesterly from the proposed route (about 12 miles east of the Kofa NWR)

toward the town of Brenda. The route crosses I-10 near Brenda and continues northwesterly towards the Lazarus Tanks-Climax Mines area of the Plomosa Mountains. Once through the mountains, the route turns westerly and crosses the La Posa Plain (approximately 5 miles north of Quartzite), the northern end of the Dome Rock Mountains, the southern portions of the Colorado Indian Reservation, and the Colorado River about 9 linear miles north of Blythe. The route skirts the northern edge of the Palo Verde Valley and rejoins the proposed route 12 miles west of Blythe. This route would require approximately 74 miles of new transmission line right-of-way and (ROW) considerable upgrading and construction of new roads.

Most of the alternative route segments would not be within a BLM-designated utility corridor. In designating these corridors, the BLM conducted an extensive evaluation of environmental and socioeconomic/cultural factors, and a public involvement program. These corridors, therefore, are the result of a thorough planning process, and right-of-way planned outside of them would represent a contradiction to the intent of that process.

Major issues with respect to this alternative are potential conflicts with BLM land use and planning (by being outside of an existing BLM-designated corridor, additional planning analysis would be required), potentially significant adverse impacts to biological resources in the Plomosa Mountains (bighorn sheep in particular), and crossing of Native American reservation lands. This alternative would avoid impacts to agricultural interests in the Palo Verde Valley and would not cross the Kofa NWR; however, this alternative would have greater impact to resources such as bighorn sheep.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.3 Northern Alternative 2

This alternative would have a total length of 243 miles and would also share common segments with the proposed route in portions of Arizona and all of California. The Northern Alternative 2 route departs the proposed alignment about 12 miles east of the Kofa NWR and proceeds northwesterly towards Brenda. About 3.5 miles southeast of Brenda, the Northern Alternative 2 route parallels I-10 and several existing gas pipeline and underground communication lines through Plomosa Pass (subalternative alignments north and south of the

highway are evaluated). Once through the pass, this alternative turns southwesterly along the edge of the mountains toward a point about 9 miles southwest of Quartzite where it rejoins the proposed route.

This alternative would require approximately 47 miles of new ROW, of which 20 percent would be within a BLM-designated utility corridor.

This route was evaluated as an alternative to crossing the Kofa NWR and is similar to the Brenda Route analyzed in the original EIS for the Devers-Palo Verde #1 project. Major issues with respect to this alternative are new and cumulative visual effects along I-10 and La Posa Recreation Area, potential adverse impacts to bighorn sheep, cultural resources, and land use and BLM planning. This alternative avoids farmland in Palo Verde Valley and avoids the Kofa NWR. Although the portion of the Northern Alternative 2 route through Plomosa Pass follows a designated utility corridor, the use of this alternative would be inconsistent with existing BLM policy. Portions of the subalternative route south of the highway cross the New Water Mountains Wilderness Study Area and proposed extension of the Kofa NWR. The subalternative route north of the highway would also utilize an existing utility corridor; but, the corridor is considered to be "at capacity" and there are overhead restrictions (for visual and wildlife considerations) placed on the corridor which would preclude use of this corridor for the transmission line without amendment of existing Resource Management Plans and further environmental review.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.4 Southern Alternative

This alternate leaves the proposed route just east of the Colorado River, heads southwest and crosses the river and lower Palo Verde Valley approximately 15 miles southwest of Blythe, then heads northwest and rejoins the proposed alignment at a point approximately 15 miles west of Blythe. Total distance of this route is 251 miles, of which all but 32 miles is shared with the proposed route. As with Northern Alternative 2, the primary reason for considering this alternative would be to avoid the agricultural lands already affected by the Devers-Palo Verde #1 line. This route would require 32 miles of new right-of-way, none of which would be within a utility corridor.

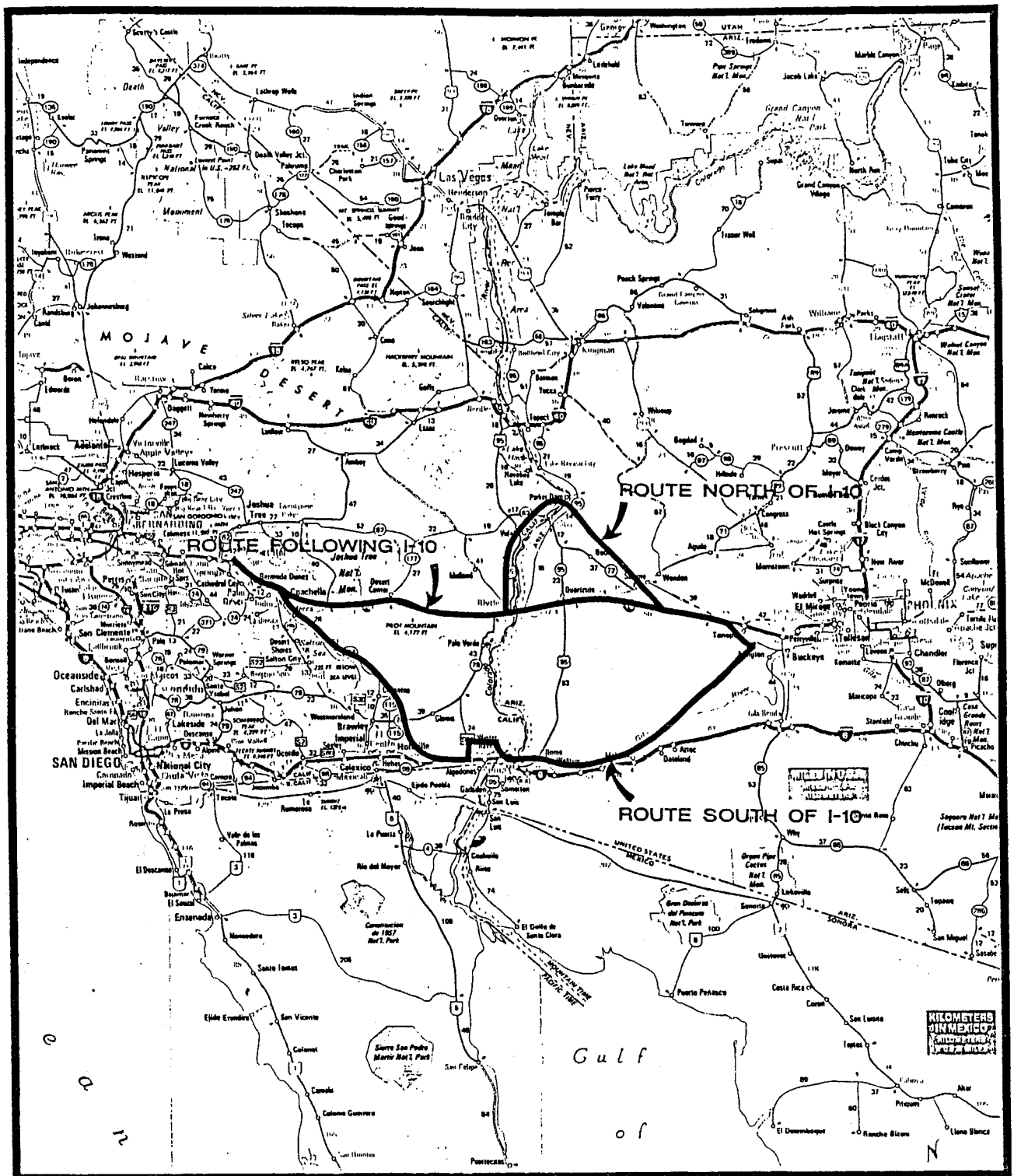
Selection of the southern alternative would be inconsistent with BLM and affected counties' plans and policies (i.e., not in a designated utility corridor). The route would also cross the Kofa NWR, have significant visual effects from high human use areas along the Colorado River, cross areas of high cultural resource sensitivity (primarily uplands/terraces on the Arizona side of the river), and would be within 1.5 miles of high waterfowl use areas on the Cibola National Wildlife Refuge. The route would also cross approximately 4 miles of agricultural land.

Dollar cost of this alternative would be about the same as that of the proposed route.

1.3.5 Alternatives Considered but Eliminated from Detailed Study

In the process of evaluating SCE's proposed project, BLM considered several potential alternative routes in addition to the three that were evaluated in detail in the Draft SEIS. These alternatives were screened from further consideration because of several major disadvantages that made them infeasible. The BLM has studied these and many other possible corridor combinations over the past several years for their suitability for utility routings. The following describes those routes that were screened from further consideration, and Figure 1.3.1 shows their location:

- Route Following Interstate 10. This proposed corridor parallels I-10 just to the north. The Federal Land Policy and Management Act of 1976 (section 503) requires that existing utility corridors be used to the extent practicable. The eastern portion of the I-10 route does not contain existing utilities. Although the western portion of this corridor does contain some facilities (pipelines), each project must be evaluated individually to determine if it is compatible with existing facilities (above ground or underground), corridor capacity, and environmental factors. A 500 kV transmission line was not considered suitable for this corridor because of very high visual impacts. In addition, there are overhead restrictions on link UC-10 because of resource concerns. For these reasons, no further consideration of this route as a viable alternative was deemed warranted. This route would be about 15 miles shorter than the proposed route and cost approximately the same.



ALTERNATIVES CONSIDERED,
BUT ELIMINATED FROM DETAILED STUDY

DEVERS-PALO VERDE #2 TRANSMISSION LINE

FIGURE 1.3-1

NORTH

Base Map: AAA Western States and Provinces

WESCO
WESTERN ECOLOGICAL SERVICES COMPANY

- Route South of I-10. The most southerly route follows the Lower Gila corridor 3 (proposed), Yuma corridor UC-9, and California Desert Conservation Area (CDCA) plan corridors CC, L, and M. Major problems which resulted in BLM not considering this route further included rough terrain in Arizona; Wilderness Study Areas (WSAs) in Arizona that would require the powerline to cross the Arizona Public Service (APS) 500 kV line several times; conflicts with archaeological resources along the old Lake Cahuilla shoreline in Imperial County, California; conflicts with the East Mesa crucial habitat of the flat-tailed horned lizard; and conflicts with military overflights in the East Mesa area of Imperial County. This route would be approximately 52 miles longer than the proposed route and would cost approximately twenty percent more.

- Route North of I-10. This route follows the proposed Lower Gila corridor 1 (along a spur of the El Paso natural gas pipeline and a powerline), Yuma corridor UC-5, and CDCA plan corridor J. The major problem with this route is that corridor J is completely blocked by two non-suitable WSAs just north of Blythe. This route would be approximately 22 miles longer than the proposed route and would cost about 10 percent more.

1.4 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

1.4.1 Impact Summary of Proposed and Alternative Routes

Table 1.4-A presents a comparative summary of impacts and miscellaneous data for the proposed and alternative routes.

1.4.2 Comparative Evaluation of Proposed and Alternative Routes

A comparative evaluation of the proposed and alternative routes is presented in Table 1.4-B. Relative impact ratings used in the table were:

- High (potential for major significant impact)
- Moderate (potential for significant, but not major impact)
- Low (little or no potential for significant impact)

Also indicated in the table for some environmental considerations and alternatives are "(P)" for a preferred choice among alternatives, and "(L)" for a least preferred choice among alternatives. If potential impacts between

Table 1.4-A

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Geology	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in the western 45 miles. Hazards much less significant for east 1/3 route from Blythe to the PVNGS. Cumulative miles of sensitive landforms and hazardous features crossed: active fault zones, 12.5; duneland, 7.2; badland, 22.5; hardpan soils 24.2; unstable slopes, 28.5; total miles of hazards, 94.9. Impacts are largely mitigable through proper engineering and construction practices.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles. Impacts are more significant and less easily mitigable for portions or route without existing ROW where new access roads would be required. Cumulative miles of sensitive landforms and hazardous features crossed: active fault zones, 12.5; duneland, 7.2; badland, 28.7, hardpan soils, 19.3; unstable slopes 28.5; total miles of hazards, 94.9.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles. Would require significant new road construction resulting in more impacts than proposed route. Would transverse slightly fewer miles of potentially unstable slopes, but more miles of badlands and hardpan soils as detailed below: active fault zones, 12.5; duneland, 7.2; badland, 23.5; hardpan soils, 22.4; unstable slopes, 26.2; total miles of hazards, 91.8.	Traverses several hazard zones, including active faults and potentially unstable and erosive slopes. Most occur in western 45 miles and all are mitigable. New access road requirements make this alternative less desirable. Avoids some potentially unstable slopes, but crosses more miles of badlands and hardpan soils near Blythe: active fault zones, 12.5; duneland, 7.2; badland, 33.5; hardpan soils, 27.6; unstable slopes, 25.2; total miles of hazards 106.0.
Soils	Traverses several areas of sensitive and highly erosive soils, primarily in Indio and Mecca hills NE of Palm Springs and adjacent to Colorado River near Blythe. Prime farmland soils (Class I and II) are also traversed in the Coachella and Palo Verde valleys. Cumulative miles of sensitive soils traversed: highly erosive soils, 14; prime farmland, 11.5. Potential impacts are largely mitigable through adequate erosion control plans.	Traverses slightly more miles of highly erosive soils near Blythe, but less prime farmland. Cumulative miles of sensitive soils traversed highly erosive soils, 12.8; prime farmland, 6.5.	Not significantly different from proposed project in terms of soils and land features crossed. The greater number of miles of new access roads makes this route less desirable. Cumulative miles of sensitive soils traversed: highly erosive soils, 15.8, prime farmland, 6.5.	Traverses the most miles of highly erosive soils requiring new road construction, and most miles of prime farmland: highly erosive soils, 19.8; prime farmland, 15.6.
Hydrology	Route crosses flood prone areas. Flood hazards can be mitigated with properly engineered structures.	Flood hazards and impacts not significantly different from proposed route.	Flood hazards and impacts not sig- significantly different from proposed route.	Flood hazards and impacts not significantly different from proposed route.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Biological Resources	Loss or disturbance of approximately 91.4 ac of habitat. Includes 15.9 ac of medium and high sensitivity habitats. Route crosses Kofa NWR; 17 miles of high density bighorn sheep habitat and (within 0.5 miles of an important lambing area); 77 miles of desert tortoise habitat; 29 miles of Coachella Valley fringe-toed lizard habitat; 0.6 miles of Colorado River riparian habitat; and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. Potential for bird collision impacts is the lowest of all alternatives since the route parallels the existing Devers-Palo Verde #1 line.	Loss or disturbance of approximately 294 ac of habitat. Includes 47 ac of medium and high sensitivity habitats. Route crosses or is adjacent to less than 5 miles of high density bighorn sheep habitat; 73 miles of desert tortoise habitat; 1.9 miles of Colorado River riparian habitat; and 3.0 miles of Coachella Valley Dune Thicket ACEC. The Climax Mines-Lazarus Tanks area is particularly sensitive since the area currently has limited road access for the general public. Significant effects could occur to bighorn sheep populations if this alternative is selected. Bird transmission line collision potential would be *higher than the proposed* route.	Loss or disturbance of approximately 180 ac of habitat. Includes 39 ac of medium and high sensitivity habitats. Route crosses through or is adjacent to 10.6 miles of high density bighorn sheep habitat (within 0.5 and 1.5 miles of an important lambing area); 29 miles of Coachella Valley fringe-toed lizard habitat; 0.6 miles of Colorado River riparian habitat; and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. This alternative has a greater potential for impacts to bighorns by increasing road access into the western edges of the Scadden Mountain area.	Loss or disturbance of approximately 14.6 ac of habitat. Includes 24 ac of medium and high sensitivity habitats. Route crosses through or is adjacent to 2.9 miles of Colorado River riparian habitat and 3.0 miles of the Chuckwalla Valley Dune Thicket ACEC. The line would cross within 1.25 miles of the Cibola NWR and would have the highest potential for bird transmission line collision. Other significant resource considerations are the same as the proposed route.
Land Use and Planning	Consistent with relevant BLM RMP's and County general plans and policies; however, the U.S. *Fish and Wildlife Service* is opposed to the selection of this route which crosses the Kofa NWR. Results in the loss of one commercial/industrial use and a single-family dwelling. Crosses two transmission lines (0.2 miles total), one railroad (0,1 mile), and an interstate highway (I-10). Crosses 10.1 miles of agricultural land, temporarily disrupts agricultural land. Increases an existing safety	Inconsistent with relevant BLM RMP's and County general plans and policies. Results in the loss of 6 dwell-units. Crosses 3.1 miles of agricultural land, temporarily modifying 13.4 ac and permanently occupying 0.09 ac. Crosses 0.3 ac of Statewide Important Farmland on the CRIR. New access would be required for the entire alternative, resulting in additional disruption of agricultural land. Crosses 1 mile of the Big Maria Mountains WSA and provides new access into the area. Crosses two golf courses and Colorado	Inconsistent with relevant BLM RMP's, 4 miles of a heavily used LTVA; would cross a dwelling unit requiring its removal. Also crosses 3 miles of priority wildlife habitat in the Dome Rock Mountains and 0.3 mile of the proposed Kofa NWR addition. There is no room within this subalternate to accommodate a new utility ROW. The subalternative south of I-10 crosses an additional mile of the LTVA, 5 miles of the proposed Kofa NWR addition, and a mineral extraction operation requiring its removal.	Inconsistent with all BLM RMPs and County general plans and policies. Crosses 4 miles of agricultural land and would temporarily disrupt agricultural production and permanently occupy 0.2 ac of prime agricultural land. New access would be required for the entire alternative, resulting in an additional equivalent amount of agricultural land disturbed. Crosses 1 mile of the Mule Mountains ACEC and provides new access into the area. Crosses two Riverside County Parks, *two campgrounds, and two proposed* recreational facilities near the Colorado River.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Land Use and Planning (cnt.)	ities, particularly agricultural aircraft. Crosses one airport interference zone.			
Socio-economics	No significant impacts to population, housing, income, and employment or property values would occur. Increase in local sales, property, and income tax revenues as a result of construction and operation.	Same as proposed project, with possible slight increase in County revenues and because of slightly greater length and associated costs.	Same as proposed project, with possible slight increase in County revenues and because of slightly greater length and associated costs.	Essentially same as proposed project, but would generate additional County tax revenues over the life of the project.
Visual	Potential significant effects to the following features of high visual sensitivity: Interstate 10, Kofa NWR, U.S. Highway 95, La Posa Recreation Area, Colorado River, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts include 3 crossings and 75.5 paralleled miles in foreground/middleground view. Cumulative effects at the Colorado River (1.0 mile), Kofa NWR (27.2 miles), Interstate 10 (25.0 miles), and Dillon Road (1.0 mile).	Potentially significant effects to the features of high visual sensitivity: Interstate 10, U.S. Highways 60 and 95, Colorado River, rural residences, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts include 5 crossings and 87 paralleled miles in foreground view. Cumulative effects on Interstate 10 (28.5 miles) and Dillon Road (1.0 mile).	Potentially significant effects to features of high visual sensitivity: Interstate 10, U.S. Highway 95, Colorado River, La Posa Recreation Area, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road. Scenic highway impacts same as proposed route. Cumulative effects at the Colorado River (1.0 mile), Interstate 10 (35 miles, and Dillon Road (1.0 mile).	Essentially the same as proposed project. Additional features of high visual sensitivity potential affected include Palo Verde County Park and BLM Oxbow Recreation Area.
Native American Resources	Crosses 2 miles of the Aqua Caliente Indian Reservation.	Crosses 2 miles of the Aqua Caliente Indian Reservation plus 12 miles of the southern portion of the Colorado Indian Reservation, most of which is located in Arizona.	Same as proposed project.	Same as proposed project.

Table 1.4-A - continued

Comparative Impact Summary of Proposed and Alternative Routes

Resource	Proposed Route	Northern Alternative (NA1)	Northern Alternative (NA2)	Southern Alternative
Acoustic	Construction noise as high as 95 dB could be experienced within 50 feet of the project. Addition of a second line would be expected to increase existing noise levels by only 1 or 2 dB.	Construction noise is the same as proposed route. Operational noise (corona discharge) would generally 33-36 dB. Noise level could increase by 50 percent.	Same as Northern Alternative 1.	Same as Northern Alternative 1.
Cultural Resources	Route passes through 25 miles of high density zone. Impacts are expected to be low if existing access roads are used and towers are placed in zones that have been avoided or where data recovery has been completed. Cultural resource maps should be referenced to avoid impacts when positioning new access roads or any tower locations. Additional inventory evaluations and mitigations will be necessary in previously unimpacted areas.	Route passes through 19 miles of highly sensitive areas (high densities of cultural resources); intensive surveys and resource recovery operations may be required to construct this alternative in alternative Links 3, 5, and 11.	Route passes through 13 miles of highly sensitive areas (high densities of cultural resources); intensive surveys and resource/recovery operations may be required to construct this alternative in Links 3, 4a, 4b, or 17c, and 4c.	Route passes through 11 miles of Colorado River terrace area; the most sensitive of all topographic zones in project area (Link 7). Intensive surveys and resource recovery may be required in Link 7.

Table 1.4-B

Comparative Evaluation of Impact Potential for the
Devers-Palo Verde #2 500 kV Transmission Line Route Alternative

Environmental Consideration	Transmission Line Routes			
	Proposed	Northern Alt. 1	Northern Alt. 2	Southern Alt.
Total Length	238 mi.	243 mi.	243 mi.	251 mi. (L)
New ROW Required	0 mi.(P)	74 mi.(L)	47 mi.	32 mi.
Geology	Low	Mod.	Mod.	Mod.
Soils	Mod.	Mod.	Mod.	Mod.
Hydrology	Low	Low	Low	Low
Biological Resources	Low	High(L)	Mod.	Mod.
Land Use	High(P)	High	High	High
Socioeconomic	Low	Low	Low	Low
Visual	High	High	High	High
Acoustic	Low	Low	Low	Low
Cultural and Historical Resources	Low(P)	Mod.	Mod.	High
Nat. Amer. Resources	High	High(L)	High	High
TOTALS				
No. High & Mod.	4	7	7	7
No. Pref. (P)	3	0	0	0
No. Least Pref. (L)	0	3	0	1

NOTES: Impact Potential Ratings are High, Moderate, or Low*
(P) - the preferred choice*
(L) - the least preferred choice*
If no (P) or (L) is indicated among the range of alternatives, no clear advantage or disadvantage could be identified.
All ratings are based on the potential for impacts and represent professional judgements of the SEIS team.

*See Section 1.4.2 for explanation.

alternatives were judged to have no significant differences, then no preferred or least preferred choice was identified. In some cases, only one or the other was determined to be applicable. These ratings are based on the impact projections previously described in this report.

As can be seen from the summary at the bottom of the table, the proposed route is clearly the preferred choice from an overall environmental/planning perspective. It has the fewest High and Moderate impact potential ratings; is the "clearly preferred" choice in three of the resource areas, while the three alternatives each had no preferred ratings; and had no "clearly least preferred" ratings, while the alternates had from zero to three such ratings.

The proposed route does have three High impact ratings of note in the areas of Land Use, Visual Resources, and Native American Resources. This reflects the high sensitivity of and concerns for the impact to agricultural land near Blythe; the visual impact of adding another line through the Kofa NWR and across the Colorado River; and the fact that the proposed line would cross the Agua Caliente Indian Reservation. The category of Native American Resources is given a "High" impact rating in light of uncertainty as to the actual impact and potential for significance in the context of cumulative changes that have occurred to Native American lands and resources as a result of projects initiated by non-Natives.

1.4.3 BLM Preferred Alternative

Based on a comparative environmental analysis of the proposed and alternative routes in the SEIS, the Applicant's proposed route for the project is the preferred alternative of the BLM. This conclusion is based on the following general considerations:

- Since 1950, the proposed route has repeatedly been used for interstate pipelines and transmission lines. These have been constructed both prior to and after the designation of the Kofa National Wildlife Refuge. There are currently three natural gas pipelines and one transmission line running along the proposed route through the Kofa NWR. Therefore, impacts of the proposed project would be confined to an established utility corridor where environmental disturbances have already taken place.

- The Northern Alternative 1, Northern Alternative 2, and Southern Alternative routes would require an additional 74 miles, 47 miles, and 32 miles, respectively, of new rights-of-way and associated ground disturbance (access roads). New rights-of-way on these routes would involve greater environmental impacts than the proposed route, particularly in soil disturbance, biological resources, visual quality, cultural resources, Native American cultural values, and land use. The greater impact results form more land area being affected, and higher resource values in those areas. The majority of these new rights-of-way would not be within BLM-proposed utility corridors or, in the case of the Northern Alternative 2 route, would utilize approved corridors which are currently considered "at capacity."

- The alternative routes, because of their greater length, would result in higher costs of construction and operation.

The significant areas of concern for the proposed route are potential impacts to agricultural lands and operations in Blythe, and the fact that the proposed line would cross the Agua Caliente Indian Reservation and the Kofa NWR, and potential impacts to endangered species and related section 7 consultation.

The original decision to route the Devers-Palo Verde #1 transmission line (which the #2 line would parallel) through the Kofa NWR was based in large part on the greater potential for significant impacts to bighorn sheep by the construction of the project along any of the alternative routes analyzed. Alternative routes considered in the Devers-Palo Verde #1 EIS included the Northern Alternative 2 route or, as it was referred to in the Devers-Palo Verde #1 EIS, the Brenda Route. This decision was supported by the Arizona Department of Game and Fish and the Desert Bighorn Sheep Society. These agencies/organizations also support the selection of the Devers-Palo Verde #2 project through the Kofa NWR as the preferred alternative. Detailed studies conducted before, during, and after construction of the #1 line have not identified any significant adverse effects to bighorn sheep in the Kofa NWR or other areas studied as a result of the project. The #2 project is expected to result in similar negligible effects.

1.5 POTENTIAL SIGNIFICANT IMPACTS OF THE PREFERRED ROUTE

Although many impacts are identified in the SEIS, few were found to be significant, and most of these will be reduced or eliminated by required mitigation. Potentially significant impacts are summarized below.

1.5.1 Geology, Soils, and Hydrology

Impact: Water and wind erosion of unstable soils.

1.5.2 Biological Resources

Impact: Potential loss or disturbance of valuable palo verde ironwood wash habitat, palo verde-cactus ecotone habitat, riparian habitat, and sand dune habitat.

Impact: Loss of habitat and/or individual rare, threatened, endangered, or otherwise sensitive species including desert tortoise, Coachella Valley fringe-toed lizard, Arizona Bell's vireo, Yuma clapper rail, and several rare plant species.

Impact: Increased bird mortality resulting from collisions with the powerline.

1.5.3 Land Use and Planning

Impact: Disrupt or impair agricultural production; permanently occupy prime agricultural land; increase existing safety hazard to agricultural activities, particularly agricultural aircraft; and increased operational expenses for affected farmers.

Impact: Proposed route traverses several Areas of Critical Environmental Concern (ACEC), an endangered species preserve, and two National Wildlife Refuges.

1.5.4 Visual

Impact: Potential significant cumulative effects to features of visual sensitivity including Interstate 10, Kofa NWR, U.S. Highway 95, La Posa Recreation Area, Colorado River, Joshua Tree National Monument, Indio Hills State Park (proposed), and Dillon Road (eligible scenic highway).

1.5.5 Acoustic

Impact: Potential short-term construction noise to 5 to 7 residences.

1.5.6 Native American Resources

Impact: Crosses Indian allotment lands.

2.0 CONSULTATION AND COORDINATION

2.0 CONSULTATION AND COORDINATION

2.1 DRAFT SEIS REVIEW

In the course of preparation and review of the Draft and Final SEIS for the Devers-Palo Verde #2 transmission line, the BLM has communicated with and received input from several federal, state, and local agencies; environmental and citizens groups; industries; and individuals. Several of these people participated in the public scoping meetings and subsequent public hearings that were held in the vicinity of the transmission line route. Scoping meetings were conducted in April 1986 in the following cities: Riverside and Desert Hot Springs, California, and Tonopah, Arizona.

The Draft SEIS was released for public review in May 1987. During the public comment period (which ended July 8, 1987), 3 formal public hearings were held to solicit comments on the Draft SEIS. These hearings were held in Palm Springs and Blythe, California, and Phoenix, Arizona.

The public hearing transcripts have not been reprinted in this Final SEIS as they are part of the public record and are available for review at the following locations:

- Bureau of Land Management
  1695 Spruce Street
  Riverside, CA 92507

- Bureau of Land Management
  2015 W. Deer Valley Road
  Phoenix, AZ 85027

Section 2.2 contains the hearing comments and BLM's responses. In addition to the public hearing comments, 23 written comment letters were received during the comment period. These comments and BLM's responses to them can be found in Section 2.3 of this SEIS. The following agencies, organizations, and industries have provided input to and/or received copies of the Draft SEIS:

California City Government

Office of the Mayor
City Hall
892 N. 10th Street
Blythe, CA 92225

Office of the Mayor
City Hall
4515 Sixth Street
Coachella, CA 92236

Office of the Mayor
City Hall
11711 West Drive
Desert Hot Springs, CA 92240

Office of the Mayor
City Hall
45300 Club Drive
Indian Wells, CA 92260

Office of the Mayor
P.O. Drawer 1788
45-250 Towne Street
Indio, CA 92201

Office of the Mayor
City Hall
45-275 Prickley Pear Lane
Palm Desert, CA 92260

Office of the Mayor
P.O. Box 1785
3200 Tahquitz-McCallum Way
Palm Springs, CA 92262

Office of the Mayor
City Hall
69-825 Highway 111
Rancho Mirage, CA 93555

Office of the Mayor
City Hall
68625 Perez Road
Cathedral City, CA 92234

Department of the Interior Agencies

Chief, Division of Environmental Coordination
Fish and Wildlife Service
Department of the Interior
Washington D.C. 20240

Division of Environmental Affairs
Bureau of Reclamation
Department of the Interior
Washington D.C. 20240

Division of Environmental Compliance (762)
National Park Service
Department of the Interior
Washington, D.C. 20240

Environmental Affairs Program
U.S. Geological Survey
National Center (423)
Department of the Interior
Reston, VA 22092

Office of Mineral Data
U.S. Department of Interior

Analysis Program (MS-5000)
U.S. Geological Survey
National Center (423)
Department of the Interior
Washington D.C. 20240

Bureau of Indian Affairs
3600 Lime Street, #722
Riverside, CA 92501-2871

U.S. Department of Interior
Bureau of Reclamation
Lower Colorado Reg'l Office
P.O. Box 427
Boulder City, NV 89005

U.S. Department of Interior
Bureau of Reclamation
Suite 2200, Valley Center
201 North Central
Phoenix, AZ 85073

U.S. Department of Interior
Fish and Wildlife Service
2800 Cottage Way, Room 1823
Sacramento, CA 95825

U.S. Department of Interior
Office of Endangered Species
Washington, D.C. 20240
Attn: Steven Chambers

W. Powell White
U.S. National Park Service
450 Golden Gate Avenue
Box 36063
San Francisco, CA 94102

Rich Anderson
Joshua Tree National Monument
74485 Nat'l Monument Drive
Twenty-nine Palms, CA 92277

Office of Environmental
Project Rev.
Attn: Lillian K. Stone
Department of the Interior
Main Interior Bldg., Room 4251
18th & C Street
Washington D.C. 20240

Milton Haderlie
KOFA National Wildlife
356 West First Street
Yuma, AZ 85364

U.S. Fish & Wildlife Service
Art Kinskey (AHR)
P.O. Box 1306
Albuquerque, NM 87103

Federal Agencies

Regional Forester
U.S. Forest Service, USDA
630 Sansome Street
San Francisco, CA 94111

Supervisor (Ralph Cisco)
Cleveland National Forest
880 Front Street
San Diego, CA 92188

Supervisor
San Bernardino National Forest
144 N. Mountain View Avenue
San Bernardino, CA 92408

U.S. Department of ARmy,
Los Angeles District
Corps of Engineers
P.O. Box 2711
Los Angeles, CA 90053

Environmental Review
Coordinator
EPA Region IX
215 Fremont Street
San Francisco, CA 94105

Chief, Planning Division
South Pacific Division
Army Corps of Engineers
630 Sepsone Street, Room 1216
San Francisco, CA 94111

Assistant Secretary of the
Air Force
Installation, Environment &
Safety Pentagon
Admiralty, VA 20330

Chief, Environmental Hydrologic
& Engineering Branch
Division of Engineering
7920 Norfolk Avenue, Room P-312
Nuclear Regulatory Commission
Bethesda, MD 20014

Office of Env. Coordination
P.O. Box 2417, Room South Bldg.
Forest Service, 1204
Department of Agriculture
Washington D.C. 20013

Office of Environmental Planning
Headquarters, U.S. LEVX
Bolling Air Force Base
Washington D.C. 20332

Ms. Carol Borgstrom
Office of Environmental
Compliance (EH-23)
1000 Independence Avenue, S.W.
Department of Energy
Washington D.C. 20585

Office of Environmental Review
(A-104)
Environmental Protection Agency
2119 Waterside Mall
401 M. Street, S.W.
Washington D.C. 20460

Bureau of Indian Affairs
1951 Constitution Ave., N.W.
Mail Stop 4520 MIB
Environmental REview Staff
Washington, D.C. 20002

Bureau of Indian Affairs
1 North First Street
P.O. Box 10
Phoenix, AZ 85001

California State Agencies

California Energy Commission
Siting & Environmental Division
1516 9th Street, MS-44
Sacramento, CA 95814

Reg'l Water Quality Control Board
Colorado River Basin
73271 Highway 111, Suite 21
Palm Desert, CA 92260

Linda Ulmer
California Dept. Fish & Game
P.O. Box B-P
Blythe, CA 92225

Fred Worthley
California Dept. Fish & Game
Region 5
245 W. Broadway, Suite 350
Long Beach, CA 90802

CA State Land Commission
1807 13th Street, Room 101
Sacramento, CA 95814
Attn: Mary Griggs

Office of Environmental Affairs
CALTRANS
1120 N Street
Sacramento, CA 95814

Arizona State Agencies

Arizona Game & Fish Department
2222 W. Greenway Road
Phoenix, AZ 85023

Arizona State Historic Society
949 W. Second
Tuscon, AZ 94719

Commissioner
Arizona State Land Department
1624 W. Adams
Phoenix, AZ 85007

Governor of Arizona
Phoenix, AZ 85007

Indian Affairs Commission
1645 W. Jefferson Street
Phoenix, AZ 85007

W.A. Ordway
Director
Arizona Dept. of Transportation
206 S. 17th Avenue
Phoenix, AZ 85007

Michael A Ramnes
Director
Arizona State Parks
1688 W. Adams
Phoenix, AZ 85007

Supervisor
Arizona State Clearinghouse
1700 W. Washington, 505
Phoenix, AZ 85007

Donna Schober
State Historic Preservation Officer
Arizona State Parks
800 West Washington, Suite 415
Phoenix, AZ 85007

California Local Agencies

Chairman Board of Supervisors
Riverside County
4080 Lemon Street
Riverside, CA 92501

Coachella Valley Association
of Government
74-133 El Paseo, Suite 4
Palm Desert, CA 92260

Phillip E. Hitchcock
Metropolitan Water District
P.O. Box 54153
Los Angeles, CA 90054

John Jaquess, Director
San Bernardino Co. Planning
385 N. Arrowhead Avenue
San Bernardino, CA 92415

Roger J. Streeter, Director
Riverside County Planning Dept.
4080 Lemon Street, 9th Floor
Riverside, CA 92501

South Coast AQMD
9150 Flair Drive
El Monte, CA 91731

Native Americans

Anthony Drennan
Colorado River Indian Tribes
Route 1
Box 23-B
Parker, AZ 85344

Minerva Jenkins
Fort Mojave Indian Reservation
500 Merriman Avenue
Needles, CA 92363

Native American Heritage
Commission
Executive Secretary
1400 Tenth Street, Room 109
Sacramento, CA 95814

Donna Schober
State Historic Preserv. Officer
Arizona State Parks
800 West Washington, Suite 415
Phoenix, AZ 85007

Tribal Chair
Aqua Caliente Reservation
P.O. Box 2245
Palm Springs, CA 92262

Tribal Chair
Morongo Reservation
11555 Potrero Route
Banning, CA 92220

Libraries

Buckeye Library
310 N. 6th Street
Buckeye, AZ 85326

California State Library
Regional Depository
Document Section
P.O. Box 203
Sacramento, CA 95809

Coachella Valley Reg. Library
200 Civic Center Mall
Indio, CA 92201

Dept. of Library and Archives
3rd Floor, State Capitol
Phoenix, AZ 85001

Desert Hot Springs Public
Library
11691 West Drive
Desert Hot Springs, CA 92240

Long Beach State University
Library Documents Department
6101 E. Seventh Street
Long Beach, CA 90801

Los Angles Public Library
Documents Department
361 S. Anderson St.
Los Angeles, CA 90033

Palm Springs Library Center
300 S. Sunrise Way
Palm Springs, CA 92262

Palo Verde Valley District
Library
125 Chanslor Way
Blythe, CA 92225

Phoenix Public Library
12 East McDowell Rd.
Phoenix, AZ 85004

Quartzite Public Library
P.O. Box 426
Quartzite, AZ 95346

Riverside Central Library
Government Documents Section
3581 Seventh Street
Riverside, CA 92501

San Bernardino Public Library
401 Arrowhead Avenue
San Bernardino, CA 92401

San Francisco Public Library
Government Documents Dept.
Civic Center
San Francisco, CA 94102

Yuma City - County Library
350 Third Avenue
Yuma, AZ 85364

2.2 PUBLIC HEARING COMMENTS AND RESPONSES

Table 2.2-A contains a summary of the comments and questions raised at the public hearings on the Draft SEIS for the Devers-Palo Verde transmission line. Formal responses have been prepared for only those comments/questions that address the adequacy and/or accuracy of the Draft SEIS. However, all comments and opinions will be considered by the BLM in the final decision-making process.

2.3 WRITTEN COMMENTS RECEIVED AND RESPONSES

The BLM received 25 letters addressing the Draft SEIS during the public comment period. All letters received were reviewed. Substantive comments (those that presented new data, questions, or issues bearing directly on the effects of the proposed Devers-Palo Verde #2 Transmission Line and Alternatives) were responded to, and where appropriate, Draft SEIS sections were revised. Table 2.3-A lists each comment letter and identifies its assigned reference number. Individual substantive comments within each letter were identified and responses were prepared for these comments. The responses, which accompany each letter, are keyed to the appropriate comment by the reference numbers that appear on the comment letter.

All comment letters have been reprinted verbatim, and all substantive comments have been addressed in this Final SEIS. Letters that did not address environmental issues but presented an opinion are acknowledged by their inclu-

TABLE 2.2-A

PUBLIC HEARING COMMENTS AND RESPONSES

June 16, 1987
Palm Springs, CA
7:00 p.m.

No comments on the Draft SEIS were received.

June 17, 1987
Blythe, CA
7:00 p.m.

No comments on the Draft SEIS were received.

June 18, 1987
Phoenix, AZ
7:00 p.m.

1. Mr. Smith, Sierra Club

   Concerned about transmission line routing through the Kofa National Wildlife Refuge. Primarily concerned with bighorn sheep.

   Prefers to have visually impacting facilities located in areas already significantly affected; therefore, would prefer to see the line located to the north of the Kofa NWR.

2. Mr. Zinsli, Arizona Wilderness Coalition

   Opposes routing the transmission line through the Kofa NWR and favors routing it along I-10.

3. Ms. Barnett

   Opposes routing the transmission line through the Kofa NWR.

4. Mr. Schmit

   Opposes routing the transmission line through the Kofa NWR and is concerned about potential impacts to bighorn sheep.

1. Mr. Smith

   Your concerns are noted. We believe that these concerns have been given full evaluation in the Draft SEIS and in response to other comments to this Final SEIS (e.g., response 22-11).

   Your preference regarding routing the transmission line to the north of Kofa NWR is noted.

2. Mr. Zinsli

   Your preferences are noted.

3. Ms. Barnett

   Your preference is noted.

4. Mr. Schmit

   Your preferences and concern are noted.

TABLE 2.2-A Continued

5. Mr. Norton, The Wilderness Society The Wilderness Society is opposed to the applicant's proposal through the Kofa NWR. Primary objection is that, in their view, it is not compatible with the Refuge Administration Act which guides the management of wildlife refuges. The Refuge Administration Act requires that other activities in refuges be compatible with the original purposes for which the refuge was established, namely wildlife, particularly the desert bighorn sheep. Also favors routing the existing Devers-Palo Verde #1 line out of the refuge at some point.	5. Mr. Norton The Draft SEIS concluded that impacts to wildlife resources of the Kofa NWR would not be significant. The Kofa NWR was established to protect the bighorn sheep. In preparing the SEIS, the BLM found no evidence that bighorn sheep would be affected.
6. Mr. Witzeman, Maricopa County Audubon Society Favors routing the proposed transmission line to the north of Highway I-10. Also concerned about the cumulative effects of transmission lines in the National Wildlife Refuge. Also concerned about the visual impacts in the Kofa NWR.	6. Mr. Witzemen Your preference and concerns are noted.
7. Mrs. Witzeman Opposes routing the transmission line through the Kofa NWR.	7. Mrs. Witzemen Your opposition to routing the transmission line through the Kofa NWR is noted.
8. Mr. Burge Favors routing the transmission line along the I-10 freeway.	8. Mr. Burge Your preference for routing the transmission line along the I-10 freeway is noted.

Several letters have expressed opinions or concerns regarding the routing of the proposed transmission line through the Kofa National Wildlife Refuge or along one of the alternative routes. The BLM will take these concerns into consideration in the decision making process. Please see Section 1.4.3, "Preferred Alternative," for a further discussion of how these concerns were addressed.

Table 2.3-A

List of Comment Letters

Letter Number	Source of Letter
1	William Cochran, United States Bureau of Mines
2	Kathryn Gualtieri, Office of Historic Preservation, California Department of Parks and Recreation
3	Stephen M. Williams, Arizona Desert Bighorn Sheep Society, Inc.
4	Michael Harrod, Riverside County Planning Department
5	Teresa L. Hoffman, State Historic Preservation Office, Arizona State Parks
6	John Pamperin
7	Bobbie Holaday
8	William E. Rime, United States Bureau of Reclamation
9	Dale S. Turner, Sierra Club
10	Barry A. Horst, Medical Care Clinic Ltd.
11	Gabriel Zinsh
12	Russell D. Butcher, National Parks & Conservation Association
13	Glenn Stewart, The Desert Tortoise Council
14	Huston T. Carlyle, Jr., State of California Office of Planning and Research
15	Anthony Drennan, Sr., Chairman, Colorado River Indian Tribal Council
16	Tucson Rod and Gun Club
17	James Kahle, Southern California Edison Company
18	E. Linwood Smith, Ph.D
19	Temple A. Reynolds, Director, Arizona Game & Fish Department
20	Jim Cain, President, Arizona Outdoor Coalition
21	Robert Moore
22	David F. Riley, Assistant Regional Director, U.S. Fish and Wildlife Service
23	Jim Rorabaugh, Yuma Audubon Society
24	Cary W. Meister, Yuma Audubon Society
25	Deanna M. Wiemar, U.S. Environmental Protection Agency, Region IX

LETTER 1

United States Department of the Interior

BUREAU OF MINES

P. O. BOX 25086
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225

Intermountain Field Operations Center

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN -4 PM 12: 21
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 2, 1987

Memorandum

To: William Haigh, Bureau of Land Management, California Desert District, 1695 Spruce Street, Riverside, California 92507

From: Chief, Intermountain Field Operations Center

Subject: Review of Supplemental Draft Environmental Impact Statement for the proposed Devers-Palo Verde No. 2 500-kV Transmission Line Project, Riverside County, California, and Yuma and Maricopa Counties, Arizona

2-13

Personnel of the Bureau of Mines have reviewed the subject document to determine whether possible impacts to mineral resources and producing facilities are adequately discussed.

The proposed Devers-Palo Verde No. 2 Transmission Line Project follows the same route as, and would be located parallel to, the existing Devers-Palo Verde No. 1 Transmission Line. Bureau of Mines personnel previously reviewed documents pertaining to the Devers-Palo Verde No. 1 Transmission Line on Dec. 13, 1978 (copy attached). Our earlier comments remain valid.

William Cochran

Attachment

United States Department of the Interior
BUREAU OF MINES
BUILDING 20, DENVER FEDERAL CENTER
DENVER, COLORADO 80225
Office of
Chief
Intermountain Field Operations Center

December 13, 1978

Your reference:
5100(911)
A9878

Memorandum

To: Arizona State Director (911), Bureau of Land Management, 2400 Valley Bank Center, Phoenix, Ariz. 85073

From: Acting Chief, Intermountain Field Operations Center

Subject: Draft Environmental Statement for the Proposed Palo Verde-Devers 500 kV Transmission Line, Arizona and California

The subject document—prepared by the Bureau of Land Management and the U.S. Nuclear Regulatory Commission—has been reviewed by personnel of this office as requested by Mr. Hal Pilkington of your district office in Yuma, Ariz., in a telephone conversation on December 8.

The project provides for the construction of a single-circuit 500 kV transmission line from the Palo Verde Nuclear Generating Station near Buckeye, Ariz., to the Southern California Edison Substation near Palm Springs, Calif. The length of the transmission line would vary between 235 and 265 miles, depending on the route selected.

The document gives excellent coverage of the mineral resources in the study area. The major metallic and nonmetallic minerals are listed in table 2-2, and the Land Use Areal Map 2-4 shows the location of the deposits. In addition, a map prepared by the U.S. Geological Survey (USGS) that shows supplemental minerals data is included in the appendix of the report; and a list of mineral localities by section, range, and township is given. Both active and potential mining areas were included in the USGS study. There are no known deposits of oil and gas or coal within the area.

2-14

We agree with the statement on page 3-8 that "Construction of the transmission line would have little impact on known mineral values or on current mining activity." We do, however, believe it is misleading to imply that the sand and gravel operations near Coachella Valley would be affected adversely if a certain one of the proposed corridors were selected. Our understanding is that none of the proposed transmission lines would have an adverse effect on the exploitation of mineral occurrences. In fact, the project conceivably could help mineral development by providing readily available electrical power.

1-1

We appreciate the opportunity to review an extremely well-prepared document.

Russell R. McLellan

2-15

1-1 At one time, the proposed route had a potential conflict between a tower location and an existing gravel pit within the right-of-way. This conflict has been resolved through negotiations between the gravel pit operator/owner and SCE. The gravel pit operator will make changes to the pit's configuration to allow SCE to site its tower as originally planned (adjacent to the existing tower).

LETTER 2

STATE OF CALIFORNIA — THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
POST OFFICE BOX 942896
SACRAMENTO, CALIFORNIA 94296-0001
(916) 445-8006

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN -8 PM 1:29
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

REPLY TO: BLM870519A

June 4, 1987

Gerald E. Hillier, District Manager
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: 1792 DEV2 (CA-063.03) Southern California Edison (SCE) Company's Devers-Palo Verde No. 2 500 kv Transmission Line Project.

Dear Mr. Hillier,

The Office of Historic Preservation (OHP) has received the updated March 1987 Draft Environmental Impact Report (EIS) and accompanying documents relating to the Devers-Palo Verde Transmission Line Project.

The OHP finds that the documents very adequately describe the project area and nature of undertaking with clear maps and accompanying prefield historic, ethnographic, and prehistoric research information. The field reconnaissance methods and results are satisfactory in identifying cultural resources within the project area which are or may be eligible for inclusion on the National Register of Historic Places. The OHP understands that SCE is still in the process of project design. Areas of Potential Effect (APE's) have not been finalized. Changes in the transmission line route could result in stub roads and tower sites being placed outside the surveyed areas and involve property not yet inventoried. If such should eventuate, we understand that the 106 process will be followed and further information provided for review and comment.

The OHP reiterates our support of previous determinations as to site eligibility and non-eligibility as well as with your management and treatment recommendations. We look forward to additional and continued consultation as the Devers-Palo Verde Transmission Line Project proceeds. We would like to thank you for your continued concern for and protection of important cultural resources. If you have any questions, please contact Mr. Robert Jackson of our staff at (916) 322-9602.

Sincerely,

Kathryn Gualtieri

Kathryn Gualtieri,
State Historic Preservation Officer

KG/RJ:mg

Routing	Date	Intls.
TO:		
1 DM		
2 ADM	6/7	K
3 PEC		
PA		
ADMIN		
DMS		
4 RES		
MIN		
AMs		
ESCON		
Action By:		
Return To:		

LETTER 3

ARIZONA DESERT BIGHORN SHEEP SOCIETY, INC.

P.O. Box 5241 Phoenix, Arizona 85010

RECEIVED
BUREAU OF LAND MANAGEMENT
JUN 15 PM 2:47
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 9, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Re: Devers-Palo Verde #2 500 KV Transmission Line Project

Dear Mr. Haigh:

The Arizona Desert Bighorn Sheep Society, Inc.(ADBSS) has reviewed the Draft Supplemental Environmental Impact Statement and the Environmental Assessment for the above referenced project. Please accept the following comments as part of the public record on this project.

The ADBSS supports the routing of this proposed project as outlined in the Preferred Alternative. Even though this route passes through the Kofa National Wildlife Refuge, it would follow a Bureau of Land Management approved utility corridor and use existing access roads. Construction along this route would cause less bighorn sheep habitat loss than construction along any of the three subalternate routes. 2-17

Although construction following the preferred route may cause less habitat damage than construction along the subalternate routes, it still has the potential for creating disruption to movements of desert bighorn sheep. It also has to potential for causing stress at important times in their life cycle, such as the lambing season. Construction should be scheduled so as to avoid disturbance in bighorn sheep habitat during the times of the year most likely to adversely affect bighorn sheep natality and survivability. 3-1

The ADBSS requests bighorn sheep habitat disturbance and stress-related construction activities be minimized in the Dome Rock Mountains, as well as the Kofa National Wildlife Refuge. 3-2

Thank you for the opportunity to comment on this proposed project.

Sincerely,

Stephen M. Williams

Stephen M. Williams
Chairman, Legislative Committee

3-1 A new mitigation measure has been added which prohibits construction in bighorn sheep lambing areas from January 1 to March 31. For further discussion of anticipated impacts to bighorn sheep, see response 22-6. Also, Appendix B is a summary report of the detailed studies conducted to assess the impacts of the Devers-Palo Verde #1 line on bighorn sheep. This study basically concluded that the Devers-Palo Verde #1 transmission line has not affected the behavior of bighorn sheep.

3-2 Please see response 3-1.

LETTER 4

RIVERSIDE COUNTY PLANNING DEPARTMENT

MH:3890
June 17, 1987

William Haigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh:

We appreciate the opportunity to review the Supplemental Draft Environmental Impact Statement on the Devers-Palo Verde #2 500 KV Transmission Line Project. We offer the following comments.

4-1 On July 2, 1985 and December 31, 1985, the Riverside County Board of Supervisors amended the Comprehensive General Plan to include the Eastern Coachella Valley Plan and the Western Coachella Valley Plan, respectively. The Final Environmental Impact Statement should evaluate the proposed project in light of these new policies.

4-2 The County's Comprehensive General Plan designates Interstate 10 as an "Eligible County Scenic Highway". The proposed project should, therefore, be evaluated against the policies contained in the Scenic Highway Section of the Comprehensive General Plan.

Riverside County recently completed a study on the visual impacts of transmission lines entitled "San Gorgonio Pass Master Transmission Network Program". A copy is enclosed for your information as the subject matter relates to the proposed project.

If you have any additional questions regarding these matters, please contact me at (714) 787-1358.

Very truly yours,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Roger S. Streeter, Planning Director

Michael Harrod

Michael Harrod, Associate Planner

MH:sjc

4080 LEMON STREET, 9TH FLOOR
RIVERSIDE, CALIFORNIA 92501
(714) 787-6181

46-209 OASIS STREET, ROOM 304
INDIO, CALIFORNIA 92201
(619) 342-8277

4-1 As noted in Section 4.6.2 (Relevant Plans and Policies) of the CPUC's Draft EIR (included by reference in the Draft EIS), the proposed project was evaluated against policies of the amended Riverside County Comprehensive General Plan (1985) which included both the Eastern Coachella Valley Plan and the Western Coachella Valley Plan. Since the proposed project does not cross any lands under the jurisdiction of the Eastern Coachella Valley Plan, the discussion of impacts relevant to land use policies was limited to impacts within the Western Coachella Valley Plan and the Chuckwalla Land Use Planning Area. For a detailed discussion of these impacts, the reader is referred to Section 5.5.1 of the CPUC Draft EIR.

4-2 The Scenic Highway Section of the Comprehensive General Plan contains two policies which are relevant to construction of transmission lines along scenic corridors. These are:

c. Earth moving operations which expose soil surfaces shall be required to re-establish vegetation to bind the soil, prevent water or wind erosion, and re-establish a natural vegetative appearance.

g. The design and appearance for new structures and/or equipment within Scenic Corridors shall be compatible with the scenic setting or environment.

4-2 CONT. In regard to policy c, there will be no significant construction-related earth moving along the scenic corridor portion of the proposed route. There has been little success with revegetation in non-irrigated areas; hence, no specific landscaping or revegetation of disturbed areas other than that recommended for sensitive species is proposed for the area.

Mitigation measures that address policy g are contained in Section 5.7.3 of the Draft EIR. The project was routed and designed to minimize visual impacts.

LETTER 5

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 19 PM 1:15
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

ARIZONA STATE PARKS

800 W. WASHINGTON
SUITE 415
PHOENIX, ARIZONA 85007
TELEPHONE 602-255-4174

EVAN MECHAM
GOVERNOR

STATE PARKS BOARD MEMBERS

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TUCSON

RONALD PIES
TEMPE

M. JEAN HASSELL
STATE LAND COMMISSIONER

KENNETH E. TRAVOUS
EXECUTIVE DIRECTOR

12 June 1987

Mr. Bill Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, CA 92507

RE: Devers-Palo Verde #2 500 kV Transmission Line Project, Draft SEIS, DOI-BLM

Dear Mr. Haigh:

We have reviewed the Draft Supplemental Environmental Impact Statement for the above project and offer the following comments pursuant to 36 CFR Part 800.

This document appears to sufficiently address the issue of cultural resources for this stage of the undertaking. I note that the proposed alternative lies within the corridor which was surveyed for cultural resources prior to construction of the Devers-Palo Verde #1 transmission line. I further note that any projected areas of impact not previously surveyed (such as new access roads) will be inventoried in consultation with our office, and that cultural resources will be avoided were practical in siting the new transmission towers. Any mitigation measures will be developed in consultation with our office in accordance with the PMOA between the BLM and SHPO.

We appreciate your continuing consultation with this office regarding the historic preservation requirements for federal undertakings. Please contact me if you have any questions.

Sincerely,

Teresa L. Hoffman
Archaeologist

for Shereen Lerner, Ph.D.
State Historic Preservation Officer

2-20

LETTER 6

Dear Mr. Haigh:

I am writing to you concerning the Phx. to LA. 500,000 Volt powerline.

6-1 First of all I think the BLM should study the route that completely follows their I-10 utility corridor, since this was not done in the EIS.

this powerline should not be routed through the Kofa Refuge. As you admitted you made a mistake in 1979 in deciding to put a line through the refuge. By putting a second powerline through the compound it would only compound an already bad situation.

By putting the line through the Kofa Refuge it would affect more sensitive plants, cross more high density Bighorn Sheep habitat, and a larger area of mountainous land that would be subject to erosion than if paralled along I-10.

Since the F.W.S. has already made a formal determination that the powerline would be incompatible with refuge purposes, the powerline could go north or south of I-10 where the New Water WSA adjoins I-10. Two recent crude oil pipelines were routed along I-10 by the BLM, not through the Kofa Refuge.

6-1 Study of a route entirely following I-10 was not conducted for several reasons. First, the Federal Land Policy and Management Act of 1976 (section 503) requires that existing utility corridors be used to the extent practicable. I-10 is only a proposed corridor, and most of it has no existing utilities in it.

Second, where existing facilities do parallel Interstate 10 (e.g., links 4b and 17), there are other environmental problems. On page 124 of the Draft SEIS (in the Environmental Consequences section), the text indicates that the corridor has reached capacity (links 4b and 17, approximately mileposts 5.0 to 10.0) and that further development could have significant adverse impacts to visual and wildlife resources. In addition, there are overhead restrictions on link UC-10 because of visual resource concerns.

Therefore, additional study was not considered to be warranted.

I hope you will reconsider your proposal on the routing of the powerline. The Kofa Refuge is a very important part of the AZ Wilderness Plan And should not be marred by a bad placement of this powerline

Thank you,

Sincerely

John Pompei

LETTER 7

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 22 PM 2:21
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 19, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

I regret that I was unable to attend last night's hearing on the KOFA Powerline, but the hearing was scheduled on the same night as our local Sierra Club's general meeting. I sincerely hope that in scheduling such hearings, the BLM will keep in the mind that the 3rd Thursday of the month has always been the night of our regular meeting.

I would heartily recommend that the powerline be *kept out* of the Kofa National Wildlife Refuge and further recommend that you use the corridor existing outside of the refuge, north along I-10.

2-23

7-1 Putting the line through the Kofa Refuge would affect sensitive plants, cross more high density Bighorn Sheep habitat, and subject a larger area of mountainous land to erosion that would paralleling I-10.

I appreciate your consideration of my recommendations.

Sincerely yours,

Bobbie Holaday

Bobbie Holaday

1413 East Dobbins Rd.
Phoenix, AZ 85040

7-1 Please see response 22-6 for discussion of the potential impacts and comparison of the proposed and Northern Alternative 2 routes with respect to bighorn sheep. The Northern Alternative 2 route could also impact rare plants listed by the State. This route crosses more suitable habitat for Cercus greggi than the proposed route (23.2 miles compared to 20.5 miles respectively). Although additional rare plant species/locations are identified along the proposed route that do not appear on the other alternatives, the alternative routes have not been studied as extensively in the field, therefore; less is known about the specific occurrences and locations of other plant species. The proposed route would have the least erosion potential of the alternatives because of the existing access and reduced clearing requirements for construction (Draft SEIS, p. 111).

LETTER 8

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
CALIF. DESERT DISTRICT
LC-159 RIVERSIDE, CA.

RECEIVED
1987 JUN 26 PM 2:50
BUREAU OF LAND MANAGEMENT

BUREAU OF RECLAMATION
LOWER COLORADO REGIONAL OFFICE
P.O. BOX 427
BOULDER CITY, NEVADA 89005

IN REPLY REFER TO:

JUN 23 1987

Memorandum

To: Mr. William Haigh, District Manager, California Desert District, Bureau of Land Management, 1695 Spruce Street, Riverside, California 92507

From: Regional Environmental Officer

Subject: Review of Draft Supplemental Environmental Impact Statement (EIS) for the Devers to Palo Verde No. 2 500-KV Transmission Line Project

We have reviewed the subject EIS and have no comments to offer. Thank you for the opportunity to review the document.

William E. Rinne

2-24

LETTER 9

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 26 PM 3:04
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

SIERRA CLUB

23 June 1987
117 N. 2nd Avenue
Tucson, AZ 85705
602-792-2690

William Haigh
California Desert District
Bureau of Land Management

Dear Mr. Haigh:

The "Devers-Palo Verde No. 2 500 kV Transmission Line Project" should NOT go through the Kofa Wildlife Refuge. That would be an inappropriate and unnecessary use of public land in the Kofa, as it would affect sensitive plants and wildlife along with recreational users.

9-1 The utility corridor along Interstate 10 would be far more appropriate, and should be given primary consideration in the siting process. In particular, BLM should study a route that follows I-10 as far as possible through Arizona.

The presence on one powerline through the Kofa Refuge is no justification for adding a second. Indeed, given the effects of the first that are now evident, it should be removed and rerouted around the refuge.

Yours,

Dale S. Turner
Conservation Chair
Rincon Group

9-1 Please see response 6-1 and section 1.3.5 of this Final SEIS for a discussion of the I-10 route.

LETTER 10

Medical Care Clinic Ltd.

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 2:42
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 23, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

Re: Kofa Wildlife Refuge

Dear Mr. Haigh:

It is inconceivable that another power line should be built through this incredibly beautiful wilderness area. Please understand that I am absolutely opposed to its construction anywhere except along I-10.

2-28

Respectfully,

Barry A. Horst
Clinic Administrator

Enclosure

13000 North 103rd Avenue, Suite 99, Sun City, Arizona 85351 (602) 974-5845

LETTER 11

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 3 08
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

June 26, 87

Mr William Haigh
California Desert District
BLM
1695 Spruce Street
RIVERSIDE, Ca 92507

Dear Mr Haigh,

I am writing regarding the proposed S.C. Edison powerline through the Kofa Natl. Wildlife Refuge.

I think it is an outroge that a line was built there in 1979 and I am very much opposed to building a second one.

A wildlife refuge like Kofa is designed to protect wild plants and animals, not as a conduit for a powerline.

11-1 I suggest that the powerline be routed along I-17, preferably on the North side and that it not run right through the two ACEC's in California.

Again please remember what a wildlife refuge is designed to do.

Thank you for your consideration.

Sincerely

Gabriel Zinsli
8425 N. 56th Ave
Glendale, Az 85302

11-1 It is assumed that the reference to I-17 in this comment was intended to be I-10, since I-17 runs north-south. Please see response 6-1 and section 1.3.5 of this Final SEIS which addresses this issue. Where the transmission line crosses the Chuckwalla Bench ACEC, SCE will be required to purchase lands to compensate for habitat impacts (see Appendix A, wildlife mitigation measure 3). In both ACECs and other sensitive areas the applicant will also be required to site towers and roads in a manner to avoid direct disturbance to sensitive features (see vegetation mitigation measures 3, 4, 7, and 8, and wildlife measures 2, 3, 4, 5, 7, 8, 10, 11, 12, 13, and 14 in Appendix A).

LETTER 12

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUN 29 PM 3 10
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

National Parks & Conservation Association

1701 Eighteenth Street, N.W. • Washington, D.C. 20009

(202) 265-2717

RUSSELL D. BUTCHER
Regional Representative
SOUTHWEST & CALIFORNIA
Box 67
Cottonwood, AZ 86326
(602) 634-5758

June 25, 1987

RE: PROPOSED PALO VERDE-TO-DEVERS #2 500kV TRANSMISSION LINE

Bureau of Land Management
1695 Spruce Street
Riverside, California 92507

Dear Sirs:

National Parks and Conservation Association, a private nonprofit membership organization founded 68 years ago to promote the protection, enhancement, and public understanding of national parks and other public lands, appreciates this opportunity to offer some comments regarding Southern California Edison's proposed Palo Verde-to-Devers #2 500kV transmission line. We shall limit our response to the western Arizona segment of the line that would either pass across a broad plain or valley in the Kofa National Wildlife Refuge; or, alternatively, would run to the north in the vicinity of Interstate highway 10.

In response to the question: should this second 500kV be placed alongside the existing 500kV powerline within the Kofa refuge from a wildlife refuge management point of view, we normally would vigorously oppose construction of commercial facilities within special land management areas such as a national wildlife refuge. Regarding the Preferred Route (Links 1, 2, 6, 8), it cannot be denied that a second 500kV running parallel to the existing line would create some degree of increased visual impact upon the landscape within Kofa.

We believe there are some additional relevant factors, however, that deserve careful evaluation. We suggest, for example, that the refuge should not necessarily be viewed in a vacuum--without seriously considering other public land values. In other words, given the reality that the first 500kV exists within the refuge, would it be environmentally less impairing to public land values overall (1) to place the second line across the refuge closely paralleling the existing line; or (2) to run the new line across another

2-28

scenic area that so far contains no powerlines?

The question of bypassing the refuge by utilizing the I-10 Plomosa Pass area raises further issues:

(1) For the powerline to follow the most logical, most direct, and visually least objectionable route through Plomosa Pass, it would be necessary for Congress to legislate a change in the northern boundary of the BLM's New Water Mountains Wilderness Study Area (WSA), since there is presently no space available for a utilities corridor between the freeway right-of-way and the WSA. Is there time in which Congress could act to adjust this boundary? We have been told that such a specific legislative effort would likely require more time than is available for the powerline project to remain reasonably on schedule. However, even if there would be time for this particular legislative measure to be acted upon, we understand that some members of Congress, their staffs, and others oppose singling out this one BLM wilderness issue; but favor instead that Congress act at one time on a whole package of Arizona statewide BLM and national wildlife refuge wilderness proposals. The time required for this broad legislative effort would obviously be enormously greater.

(2) For the powerline to approximately parallel the buried crude oil pipeline facility of All American Pipeline Company, the 500kV would have to cross over to the north side of I-10 in the Plomosa Pass vicinity, be placed high up on the steep south slopes of the Plomosa Mountains, and then cross back over the freeway. While we actively supported the "Brenda" alternative for the buried pipeline (a visual impact that will essentially heal over in time), we believe this route for a major above-ground powerline would create a significant and unsightly permanent visual impact upon the high scenic quality of the Plomosa Pass stretch of I-10. Were it possible to avoid this northward jog across the freeway, the visual impact, while still considerable, would be far less objectionable, from our viewpoint.

Another argument that has been raised by the Fish & Wildlife Service and several interested groups concerns the welfare of the desert bighorn sheep. Will a second 500kV possibly cause the bighorns to cease seasonally migrating back and forth from the New Water Mountains, across a broad plain and beneath the powerline facilities, to the Livingston Hills? At some undeterminable point, might an additional powerline make the difference and for some reason suddenly constitute a barrier to the bighorns?

3-NPCA re Palo Verde-Devers 500kV #2

We note that the document, Studies of Desert Bighorn Sheep in Western Arizona: Impacts of the Palo Verde to Devers 500kV Transmission Line: Final Report - Volume II, dated August 1, 1986, and prepared for Southern California Edison Company by E. Linwood Smith & Associates, of Tucson, states (p. 9) that

> "Sheep did cross the line...apparently without hesitation, and from the few observations we were able to obtain did forage directly beneath the energized line without paying any overt, obvious attention to the associated structures or line noise."

There are similar reports of undeterred bighorn migrations back and forth beneath a 500kV line between the South and North Providence mountains in the BLM's East Mojave National Scenic Area in California.

Desert bighorns regularly migrate back and forth through an underpass beneath I-15 in Arizona's Virgin River Gorge and are from time to time observed by the BLM and others on the rugged slopes close to the freeway. Elsewhere, bighorns are seen in close proximity to mining operations--even apparently evidencing curiosity.

What is of even greater interest regarding the present issue is the fact that small herds of desert bighorns are undeterred in their migrations back and forth between the Clark and Mesquite mountains in eastern California, passing beneath four closely paralleling powerlines (3-500kV's and 1-287kV) that span a quarter-mile width through Keany Pass. This situation especially offers compelling, helpful evidence that suggests that the addition of a second powerline through the Kofa refuge will not deter the migration habits of the bighorns in that area. Were there even some evidence to the contrary, we would certainly raise at least a question on this issue. But we are forced to conclude--given no available contrary information--that the desert bighorn migration issue is really not a relevant concern. (We should add, though, that our Association strongly supports all proposed measures dsigned to avoid construction phase impacts upon migrating and lambing bighorns in Kofa refuge and elsewhere.)

In our view, then, this leaves only the basic question of whether the new line is overall less environmentally/visually impairing of the Kofa refuge values or the BLM public land values to the north. While admitting that it is generally inappropriate to place strictly commercial developments within special conservation lands such as a national wildlife refuge, it is our feeling in this instance that less overall visual/aesthetic impairment to public land values would occur if the

second Palo Verde-to-Devers line closely parallels the existing line across Kofa refuge.

Were it possible to promptly clear up the WSA problem and site this new line along the south side of I-10 through Plomosa Pass, we believe there could be a stronger argument for avoiding the refuge. In fact, we urge that once the New Water Mountains Wilderness issue is resolved by Congress that a careful study be made to evaluate the possibility of allowing no additional utilities facilities (buried or above ground) through the Kofa route.

At the same time, we suggest that yet another idea be placed on the table for evaluation for resolving the utilities corridor-versus-refuge issue. This problem could conceivably be resolved for the long-term by deleting the utilities corridor from the refuge. This could be accomplished by redrawing the refuge boundary so that Kofa's northern edge would coincide with the southern edge of the utilities corridor. The narrow strip of present refuge land to the north of the utilities corridor could then be added to the BLM's proposed New Water Mountains Wilderness. To offset the loss of refuge land, certain mountainous habitat to the west and east of the refuge could be added, thus ending an arbitrary north-side section line boundary situation.

12-1

We are also aware that the Fish & Wildlife Service and others adamantly oppose redrawing the boundaries as suggested above; and would instead prefer to enlarge the refuge northward to bring in all of the New Water Mountains. The merits of this option also should be studied.

We suggest the idea of modifying the refuge boundaries to exclude the utilities corridor is worthy of evaluation not because we are actually prepared to support such a plan at this time, but to simply offer it as a possible solution to what some persons are strenuously arguing is an unacceptable conflict between a commercial enterprise and a national wildlife refuge.

In summary, particularly since it appears likely that the New Water Mountains WSA boundary problem will not be resolved in the near-term, we support placing the Palo Verde-to-Devers #2 500kV transmission line closely parallel to the existing line across the Kofa National Wildlife Refuge. We view this alternative as the overall least impairing of public land values.

Sincerely,

Russell D. Butcher
Southwest-&-California Representative
Box 67, Cottonwood, AZ 86326

cc: D. Dean Bibles
James W. Kahle

12-1 The boundary change would require an act of Congress and therefore is beyond the scope of this SEIS.

LETTER 13

THE DESERT TORTOISE COUNCIL

RECEIVED
BUREAU OF LAND MANAGEMENT
'87 JUN 30 PM 12:43
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

5319 Cerritos Avenue
Long Beach, California 90805

June 29, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, CA 92507

Mr. Haigh:

We have reviewed the Draft EIR Devers-Palo Verde #2 Power Transmission Line Project and recommend the preferred alternative be selected. Although the project will have adverse impacts to desert habitat, these impacts would be reduced with the preferred alternative in the utilization of existing roads and in following the existing powerline.

2-32

13-1 Clarification is needed on where the three construction yards will be located, the amount of acreage impacted and the number of additional roads for access to these areas.

As desert habitat continues to be adversely impacted, the decline of native desert wildlife accelerates. Evidence of this is demonstrated in the decline of the desert tortoise, considered an indicator species for all desert wildlife. The U.S. Fish and Wildlife Service has determined the desert tortoise is warranted for listing, the Bureau of Land Management has the species listed as a Sensitive Species, and it is being proposed for California State listing.

The proposed project will have a direct adverse impact to the desert tortoise as the result of loss of habitat, additional population fragmentation resulting from addition of roads, and direct loss of individuals due to increased vehicle traffic. To minimize these impacts, the following mitigation is needed:

13-2

1. A desert tortoise orientation and awareness training class be given to all employees involved in the project prior to construction. This needs to be conducted by a qualified tortoise biologist.

2. Continuous removal of tortoises by a qualified biologist on the project site until completion of the project. This would include pre-survey work to locate and flag tortoise burrows so they can be avoided during construction.

3. An enforced speed limit of a maximum of 20 mph on all roads involved in the project, with travel limited to designated roads.

13-1 SCE has not yet identified specific sites for its construction yard. It intends to use as many of the sites that were used for construction of the first Devers-Palo Verde line as are available. These sites have existing access roads. Should new sites be necessary, SCE intends to select a site with existing access, if possible.

There will be six construction yards. Each will cover 6 to 8 acres. Likely locations include Palo Verde, Blythe, Desert Center, and Vicksburg. SCE's first priority would be lands owned by the Arizona Power System, Edison, or lands leased from the Federal Government. At the time a site is selected, an environmental assessment will be prepared and other regulatory requirements will be met (e.g., compliance with Endangered Species Act and the National Historic Preservation Act).

4. Where the transmission line involves tortoise habitat, construction needs to be limited to the period of November 1 through March 15 to coincide with minimal tortoise activity.

5. It has recently been documented that ravens are having a serious impact on young tortoises, particularly where suitable perch structures are available such as transmission towers. To determine the degree of raven predation resulting from this project, it is necessary that a pre and post study be conducted and appropriate mitigation follow, if needed.

6. To mitigate for the loss of tortoise habitat, acquisition of appropriate land in the Chuckwalla Bench area is needed; the land acquired to be transferred to the California Department of Fish and Game or the Desert Tortoise Council.

Please contact us if you have questions or if we can be of assistance.

Sincerely,

Glenn Stewart
Co-Chairman

cc: DTC Board

13-2 CONT.

2-33

13-2 See response 14-6 for a discussion of similar measures recommended by the California Department of Fish and Game.

Recommended measure #4 requiring a 4.5-month construction closure places undue hardship on the applicant when the measure is not clearly beneficial. Construction during the winter hibernation means that some animals may have to be removed from overwintering burrows and maintained in artificial hibernacula for later release. This procedure has met with limited success. It may be preferable to construct during the active tortoise season, thereby allowing tortoises to be moved off of construction sites to a place of safety, but within its presumed range. Other measures incorporated (see response 14-6 and wildlife mitigation measures 3-9) should provide adequate protection for individual tortoises.

LETTER 14

State of California

GOVERNOR'S OFFICE
OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO 95814
916/323-7480

GEORGE DEUKMEJIAN
GOVERNOR

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -6 PM 1:22
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

DATE: July 2, 1987

TO: Mr. William Paigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

FROM: Office of Planning and Research
State Clearinghouse

RE: SCH 86072810 --- Draft Supplemental EIR, Devers - Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties.

2-34

As the designated California Single Point of Contact, pursuant to Executive Order 12372, the Office of Planning and Research transmits attached comments as the State Process Recommendation.

This recommendation is a consensus; no opposing comments have been received. Initiation of the "accommodate or explain" response by your agency is, therefore, in effect.

Sincerely,

Huston T. Carlyle, Jr.
Director, Office of Planning and Research

Attachment

cc: Applicant

Resources Building
1416 Ninth Street
95814
(916) 445-5656
TDD (916) 324-0604

California Conservation Corps
Department of Boating and Waterways
Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Parks and Recreation
Department of Water Resources

GEORGE DEUKMEJIAN
GOVERNOR OF
CALIFORNIA

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Air Resources Board
California Coastal Commission
California Tahoe Conservancy
California Waste Management Board
Colorado River Board
Energy Resources Conservation and Development Commission
San Francisco Bay Conservation and Development Commission
State Coastal Conservancy
State Lands Division
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards

Mr. William Paigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

July 2, 1987

Dear Mr. Paigh:

The State has reviewed the Draft Supplemental EIR, Devers-Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties, submitted through the Office of Planning and Research. Review was coordinated with the Colorado River Board, Public Utilities Commission, and Departments of Conservation, Fish and Game, Parks and Recreation, Transportation, and Water Resources.

2-35

Attached for your consideration are comments received from the Departments of Conservation and Fish and Game.

The Department of Transportation, Aeronautics Division, concurs in the report's proposal to submit a Notice of Proposed Construction or Alteration, informing the Federal Aviation Administration of the "intent to construct within any interference zones and to comply with any applicable siting, lighting, or marking requirements."

The Department also recommends that future documents provide the names of any airports that the project may affect.

Thank you for providing an opportunity to review this document.

Sincerely,

Gordon T. Snow, Ph.D
Assistant Secretary for Resources

Attachments (2)

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 86072810)

State of California THE RESOURCES AGENCY OF CALIFORNIA

Memorandum

To : Dr. Gordon F. Snow
Assistant Secretary for Resources

Mr. William Haigh
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Date : JUN 24 1987

Subject: Draft Environmental Impact Statement (DEIS) for Devers-Palo Verde II 500 kV Transmission Line SCH# 86072810

From : Department of Conservation—Office of the Director

The Department of Conservation is responsible for monitoring farmland conversion on a statewide basis. The Department also administers the California Land Conservation (Williamson) Act. We have reviewed the Bureau of Land Management's DEIS for the project referenced above, and have noted that the proposal may involve the conversion of valuable farmland. The Department, therefore, offers the following comments.

The project would involve the construction of a 500 kV transmission line from the Devers Substation near Palm Springs, California to the vicinity of the Palo Verde Nuclear Generating Station about 40 miles west of Phoenix, Arizona.

2-38

The Final Environmental Impact Statement (FEIS) should provide information on the number of acres of agricultural land to be developed, the potential agricultural value of the proposed development sites, the impacts of the conversion of that land and the possible mitigation actions which would reduce the significant residual impact on prime agricultural land. We recommend the FEIS contain the following information to ensure the adequate assessment of the project's impacts in these areas.

14-1

- o The agricultural character of the area covered by the project and of nearby or surrounding lands which may be affected by the project.
  - Identify agricultural preserves and number of acres of land, type of land, (i.e. prime/non-prime) and location.
  - Types and relative yields of crops grown.
  - Agricultural potential, based on the U. S. Department of Agriculture's Land Capability Classifications and the State of California, Department of Conservation's Important Farmland Series map designations.
  - The impact upon current and future agricultural operations.

14-2

- o The impacts of any required cancellations of Williamson Act contract(s) affecting the property, as well as any of the following data. (The Williamson Act is a State of California program generally administered by the Department of Conservation and directly administered by participating counties and cities.)

14-1 A characterization of the agricultural quality of the soils in the project area is discussed on pages 139 to 140 of CPUC's Draft EIR (WESCO 1987) included by reference in the Draft SEIS. The tables below better summarize the land types, location, and acreages affected by the proposed project:

Land Type Impacted	Location*
Agricultural Preserve	
- Proposed Project	Link 14, milepost 17.5 - 18.0 Link 10, milepost 6.2 - 7.0
- Northern Alternative 1	No impact
- Northern Alternative 2	No impact
- Southern Alternative	No impact
Prime Farmland	
- Proposed Project	Link 10, milepost 0 - 10.1
- Northern Alternative 1	Link 5, milepost 34.6 - 35.6; Link 11, milepost 0 - 1.1; route skirts the edges of prime irrigated farmland; Link 11 mileposts 1.1 - 7.8 and 8.8 - 9.2
- Northern Alternative 2	No impact
- Southern Alternative	Link 7, mileposts 11.7 - 15.1 and 15.3 - 15.8; Link 9, milepost 0 - 1.1

14-1 CONT. Non-prime Farmland

- Proposed Project and

All cultivated lands within the project corridor appear to meet the criteria for prime farmland or lands of statewide importance. In addition, there is an extensive area of uncultivated non-prime farmland (which is more properly considered rangeland) that may be occasionally grazed. Virtually all of the irrigated agricultural land in the Coachella Valley, along the cnt. Colorado River in the Palo Verde Valley of California and Arizona, and a small tract of land southwest of the Palo Verde Nuclear Generating Station, is considered prime farmland.

Alternatives	No. of Acres Impacted
- Proposed Project	Temporarily disrupts agricultural production on 47 ac.; permanently occupies 0.03 ac. prime farmland.
- Northern Alternative 1	Temporarily modifies 13.4 ac.; permanently occupies 0.09 ac. prime farmland; new access required for entire alternative resulting in additional disruption of agriculture.
- Northern Alternative 2	No impact
- Southern Alternative	Temporarily disrupts agricultural production through 4 mi. of farmland; permanently occupies 0.02 ac. prime farmland; new access required for entire alternative resulting in additional disruption of agriculture.

14-1 CONT. Less than 0.1 acre of prime agricultural farmland would be removed from production by tower placement for all alternatives (the proposed project would only occupy 0.03 acres). The preferred alternative parallels the existing Devers-Palo Verde #1 transmission line and would not require any additional access roads. Agricultural operations would be temporarily disrupted during construction; however, mitigation measures have been recommended to minimize impacts (see response 14-4).

The types of crops grown in the study area are listed in Section 4.6.3 (p. 91) of the Draft EIR. The primary crops include alfalfa, citrus fruits, and grains.

A series of public meetings and a special workshop were held to facilitate public participation and identify potential impacts to current and future agricultural operations during the environmental review process. The results of the workshop (key points raised by the public participants and suggested mitigation measures) are included as Appendix A in the CPUC EIR. A detailed discussion of concerns raised during the review process regarding agricultural impacts, including those relating to aerial spraying, are discussed in Section 5.6.3 of the EIR.

In summary, agricultural impacts can generally be defined as effects upon agricultural production, operations, and farmland. Agricultural land use impacts occur on both a short- and long-term basis. Short-term effects occur during project construction, while long-term effects occur over the life of the project. Short-term impacts from the proposed project and alternatives include the loss of cropland and reduced agricultural production resulting from soil compaction in construction areas (staging areas, wire pulling and splicing sites, tower assembly and erection areas). Irrigation operations and applications of fertilizers, pesticides, and herbicides can also be disrupted by transmission line construction, thereby reducing crop yields further. Construction vehicles passing through agricultural areas can aggravate this situation by transporting weed seeds and increasing their dispersion.

- The location of Williamson Act contracts on land within and adjacent to the project area.
- A discussion of the effects that cancellation of Williamson Act contracts would have on nearby properties also under contract.

14-2 CONT.

o Farmland Impacts

- Assess cumulative impacts of possible future development that may occur as a result of additional power sources.
- The type and amount of farmland conversion, if any, that would result from implementation of the project.
- The growth inducing impact of the project on other farmland in the path of the transmission line.
- The possible curtailment of aerial spraying of farmland near transmission lines.

14-3

o Mitigation measures and alternatives that would lessen the farmland conversion impact of this project. Some possibilities are:

- The preferred alternative would be to align towers along roads, field edges and property boundaries if the siting paralleling the present transmission line is not chosen.
- Protection of other, existing farmland through the use of Williamson Act contracts in Riverside County.

14-4

The Department appreciates the opportunity to comment on the DEIS. We hope that the farmland conversion impact and the Williamson Act contract issues are given adequate consideration in the FEIS. If I can be of further assistance, please feel free to call me at (916) 322-5873.

Dennis J. O'Bryant
Environmental Program Coordinator

cc: Stephen Oliva, Chief
Office of Land Conservation

14-1 CONT. Project construction would temporarily disrupt approximately 47 acres of prime farmland. In agricultural areas, long-term effects upon agricultural production occur as a result of a loss of productive farmland and disruption or interference with farming activities. Long-term impacts include loss of cropland and reduced agricultural production in and around tower sites. Reduced crop yields may result from soil compaction and reduced maneuverability of farming equipment, and may also occur as a result of reduced or incomplete application of pesticides, herbicides, and fertilizers. The proposed project would permanently occupy 0.03 acres of prime farmland (tower footpad sites).

14-2 It is unlikely that the project would require cancellation of Williamson Act Contracts (California state legislation). See response 14-1 for the locations of prime farmlands under Williamson Act Contracts.

14-3 The proposed project transmits power to the regional service area of SCE, as opposed to being a distribution line which might bring power to a new geographic area or expand power supplies in a given area; therefore, it is not possible to identify where or what type of development might result. The project will not provide additional power sources for the Palo Verde Valley, so no cumulative impacts will occur there.

The amount and type of farmland conversion resulting from project implementation is discussed in response 14-1.

As noted in response 14-1 (the discussion of impacts to current and future agricultural operations) the possible curtailment of aerial spraying was considered during preparation of the Draft SEIS and adequate mitigation measures have been recommended as part of the applicant's proposed project. For the reader's convenience, portions of the Draft SEIS concerning impacts to aerial spraying (pp. 168-170) are reproduced below:

14-3 CONT. "The proposed project would result in an increased risk to aerial application by expanding the existing transmission corridor from approximately 200 to 800 feet. The actual area affected will depend upon actual tower locations and the separation between existing and proposed towers. This modification could result in reduced spray coverage; reduction of crop yields, increased safety risks to applicators; increased need for ground applications of pesticides, cnt. herbicides, and fertilizers; increased costs to aerial applicators; and increased production costs to growers.

"Most of the spraying of fertilizers, pesticides, and herbicides is accomplished by aerial application, and approximately 75 percent of all spraying in the Palo Verde Valley occurs in the evening (J. Cyr, pers. comm.; L. Eed, pers. comm.; C.H. Tuomela, pers. comm.). Hazards to aerial applicators were identified as a primary local concern of the agricultural community at a California Public Utilities Commission (CPUC) public workshop held in Blythe on June 16, 1986. (Refer to Appendix A for a summary of this workshop.) Hazards to aerial applicators are created by the presence of the transmission towers and conductors and as a result of the nature of the aircraft operation. Of greatest concern to aerial applicators are the conductors (wires) which are extremely difficult to see, particularly during evening flights. Construction of a second line in the existing corridor would increase this risk because of the increased number and area of additional lines and towers to be avoided.

"A high voltage transmission line reduces the dispersion efficiency for spraying of fertilizer, pesticides, and herbicides as a consequance of the aerial applicator maneuvering to avoid the transmission line conductors and towers. In order to compensate for this problem, aerial applicators normally fly additional passes over areas near and beneath the transmission line. The additional passes increase the operation costs of aerial application and, depending upon how these costs are assigned, can increase production costs to the farmer and operating costs to the applicator. In addition, these passes may result in the application of excessive fertilizer or chemicals, again adversely affecting crop yields (California Energy Commission [CEC] 1984; J. Cyr, pers. comm.)."

14-4 The proposed project is sited along an existing transmission line corridor to reduce potential impacts to agriculture and farmland conversion. The alternative routes considered appear to be the least environmentally damaging options and follow roads, field edges, and property boundaries to the extent possible. The siting and design of the proposed transmission line meets all California Agricultural Aircraft Association (CAAA) and Agricultural Society of Agricultural Engineers (ASAE) recommended criteria excluding the use of reflective devices or specular conductors to increase the visibility of the line in agricultural areas. However, the use of such materials has been recommended in the SEIS. The recommended agricultural land use mitigation measures are summarized in Section 3.5.6 of the Draft SEIS and are reproduced below for the reader's convenience:

To minimize reductions in crop productivity SCE should:

- Coordinate with landowners and farmers to time construction activities prior to normal planting periods or after normal harvest periods where possible.
- Limit construction areas to minimize ground disturbance, soil compaction, and reduced crop production.
- Locate staging areas and wire-pulling and splicing areas in non-productive agricultural areas to the greatest extent possible.

14-4 CONT. To minimize agricultural aircraft safety hazards posed by the proposed transmission line, the following measures are recommended:

- Reflectors on towers and specular conductors should be used to increase the visibility of transmission line towers and wires. Reflectors should be placed at different heights and sides of the towers. (The suggested placement of reflectors on transmission towers, required by the CPUC for the San Diego Gas and Electric (SDG&E) Southwest Powerlink project, is at three locations: at 10 feet, at approximately 40 feet [corresponding to the height of the lowest conductor], and at the top of the poles tilted upward at 20 degree angles.) Edison should work with aerial applicators to identify the most appropriate number and placement of reflective devices. In addition, lighting currently in place for the Devers-Palo Verde #1 line should be expanded by Southern California Edison, in consultation with aerial applicators, to ensure adequate lighting of both transmission lines and facilities during nighttime aerial application activities.

- Any future reconductoring of the proposed or existing transmission line should use specular conductors in the Blythe farmland area."

State of California — The Resources Agency

Memorandum

To : Honorable Gordon K. Van Vleck
Secretary for Resources
1416 Ninth Street
Sacramento, CA 95814

Attn: Gordon F. Snow, Ph.D.
Projects Coordinator

Date June 29, 1987

From : Department of Fish and Game

Subject: Draft Supplemental EIR: Devers-Palo Verde No. 2 Transmission Line, Riverside and Imperial Counties - SCH 86072810

The Department of Fish and Game (Department) biologists have reviewed the Draft Supplemental EIR describing potential environmental impacts from Southern California Edison's proposal to construct a second 500 KV transmission line from the Devers Substation (near Palm Springs) to the Palo Verde Nuclear Generating Station located in Arizona. The line would be the second in an existing corridor and would be identical to the existing line.

The Department generally supports the preferred alternative of the project because the new powerline would follow the existing service road, thus avoiding impacts to desert resources that would result from new service road construction. However, we request additional information regarding potential impacts to desert tortoise. The document states that three construction yards will be established in California for equipment storage, vehicle parking, and for a temporary office for supervisory personnel. To fully evaluate the impacts of this project we must know the total size of these yards and their locations in relation to sensitive species habitat. Also, if any new access roads are required, we would have the same concerns about their location.

14-5

The document proposes several mitigation measures to offset project impacts. However, we do not believe the proposed measures will adequately protect desert tortoise populations within the project area. We recommend that the following measures be included in any final approval:

1. Since the project would impact 77 miles of medium- to high-density tortoise habitat and would disturb 0.4 acre per mile, the project sponsor must compensate for the acreage lost due to disturbance. A total of 30.8 acres would be lost due to the various construction activities; to compensate for this loss, the project sponsor should purchase 308 acres of high-density tortoise habitat within the Chuckwalla Bench Area of Critical Environmental Concern (ACEC). Given information on additional impacts due to construction yards and any access roads, this number of acres should be increased. The rate of 10:1 in compensation acreage is currently being applied to other projects which are impacting medium-density tortoise habitat in southern California. The spur roads that are

14-6

2-43

14-5 SCE has not yet identified specific sites for its construction yard. It intends to use as many of the sites that were used for construction of the first Devers-Palo Verde line as are available. These sites have existing access roads. Should new sites be necessary, SCE intends to select a site with existing access if possible.

There will be six construction yards. Each will cover 6 to 8 acres. Likely locations include Palo Verde, Blythe, Desert Center, and Vicksburg. SCE's first priority would be lands owned by the Arizona Power System, Edison, or lands leased from the Federal Government. At the time a site is selected, an environmental assessment will be prepared and other regulatory requirements will be met (e.g., compliance with Endangered Species Act and the National Historic Preservation Act).

14-6 Most of the recommended measures have been added with modification (see Appendix A, wildlife mitigation measures 3 to 9). Recommended measures #7, requiring a raven predation study, and #8, requiring a performance bond, have not been added.

required for this project would cause additional fragmentation of the tortoise population and would increase the decline of this population. Therefore, the protection of these large population areas is essential. Once the land has been purchased, it shall be turned over to the Department or the Desert Tortoise Council for management and restoration.

2. The project sponsor shall hire qualified tortoise biologists to conduct daily tortoise sweeps on the roads within tortoise habitat and remove any tortoises which are found. These sweeps will be conducted prior to use of the roads by any construction vehicles.

3. Once spur road locations have been determined, the area shall be evaluated by the tortoise biologists and all burrows will be clearly marked and the route shall then be realigned to avoid impacting the burrows.

4. Any tortoise found on site will be removed by the biologists and placed back in the appropriate habitat or held to be released after the construction is complete. The project sponsor will provide an enclosure to hold any tortoises which cannot be released immediately.

2-44 14-6 CONT.

5. The project sponsor shall restrict the speed on all roads to a maximum of 25 miles per hour. All roads shall be posted with this limit and the project sponsor will be responsible for ensuring compliance with this limit by their employees.

6. Prior to construction activities, the project sponsor will have a tortoise biologist present a class to all workers in the handling of tortoises and their sensitivity to human disturbance.

7. For six months prior to the initiation of construction, the project sponsor will have a qualified biologist conduct raven counts on a daily basis for the length of the powerline which passes through tortoise habitat to evaluate tortoise predation by ravens. These counts will continue through construction and for one year after construction is ended so that any increase in raven numbers and predation can be documented. This biologist should also evaluate tortoise predation by checking under the bases of the existing power poles for the remains of tortoises. These inspections will be conducted on a weekly basis for the same period as the counts. If evidence of increased predation is found, the project sponsor shall develop additional mitigation measures to offset these additional impacts.

14-6 CONT. Recommended measure #1 has been added, but the compensation rate will be determined after further discussions among BLM, California Department of Fish and Game, the Desert Tortoise Council, and the applicant. The BLM is currently developing compensation policy for tortoise habitat loss. Since the BLM is the sole conservation agency administering lands on Chuckwalla Bench and the Bench is a BLM-designated Area of Critical Environmental Concern, it would seem appropriate that compensation lands be added to BLM holdings there.

Recommended measure #7 has been modified to reduce the number of surveys to bring the study into a more cost-effective scope. Study design will be refined later by discussions among biologists of BLM, California Department of Fish and Game, the Desert Tortoise Council, and the applicant.

8. A performance bond shall be required to ensure the project sponsor's completion of all mitigation measures. For this project, the performance bond should be a minimum of $250,000.

14-6 CONT.

If these conditions are included in the final project design, the impacts of this project on the desert tortoise and its habitat may be reduced to a level that is acceptable.

14-7

The project will also potentially impact the endangered Coachella Valley fringe-toed lizard. Although the Coachella Valley fringe-toed Lizard Habitat Conservation Plan (HCP) identifies utility right-of-way as a compatible use of land, it does not exempt utility companies from fees charged to developers within the fee assessment area in the Coachella Valley as delineated in the HCP. Therefore, the amount of disturbance on private land within the fee assessment area needs to be delineated. The fee schedule, as presented in the HCP of $600.00 per disturbed acre, should aid The Nature Conservancy for the purchase of land within the Coachella Valley Preserve.

14-8

Diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream, or lake will require notification to the Department as called for in the Fish and Game Code. This notification (with fee) and the subsequent agreement must be completed prior to initiating any such changes. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Fred Worthley, Regional Manager of Reign 5, at 245 W. Broadway, Suite 350, Long Beach, CA 90802-4467 or by telephone at (213) 590-5113.

Pete Bontadelli
Acting Director

14-7 The amount of disturbance on private land in the fee assessment area will be delineated before final approval by BLM, and SCE will be required to pay all applicable fees.

14-8 No diversions or obstructions of the natural flow of any watercourse are planned. Therefore, notification will not be necessary. Should any such structures become necessary, SCE will notify the Department and arrange for payment of the appropriate fees.

LETTER 15

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -6 PM 1:00
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

COLORADO RIVER INDIAN TRIBES
Colorado River Indian Reservation
ROUTE 1 BOX 23 B
TELEPHONE (602) 669 9211
PARKER, ARIZONA 85344

June 30, 1987

In reply, refer to _____

William Haigh
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: Devers - Palo Verde No. 2 500 kV Transmission Line
Supplemental EIS

Dear Mr. Haigh:

The Colorado River Indian Tribes make the following comments on the Devers - Palo Verde No. 2 500 kV Transmission Line Supplemental EIS.

15-1 First, the Tribes reiterate their position set forth in Tribal Council Resolution R-85-79 (enclosed herewith) requesting that we be consulted whenever any utility company proposes or prepares any preliminary studies in connection with a proposed transmission line crossing Reservation land. One of the alternative routes proposed in the supplemental EIS crosses Reservation land, yet the Tribes have not been consulted regarding this route by the utility company or the BLM or anyone else. The Tribes believe that we should be consulted at the earliest possible stage when such a proposal is being considered and discussed in an EIS, so that we may have input before important decisions are made.

Second, the Supplemental EIS apparently indicates that no changes will be made to the communications facilities at Black Peak, near the Reservation boundary. The Tribes wish to make certain that that is the case, and that no new facilities will be placed at that location.

15-2 Because it was impossible to discern from the EIS on the first Palo Verde - Devers transmission line that new facilities were contemplated at Black Peak, the Tribes never had the chance to comment on that action. With that experience in mind, the Tribes wish to make certain that the same problem will not reoccur, leaving us without the opportunity to make our position on such activity clear. Because the area surrounding Black Peak is of strong religious and cultural significance for the Tribes, we hereby state our opposition to any increase or upgrading of the communications facilities at that location.

2-48

15-1 The Tribal Chairperson was notified by letter dated July 9, 1985 that Southern California Edison was planning to construct a second 500 kV transmission line from its Devers, California substation to the Palo Verde Nuclear Generating Plant in Arizona. This letter indicated that an alternative route that crossed Colorado River Indian Tribes (CRIT) tribal lands was being considered. No response to this initial contact was received. In addition, informal calls were made to Mr. Ron Moore on July 16, 1985 and August 6, 1985.

Please note that the route preferred by BLM does not cross tribal lands. Only an alternative route does, and it is not BLM's proposed alternative or the Applicant' proposed route. However, should this alternative receive further consideration, the BLM and the applicant will contact CRIT to determine its concerns. Also, should this alternative ultimately be chosen for the proposed project, then appropriate permits would have to be obtained from the Bureau of Indian Affairs.

If CRIT has major concerns, however, please let us know as soon as possible so that our decision can reflect them. Should you desire a meeting, we will be more than happy to arrange one.

Thank very much for the opportunity to comment on the Supplemental EIS.

Very truly yours,

COLORADO RIVER INDIAN TRIBES

Anthony Drennan, Sr.
Chairman, Tribal Council

Enclosure

cc: Charles Lamb
Alletta d'A Belin

15-2 SCE has indicated that no new communicatiqns facilities would be required for the proposed project (Draft SEIS, page 23). If this should change at any time, the BLM would require appropriate environmental review and consultation with the Tribes.

Resolution No. R-85-79

RESOLUTION

COLORADO RIVER TRIBAL COUNCIL

A Resolution to Take a position concerning transmission lines and other utilities crossing Indian Lands and/or lands adjacent to Indian Lands

Be it resolved by the Tribal Council of the Colorado River Indian Tribes, in special meeting assembled on December 7, 1979

WHEREAS, the Colorado River Indian Tribes exercise sovereign jurisdiction over lands of the Colorado River Indian Reservation, and

WHEREAS, these lands are the ancestral homelands of the Mohave Tribe and use areas of other tribes of the Colorado River Indian Tribes of this reservation, and

WHEREAS, utility companies have proposed from time to time the construction of transmission lines and other utility corridors crossing Indian lands in order to transmit power through Indian lands, and

WHEREAS, the Tribes of the Colorado River Indian Reservation were not adequately consulted prior to any discussion of these proposals, and

WHEREAS, the construction of these transmission lines if permitted will markedly interfere with the full development of reservation lands, and

WHEREAS, the tribes will not receive any direct power benefit from transmission lines crossing the reservation, and

The foregoing resolution was on December 7, 1979 duly approved by a vote of 5 for and 1 against, by the Tribal Council of the Colorado River Indian Tribes, pursuant to authority vested in it by Section 1(m) Article VI of the Constitution and By laws of the Tribes, ratified by the Tribes on March 1, 1975 and approved by the Secretary of the Interior on May 29, 1975, pursuant to Section 16 of the Act of June 18, 1934, (48 Stat. 984). This resolution is effective as of the date of its adoption.

COLORADO RIVER TRIBAL COUNCIL

By

Chairman

Secretary

WHEREAS, there are known potentials for safety hazards associated with such lines, and

WHEREAS, it is within the powers of the Tribes to make the final decision concerning any activity on the reservation,

BE IT RESOLVED, that no preliminary studies on the Colorado River Indian Reservation be undertaken without the prior knowledge and the consent of the Tribes,

BE IT FURTHER RESOLVED that the Tribes be consulted whenever any utility company proposes any activity on, near, or crossing reservation lands,

BE IT FINALLY RESOLVED that copies of this Resolution be sent to all the President, Senator Kennedy, State Delegations, Governors of Arizona and California, Bureau of Indian Affairs and its sub-agencies, Arizona and California reservations, Bureau of Land Management, California Heritage Commission, Native American Museums Association, National Congress of American Indians, National Tribal Chairmen's Association.

LETTER 16

Tucson Rod and Gun Club

P.O. BOX 12921
TUCSON, ARIZONA 85732

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -7 PM 1:09
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

July 5, 1987

Bill Haigh
B.L.M. California Desert Distric
1695 Spruce st.
Riverside California 92507

Dear: Mr. Haigh

Thank you in advance for reading my comments.
On behalf of my self and the 3700 members of
the Tucson Rod and Gun Club we want to go
on record of putting the Southern California
Edison Company's Devers-Palo Verde second
500 K.V Tramission Line in the same power
corridor as the first one was built
though the K.O.A National Wild Life Refuge.
We Feel this route will have Less impact
on the wild Life.

2-50

Thank you
Albert R Hurt
President
Tucson Rod and Gun Club

LETTER 17

Southern California Edison Company

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

July 8, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Subject: Draft Supplement Environmental Impact Statement (SEIS) for the Devers-Palo Verde No. 2 500 kV Transmission Line Project

Dear Mr. Haigh:

Enclosed are Southern California Edison Company's comments on the subject Draft SEIS.

Please contact me at (818) 302-8547 or Gary Dudley at (714) 891-1500 should you have any questions regarding the enclosure.

Sincerely,

James Kahle

James Kahle
Project Manager

2-51

RECEIVED
1987 JUL -8 PM 2:40

ENCLOSURE 1

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SUPPLEMENTAL ENVIRONMENTAL
IMPACT STATEMENT (SEIS) FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

	PAGE	COMMENT
17-1	44	Fifth paragraph, "Helicopter construction should be considered...": In general, helicopter construction in areas which were originally constructed utilizing normal techniques is unwarranted. Good engineering practice and erosion control measures can mitigate erosion or slope stability sensitivities. Based on both air and ground reconnaissance of the project area, there is no evidence of significant erosion above the natural rate, or slope instability along the #1 line. Thus it is not expected that there will be problems for the #2 line. In addition, limiting access to tower sites by aircraft is extremely expensive, creates extended repair outages when bad weather or nighttime work schedules occur, and creates added safety risks to personnel. Aircraft access does not resolve the need to position cranes and wire stringing equipment should line repairs be necessary. The spur roads would be required for these activities.
17-2	45	First paragraph, "Construction of new access roads and soil disturbance should be avoided or minimized on slopes over 35 percent..." A 35 percent slope is about 19.3°. Based on Edison design standards, this is too shallow to be considered for not building access roads. Edison requests changing 35 percent to 60 percent which is in line with standard Edison design allowances that have been used previously in Edison construction activities without resulting in erosion problems.

17-1 This mitigation measure has been revised; please see Section 3.1.

17-2 This mitigation measure has been revised; please see Section 3.1.

ENCLOSURE 1 (Continued)

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SEIS FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

PAGE	COMMENT
50	First paragraph, "Reflectors on towers... In addition, lighting currently in place for the Devers-Palo Verde #1 line should be expanded." The reason given for the suggested marking and lighting is to "minimize agricultural safety hazards posed by the proposed transmission line." Edison has approximately 11,5000 circuit miles of overhead transmission lines and approximately 45,000 circuit miles of overhead distribution lines. California Public utilities Code Section 21658 requires Edison to comply with Federal Aviation Regulation (FAR) Part 77 and to insure that its structures do not constitute a "hazard to air navigation" within the meaning of the FAR's. FAA criteria (FAR Part 77) established standards for determination of obstructions to air navigation. Edison's overhead lines are designed in compliance with all applicable FAA rules and regulations and should not be considered a hazard. The "marking" and "lighting" discussed in the SEIS is not required by the FAA. The subject of marking and lighting of overhead lines has been evaluated for many years. Edison believes the FAA requirements are adequate and there is no need for any further requirements. Any evaluation of marking or lighting requirements should include consideration of the following: 1. Most methods of marking involve difficult problems of installation as well as an increase in the effects of high winds. 2. Reflective markings are used as objects for target practice with the resultant increase in risk of damage to major transmission lines.

2-53

17-3

17-3 The BLM does not have specific authority to require the visual mitigation on private lands in Palo Verde Valley, the area of concern. This issue has been addressed by the CPUC in its Final EIR for the project. The applicant will have to comply with all mitigation requirements of the CPUC, which does have authority over these matters under the California Environmental Quality Act (CEQA).

ENCLOSURE 1 (Continued)

SOUTHERN CALIFORNIA EDISON COMMENTS
ON THE DRAFT SEIS FOR THE
DEVERS-PALO VERDE NO. 2 500 kV
TRANSMISSION LINE PROJECT

	PAGE	COMMENT
17-3 CONT.	50 (cont.)	3. There are substantial differences of opinion as to the effectiveness of any particular method of marking and as to the specific locations where such markings should be utilized. Despite extensive studies of a number of alternative marking schemes and devices, major problems relating to the effectiveness and feasibility are still unresolved.
17-4	117	Fourth paragraph, "It is interesting to note, however, that the original selection of the Devers-Palo Verde #1 route through the Kofa NWR was based on the assumed potential for significant adverse impacts to bighorn sheep along the Brenda Route (Northern Alternative 2 in this SEIS), particularly the Scadden Mountains lambing area. Results of the detailed studies conducted after the Devers-Palo Verde #1 project indicate that the proposed route through the Kofa actually crosses more high density bighorn sheep habitat and known movement corridors than the Brenda Route (17 miles compared to 10.6 miles, respectively). The proposed route also lies as close to a known lambing area in the Livingston Hills." Without placing this statement in context, it is misleading. A statement such as the following should be added for completeness: It is important to note, however, that the extensive studies of bighorn sheep performed for the Devers-Palo Verde #1 Project indicate no adverse impacts to bighorn sheep in the Kowa NWR as a result of that project. Of more concern to bighorn sheep would be creating new access into previously inaccessible areas as would occur along the Northern Alternative 2 (see page 122 of SEIS).
17-5	Appendix D	Column 2, paragraph 2, line 6. It should be noted that compensation will be paid according to normal Eminent Domain procedures.

17-4 The preceding paragraph on page 117 of the Draft SEIS indicates that the referenced studies have not identified any adverse impacts to bighorn sheep. The comparison of the impacts between the preferred and Northern Alternative 2 route is stated on page 122 of the Draft SEIS. Also please see response 22-6 for more information.

17-5 Comment noted.

LETTER 18

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -8 AM 10:40
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

Mr. Bill Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

6 July 1987

Dear Mr. Haigh:

I am writing, as a private citizen, in support of the proposed Kofa Route for the Devers-Palo Verde #2 transmission line. I state at the outset that I am philosophically opposed to placing any kind of utility structures, roads, microwave facilities, etc. within national wildlife refuges. However, since there is an existing corridor with a natural gas pipeline, transmission line, and access road across the Kofa NWR, I would prefer to see the second line placed in that corridor rather than creating an entirely new corridor.

The major issue swirling about the two alternatives appears to be impact to local populations of desert bighorn sheep. As the principal investigator in Southern California Edison Company's recently completed study of desert bighorn in relation to the original Devers - Palo Verde transmission line, I feel qualified to make several comments on this issue. Our study, which lasted for nearly seven years and involved more than 10,000 relocations of radio-collared bighorn, clearly showed that the original line had no identifiable adverse effects on sheep. The most obvious response by sheep to the line was that several of our Dome Rock animals actually spent significantly more time in the transmission line corridor during construction of the line than they had during the preconstruction period or than they did after construction was completed. We have some evidence that construction in the area between the New Water Mountains and Kofa Mountains/Livington Hills complex may have hindered movements of radio-collared rams between these areas. This may be misleading, however, as we only had five radio-collared rams with any potential of making the crossing and two of the five never made the crossing in almost four years of preconstruction monitoring. Postconstruction movement of rams between the new Waters and the Kofas occurred at a higher rate than during the preconstruction period - it appears quite clear that the presence of Devers to Palo Verde Line #1 is not hindering ram movements at all (ewes very, very rarely travel between the two ranges - we have a single such record over the course of our study).

18-1 I have some minor problems with the concept of "lambing areas". The term connotes an area where ewes "go" to have their lambs, rather like the mythical elephant graveyard. Ewes and ewes with lambs tend to restrict their home areas to higher elevations, usually near one of the major water sources. These areas are often called "lambing areas" because that is where one sees larger numbers of ewes and lambs. I would certainly not suggest that building a transmission line through such an area would be benign, but I see no real, biological problem with placing a line on the

18-1 On page 117, paragraph 3 of the Draft SEIS it states: "A second parallel line as proposed is not expected to pose a significant barrier to sheep movements or have significant disturbance effects during construction." This statement is intended to include any potential impacts to lambing activity in the Livingston Hills. Also please see response 22-6 for more information.

18-1
CONT.

desert floor within a mile of a lamb-ewe use area. The presence of a "lambing area" in the Livingston Hills is not, in my opinion, a valid reason to oppose the Kofa Route. The Livingston Hills "lambing area" is small, occupied by a small number of resident ewes, and is largely located more than a mile from the proposed transmission centerline. I have a very difficult time envisioning how a second line could have any effect, whatever, on the sheep residing in the Livingston Hills.

My principal objection to the Brenda Route is that construction on this route would create access where none exists today, not just in the Scadden Mountain area, but all along the north face of the New Water Mountains. In the long term I think the creation of new access would have far more deleterious effects on desert bighorn than would construction of a second line along the existing access road across the Kofa NWR.

Finally, in the SEIS prepared by WESCO, the point is made that the original line and, therefore, the second proposed line across the Kofa actually cross more high density bighorn sheep habitat and movement corridors than the Brenda Route (17 miles versus 10.6 miles). While this is true, I do not believe it is a strong point in favor of the Brenda Route. Most of the 17 miles is situated in areas that are known movement corridors as opposed to being permanently occupied sheep habitat, and it has been demonstrated that the presence of a transmission line does not stop sheep movements. There are no movement corridors on the Brenda Route due to the presence of Interstate Highway 10 which has effectively isolated the Plomosa Mountain and New Water Mountain herds. Again, it is my opinion that the creation of new access resulting from construction of the second line on the Brenda Route would be more deleterious to bighorn than construction of a second line on the Kofa Route.

2-58

Thank you for allowing me the opportunity to express my opinion in this matter.

Sincerely Yours,

E. Linwood Smith, Ph.D.

LETTER 18

EVAN MECHAM, Governor
Commissioners
FRED S. BAKER, Eagar, Chairman
LARRY D. ADAMS, Barnwood City
FRANCES W. WERNER, Tucson
THOMAS G. WOODS, JR., Phoenix
PHILLIP W. ASHCROFT, Eagar
Director
TEMPLE A. REYNOLDS
Assistant Director
DUANE L. SHROUFE

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL -8 PM 1:02
CALIFORNIA DESERT DISTRICT
RIVERSIDE, CA.

ARIZONA GAME & FISH DEPARTMENT
2222 West Greenway Road Phoenix, Arizona 85023 942-3000

June 29, 1987

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Re: Draft Supplemental EIS
Devers-Palo Verde No. 2
500 kV Transmission Line Project

2-57

Dear Mr. Haigh:

The Arizona Game and Fish Department has reviewed the referenced draft Supplemental Environmental Impact Statement (SEIS), and we respectfully submit the following comments/recommendations for your consideration.

Overall, we view the draft SEIS as accurately and adequately disclosing the biotic environmental setting in Arizona, and the potential impacts on same by the proposed construction of a second 500 kV transmission line, from the Palo Verde Nuclear Generating Station in Arizona to the Devers Substation in California, along several alternative alignments. We do offer specific comments on the draft document in a separate attachment to this letter which relate to mitigation and mitigative measures that we believe are justified and that should be incorporated into the project.

The Department has evaluated the alternative alignments for this second 500 kV transmission line, similarly to the Devers-Palo Verde No. 1 transmission line, and supports the proposed project (preferred alternative), as the alternative which would produce the fewest new direct and indirect impacts on the biological resources within the project area.

An Equal Opportunity Agency

We appreciate the opportunity to review and to offer our comments/recommendations on this draft SEIS.

Sincerely,

Temple A. Reynolds
Director

TAR:RKW:lkl

Attachment

cc: Field Operations Division
Wildlife Management Division

Attachment

Arizona Game & Fish Department
Draft SEIS
Devers-Palo Verde No. 2
500 kV Transmission Line Project

General Comments (East to West, along Arizona alignment)

The proposed power line will pass very near to water catchment #660, between Burnt Mountain and the main body of the Bighorn Mountains. On page 4-7 of the Final Environmental Statement, "Palo Verde-Devers 500 kV Transmission Line", the following statement appears:

> "The applicant or its contractors will construct one additional big game watering facility for each existing one within 300 yards (274m) of construction activities in bighorn sheep habitat."

19-1

The Burnt Mountain - Bighorn Mountain area was identified as "Bighorn Sheep Range" on Map 2-7 in that Final Environmental Statement. On Map 11-AZ in the draft SEIS, the Bighorn Mountains are again identified as an area with "Low Density Desert Bighorn Sheep Populations".

Impacts to this existing water need to be mitigated with the construction of the second transmission line.

Also, the Department recommends no construction in the area from mile 20 to where the power line crosses the Granite Reef Aqueduct, because such activity would limit the usefulness of catchment #660. That catchment is receiving heavier use than ever before from desert mule deer, which traditionally crossed the alignment of the Granite Reef Aqueduct and which can no longer do so. Waters on the upstream side of the aqueduct are an important part of the Department's program to keep deer out of the canal, with subsequent drowning losses. Deer drownings are a sensitive public issue, therefore, this catchment should not be jeopardized.

19-2

Kofa vs. Alternative Routes

The proposed and preferred alternative alignment of the second power line, parallel to the existing Palo Verde-Devers line, appears to have the least impact to bighorn sheep, as is indicated on page 117 of the draft SEIS. Northern Alternative 1

19-1 The BLM believes that the impacts to catchment #660 are a direct result of increased vehicular traffic to the catchment. This increased traffic was created by the road that was constructed for the first transmission line. The BLM and SCE have been working together to mitigate impacts to the catchment and a new catchment will be developed. This is being done because of impacts created by the first transmission line, and it is believed that the second line will have no additional impacts, and no additional mitigation is necessary.

19-2 The recommendation for "no construction in the area from mile 20 (link 1) to where the power line crosses the Granite Reef Aqueduct (link 1, milepost 23)" would in effect require denial of the proposed action. Not allowing construction through this area would force the development of a new alternative entirely. The BLM will work with the Arizona Game & Fish Department to try to minimize the temporary construction disturbance to catchment #660.

is simply not acceptable to the Department because of impacts it would create in the Plomosa Mountains. Northern Alternative 2 is less acceptable than the Preferred Alternative, because of its close proximity to a desert bighorn lambing ground on Scadden Mountain, and because it would create new access and subsequent long-term disturbance and impacts.

Further, Northern Alternative 2 would deviate from the approved Utility Corridor as identified in the "Final Yuma District Resource Management Plan and Environmental Impact Statement" and in the "Final Lower Gila South Resource Management Plan".

Our Department took the position, in commenting on those plans, that utilities must be restricted to existing corridors. Because of these reasons and those summarized in the first paragraph on page 122 of the draft SEIS, our Department believes that the Preferred Alternative would result in less impact, overall, than Northern Alternative 2.

Dome Rock Mountains

19-3 We believe that construction activity in the Dome Rock Mountains should not take place during the months of January, February, and March. This is specified on page 4-7 of the "Final Environmental Statement, Palo Verde-Devers 500 kV Transmission Line", and on page 7-6 of the "Devers - Palo Verde #2, 500 kV Transmission Line Project, Proponents Environmental Assessment-December 1985", but not specifically mentioned in the SEIS.

2-80

Colorado River Crossing

Again, we believe that specular, rather than non-specular, conductors should be used at the Colorado River crossing. Additionally, we believe that the stake lines should be marked to increase their visibility, such as by sleeving them in grey, UV
19-4 resistant PVC pipe. These measures should help to reduce bird collisions with the line. The Colorado River is an important movement corridor for ducks, geese, and many nongame species of birds, and everything possible should be done to reduce long-term impacts to these resources.

The proposed route is preferable to the Southern Alternative, in that it is the shortest possible crossing and would be adjacent to the existing line, which should help to reduce bird collisions by the clustering effect. The Southern Alternative is likely to result in significant bird mortality, because of movement from resting to feeding areas and, as birds veer left while moving south along the river towards the Cibola National Wildlife Refuge. Also, bird collisions would be increased with the Southern Alternative, if the northern part of the Cibola Valley becomes part of the Cibola National Wildlife Refuge, and is developed and managed for ducks and geese.

19-3 Also please see response 22-6. Your recommended seasonal construction restrictions have been incorporated (see Appendix A, wildlife mitigation measure 14).

19-4 Because the Colorado River crossing is not on BLM land, the BLM cannot require the recommended mitigation. However, the Army Corps of Engineers will be issuing a Section 10 permit for the crossing. SCE is expected to file an application for the crossing soon, and the Corps will prepare an environmental assessment for that application prior to issuing a permit. That document will develop necessary mitigation measures for the crossing. Since the Corps has the necessary jurisdiction to require and enforce a measure such as you propose, we suggest you contact the District Engineer of the Corps' Los Angeles District regarding the need for such a measure.

Specific Comments By Page

Page x, 5th paragraph

19-5 "... Arizona Department of Game and Fish...." should be Arizona Game and Fish Department.

Page 52, 3.4.8 Visual Resources

19-6 We believe that the use of specular, rather than non-specular, conductors at the Colorado River crossing would help to minimize bird collision with the transmission line. This would also be a consideration for the Southern Alternative.

Map 11 - AZ, Sensitive Biological Resources

19-7 To be consistant, this map should show arrows for "Known Desert Bighorn Sheep Movement Areas", where Northern Alternative 2 (link 5) passes through the Plomosa Mountains. There is also movement across Interstate 10, through the pass in the Plomosa Mountains, which is facilitated by highway culverts specifically designed for that purpose, as mitigation for the highway construction.

19-5 Correction noted. This correction is also made in Section 3.1 of this document.

19-6 Please see the response to comment 19-4.

19-7 The information mentioned in this comment does not change the analysis or conclusions in the Draft SEIS, and a revised map is therefore not necessary. Although there has been some documented use of these highway culverts by bighorns, the BLM Phoenix District wildlife biologists agree that the highway has created a significant barrier to bighorn movement.

LETTER 20

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 10 PM 1:40
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

Arizona Outdoor Coalition
P.O. Box 31917
Tucson, AZ 85751-1917
July 3, 1987

Bill Haigh
BLM-California Desert District
1695 Spruce St.
Riverside, CA 92507

Dear Mr. Haigh,

Concerning the proposed southern California Edison Company's Devers-Palo Verde #2 500 KV transmission line. We would like to go on record supporting the preferred alternative. This corridor was established approximately ten years ago to handle existing and future needs. It would be a terrible waste of land to set aside another corridor a few miles to the north when the new line could parralel an existing one.

We are against any expansion of the KOFA boundries. These lands should remain in BLM ownership.

We believe Mike Spears is trying another back door expansion. That is why he has withheld the mineral survey for one year; and not allowed it released for public review.

Sincerely,

Jim Cain
President

2-82

LETTER 21

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 10 PM 1:44
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

July 9, 1987

William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

I am writing this letter to protest the plans to put the Devers-Palo Verde No. 2 Transmission Line throgh the Kofa Game Range. As a friend and frequent visitor to the Kofas I think this would be a bad decision, especially when the nearby I-10 corridor is available. I have traveled New Water Road and seen the damage caused by the existing powerline and I don't think it needs to be compounded with another one. On the other hand, I-10, which is full of traffic and pollution, would seem the logical place to clutter up with another manmade intrusion.

Thank you for considering my comments. I would like a copy of the EIS when it is available.

Sincerely,

Robert Moore

Robert Moore
6622 W. Fillmore
Phoenix, AZ 85043

2-83

LETTER 22

United States Department of the Interior
Fish and Wildlife Service
Lloyd 500 Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232

RECEIVED
BUREAU OF
1987 JUL 13 PM 1:07
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

In Reply Refer To: Your Reference:

EC 87/18

Memorandum July 8, 1987

To: State Director, Bureau of Land Management, Sacramento, California

From: Assistant Regional Director - Fish and Wildlife Enhancement, Fish and Wildlife Service, Portland, Oregon

Subject: Review of Draft Supplemental Environmental Impact Statement (SEIS) for the Devers-Palo Verde No. 2 Transmission Project, Riverside County, California, and Yuma and Maricopa Counties, Arizona

2-84

Fish and Wildlife Service (Service) offices in both Regions 1 and 2 have reviewed the subject document. The following comments are provided for your use and consideration when preparing the final document.

General Comments

The Service has concerns with the completeness of the SEIS and the adequacy of the discussion regarding the preferred alternative as related to Service National Wildlife Refuge lands and other resources, especially threatened and endangered species, under our legal responsibility.

22-1 Page 75, paragraph 2, last sentence of the SEIS refers to a Biological Assessment developed by the Bureau of Land Management (Bureau) as part of the Endangered Species Act Section 7 consultation process. Neither of the two responsible Service Field Offices (Phoenix and Laguna Niguel) have any record of consultation being initiated by the Bureau on Southern California Edison's proposed second 500 kV transmission line. We recommend that the Bureau immediately contact the involved offices regarding Endangered Species Act responsibilities. We further recommend that a Biological Assessment for Devers-Palo Verde No. 2 and a Biological Opinion, if warranted, be appended to the final SEIS.

22-1 A formal section 7 consultation was initiated with the U.S. Fish and Wildlife Service in early August 1987. The Biological Opinion is included in the Final SEIS (see Appendix C).

California Segment

22-2 The SEIS does not acknowledge that construction of the preferred alternative is being proposed within the boundary of the Coachella Valley National Wildlife Refuge established on August 28, 1985 (map attached). The SEIS also lacks a detailed description of proposed activities that could potentially result in adverse impacts to the refuge, the Coachella Valley Preserve, designated Critical Habitat for the federally threatened Coachella Valley fringe-toed lizard, and Mitigation Fee Lands. The Service recommends that a meeting be expeditiously scheduled for all involved parties to discuss proposed site-specific actions, need for possible permits, need for mitigation, need for Section 7 consultation, and responsibilities to pay mitigation fees. The decisions resulting from the meeting should be discussed in detail in the final SEIS.

Page 46-47. 3.4.5 Biological Resources. Vegetation. We recommend that the following measures be added to this section in the final SEIS:

22-3 1. Identify the location, or at least the criteria for selection, of the transplantation areas for Ferocactus and Coryphantha.

22-4 2. Review preconstruction surveys of sensitive plant locations and facility placement with the Service and California Department of Fish and Game (CDFG) biologists.

22-5 3. Develop plans for revegetation of any woody wash, riparian, and palm oasis vegetation disturbed by project related activities and review these plans with Service and CDFG biologists.

Arizona Segment

General Comments

As stated in Albuquerque Regional Director Spear's May 27, 1987, letter (copy attached) to Southern California Edison Company (SCE), the Service strongly urged the elimination of the Kofa route as the preferred alternative at the inception of the planning stages of this proposal. We have not altered our objections and again must state that the proposed routing is incompatible with the purposes for which the Kofa National Wildlife Refuge (NWR) was established.

2-85

22-2 Although the Draft SEIS does not specifically mention the National Wildlife Refuge (NWR) by name, it does discuss the Coachella Valley Preserve (CVP). (See map attached to Letter 22 for location.) The CVP, which encompasses the NWR and of which the refuge is an integral part, is discussed in depth in the June 1985 Coachella Valley Fringe-toed Lizard Habitat Conservation Plan (HCP). This plan was prepared by the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan steering committee, a committee composed of representatives from federal and state agencies (among others). The Fish and Wildlife Service was one of the federal representatives.

In the HCP, it was noted under section IVB2a that utility rights-of-way, including transmission line and pipeline rights-of-way, are compatible with lizard habitat. Again under section VI (Plan Units--District 1, Roads and Utilities), the plan states that "utility easements...cross the District below the base of the Indio Hills. These include...up to 300-foot right-of-ways for the Southern California Edison Devers-Palo Verde 500kV... . SCE has purchased acreage...in the preserve as mitigation." The construction of additional utility lines, pipelines, and attendant roads are acceptable uses under the HCP.

A formal section 7 consultation was initiated with the U.S. Fish and Wildlife Service in early August 1987. The Biological Opinion is included in the Final SEIS (see Appendix C).

The BLM is willing to meet with the Fish and Wildlife Service and other parties to discuss any aspect of this proposal, its relation to the Coachella Valley National Wildlife Refuge and the designated critical habitat for the Coachella Valley fringe-toed lizard, or other points the Service believes may be pertinent. Such a meeting could be held anytime prior to BLM's final decision concerning whether to issue a right-of-way grant. That decision will not be made earlier than 30 days after the publication of this Final SEIS.

Less environmentally damaging alternatives to the preferred route through Kofa NWR exist and should be utilized. The Northern Alternative 2 Route (Brenda) crosses through or near less high density bighorn sheep habitat and movement areas than the proposed Kofa route. The major deleterious impact to the bighorn sheep thought to have been avoided by not selecting the Brenda route during routing considerations for the first transmission line (Devers-Palo Verde No. 1) was the known sheep lambing area on Scadden Mountain lying within 0.5 miles of the Brenda route. Selection of the Kofa route did avoid this lambing area but infringed upon the then unknown lambing area of the Livingston Hills. A slight modification to the Brenda route would have avoided impacting Scadden Mountain and would still, if implemented, render the northern route much less damaging to bighorn sheep than the Kofa route. This modification consists of extending link 4b at its northern most point near Scadden Mountain directly west to a connection with link 17, some 2 miles northwest of the lambing area. Concomitantly with this realignment, human access to the Brenda transmission line route and to the Scadden Mountain lambing area could be administratively controlled through road closures or placement of the access roads in a manner not conducive to unauthorized access.

22-6

To date, the Service's Region 2 office has received no request for a right-of-way (ROW) permit for the proposed alternative to cross the Kofa NWR. Because consideration of such a ROW would entail analyses of the compatibility of the proposal with the purposes for which the Kofa NWR was established, and because the results of those analyses may result in significant alterations of any consideration of the Kofa route as a preferred alternative, we strongly recommend the expeditious submittal of an application for a ROW permit.

2-86

22-7

The discussions of utility corridors and the desirability of any particular route or link based on its presence in or near a utility corridor are confusing. The essence of any such discussion should lie in whether or not boundaries of land management units such as the proposed Kofa wilderness addition or the Bureau's Wilderness Study Area (WSA) can be redrawn to accommodate the necessary utility corridor while still protecting the resource values of wilderness. In the case of the New Water Mountains WSA, this has been accomplished as discussed in the Bureau's Lower Gila South Final Wilderness Environmental Impact Statement. Such boundary modifications would also be accomplished for the Kofa proposed addition, drawing back the proposed addition's northern boundary by 0.5 miles and thereby allowing a utility corridor to be placed south of I-10.

22-8

22-3 Basic criteria for selecting transplant sites would include considerations for soil types, hydrologic conditions, slopes, and aspect similar to those at the impacted areas. Since precise impacts are not known at this time and appropriate mitigation requirements for the project would require development of detailed plans for transplantation sites prior to construction, the BLM would require that these plans be reviewed and accepted by appropriate agencies before affected plants would be removed.

22-4 Survey and inventory data will be transmitted upon request. A mitigation measure requiring transmission of this data is not necessary.

22-5 Disturbance to woody wash vegetation will be minimized by careful tower placement and spanning and by use of existing access roads. Disturbance to riparian habitat will be minimized to the greatest extent possible. No palm trees will be disturbed. (See measures for protection of vegetation in Appendix A.)

22-6 As described in Sections 4.5.2 (pp. 72-73) and 4.5.3 (pp. 77-78) of the Draft SEIS and in Chapter 2 (pp. 2-28) of the Final EIS for the Devers-Palo Verde #1 project, bighorn sheep resources and potential impacts of the proposed route through the Kofa NWR and the Northern Alternative 2 (Brenda) route are similar. The proposed route crosses through or near more high density bighorn sheep habitat and known movement areas (approximately 17.0 miles compared to 10.6 miles [see Map II-AZ in the Draft SEIS]) but, it has better access. Total habitat disturbance or loss would be considerably greater along the Northern Alternative 2 route (106.8 acres compared to 17.4 acres) between the same points (AC to E) because of increased access road requirements. The majority of this habitat disturbance (approximately 71 percent or

22-6 CONT. 77 acres), however, would not be in or adjacent to identified bighorn sheep habitat. Both alternatives also pass within 1.5 miles of known lambing areas: Scadden Mountain along the Northern Alternative 2 route and Livingston Hills along the proposed route. As discussed in Section 4.5.3 (pp. 77-78) of the Draft SEIS, concerns over the proximity of the Scadden Mountain lambing area to the Northern Alternative 2 (or Brenda route as it was called in the original EIS for the Devers-Palo Verde #1 project) and the perceived greater potential for significant adverse impacts were the primary considerations in rejecting this route and selecting the route through the Kofa NWR. The Livingston Hills lambing area was not identified until subsequent detailed studies designed to assess the impacts of the first project on bighorns were conducted.

Although there are some differences, the basic conclusion expressed in the Draft SEIS in Section 3.2 (p. 38), and described in more detail in Sections 5.5.1 (proposed route) and 5.5.2 (Northern Alternative 2), is that bighorn sheep are unlikely to be significantly impacted by construction or operation of the proposed transmission line along either of these alternative routes. One route is not clearly superior to the other, at least with respect to concerns for bighorn sheep.

The primary basis for this conclusion is the result of the detailed multi-year studies funded by Southern California Edison (SCE) and Arizona Public Service (APS) on bighorn sheep in the Dome Rock Mountains and New Water Mountains/Kofa NWR complex. This study, conducted by E. Linwood Smith and Associates, was initiated in 1977 and was designed to assess the impact of construction, operation, and maintenance of the Devers-Palo Verde #1 500 kV transmission line on bighorn sheep. The studies in the Dome Rock Mountains involved detailed radio telemetry and observational studies before, during, and after construction of the Devers-Palo Verde #1 project. In 1981, studies were expanded to include the Kofa NWR and New Water/Plomosa Mountains south of I-10. Pertinent conclusions of these studies are presented in Sections 4.5.2 (pp. 72-73), 4.5.3 (pp. 77-88), 5.5.1 (pp. 117-118, and 5.5.2 (pp. 121-122) of the Draft SEIS. A more detailed summary of these studies prepared by E. Linwood SMith (1987) is also provided in Appendix B of this document.

22-6 CONT. The original decision to route the Devers-Palo Verde #1 line through the valley in the northern portion of the Kofa NWR, rather than along the Brenda Route, was based in large part on the perceived greater potential to significantly impact bighorn sheep in the New Water/Plomosa Mountains. The major area of concern was known lambing grounds and watering sites in the Scadden Mountain area of the Plomosa Mountains. Please see pages 3-18 to 3-24 and Figures 3-1 and 3-2 of the Devers-Palo Verde #1 Final EIS (BLM 1979) for further information and comparison of the two routes. The original decision was supported by the Arizona Game and Fish Department and Arizona Desert Bighorn Sheep Society. Both also support selection of the #2 project parallel to the #1 line along the proposed route.

A key conclusion of the study was that bighorns appeared to be unaffected by construction of the #1 project through Copper Bottom Pass in the Dome Rock Mountains. The only change noted in the behavior of "Copper Bottom Pass resident" bighorns was that radio-collared animals tended to spend more time closer to the centerline during construction than the same individuals had prior to construction (Smith 1987, pp. 16-19, 24-27 [Appendix B]). Of four radio-collared sheep (with home ranges within 5 km of the centerline) that were monitored before and during construction, three (one ram and two ewes) shifted their activity toward the area of transmission line construction. These three bighorns also crossed the transmission line corridor more often during construction than they had prior to construction, possibly indicating that the animals may have been attracted to construction activity (Smith 1987 [Appendix B]). The fourth bighorn, another ram, showed no response to construction. Three other bighorns were also monitored during this period, but they rarely traveled to the vicinity of Copper Bottom Pass and provided little real data for analyzing construction period impacts (Smith 1987, p. 16 [Appendix B]). Data and discussion for each of these animals is presented in Appendix B, a detailed summary of Smith's earlier studies.

22-6 CONT. This explanation for the apparent crossing rate discrepancies appears reasonable based on the results of other studies conducted on bighorn sheep. Hicks and Elder (1979, p. 12) cite that bighorns in their study were less concerned or disturbed by human recreational activity that occurred below/downslope of the sheep. When a disturbance occurred upslope of the sheep, the animals invariably ran away from the disturbance and sought escape to terrain above where the disturbance originated (i.e., the bighorns natural tendency was to flee upslope and be above potential danger). Watts and Schemnitz (1985, p. 95) also noted a rise in heart rate (a sign of anxiety or heightened awareness) as the distance to escape terrain increased.

Concerns for potential disturbance impacts to bighorns are not unfounded. Numerous studies including Smith (1987 [Appendix B]), Hicks and Elder (1979), Leslie and Douglas (1980), and Campbell and Remington (1981) have documented significant reactions or shifts in normal activity patterns in response to high levels of human disturbance. What also is apparent, particularly based on the results of the multi-year studies conducted by Smith in relation to the Devers-Palo Verde #1 22-6 project, is that bighorns readily habituate to physical features such cnt. as transmission lines and are unaffected by the presence of such features. There is no evidence to suggest that the presence of a second operational line parallel to the #1 line would have any significant cumulative effect.

Similarly, there is no evidence to suggest that use of the Northern Alternative 2 route would have any significant long-term effects on bighorn sheep in the New Water/Plomosa Mountains. The major concern for this route would be the potential for increased public access into or near the Scadden Mountain lambing area. There is existing access into this area, but the roads are in generally poor, unimproved condition and usable only by four-wheel drive or other off-road vehicles. A typical construction access road would be suitable for use by a wider range of vehicles; however, modifications to the Northern Alternative 2 route (such as the one suggested in the Draft SEIS on p. 49) to move the centerline away from the lambing area or other measures such as roadless construction or gating would be used to minimize increases in long-term recreational access.

22-6 CONT. Construction of the project along the proposed route would not increase or alter existing access into or adjacent to lambing areas in the Livingston Hills. Also, as previously described in this response, construction and operation of the Devers-Palo Verde #1 project has not had any apparent adverse effects on bighorn sheep use in this area.

The suggestion that the Northern Alternative 2 route be modified by extending link 4b "at its northern most point near Scadden Mountain directly west to a connection with link 17" does not recognize the fact that link 4b was considered but rejected because of the WSA issue.

As the DEIS states on page 125, "link 4b, south of I-10, would involve crossing approximately 5 miles of the New Water Mountains WSA, which is inconsistent with the Federal Land Policy and Management Act which precludes permanent development within a WSA prior to a final decision by Congress as to the selection of these lands as permanent wilderness areas." Therefore, since use of link 4b is precluded by the existence of the WSA, it is not reasonable to consider "extending" that link.

In addition, we are aware that all of the new routes that are suggested in the letter would involve serious impacts. New roads would be required, additional visual impacts along I-10 and in the La Posa Long-Term Visitor area would occur, and (as per the comment) places that may be far more critical to bighorn sheep would be opened to human access.

22-7 SCE filed an application for a right-of-way grant across Kofa NWR with the Albuquerque Regional office of the Fish & Wildlife Service on October 17, 1985. The Fish and Wildlife Service acknowledged receipt of the application on November 4, 1985.

22-9 All maps should be modified to accurately depict the northern, western, and eastern boundaries of the Kofa NWR, and the boundaries of both the proposed addition to the refuge and the New Waters WSA. As they stand, the maps give the mistaken impression that the LaPaz/Yuma County lines form the refuge boundaries.

Specific Comments

We request that the Bureau make the following corrections or modifications in the final SEIS:

22-10 Page X. Para. 1. There is no designated utility corridor through Kofa NWR. The Bureau does not designate utility corridors on National Wildlife Refuges.

22-11 Page X. Para. 5. The Kofa route has a greater potential to adversely impact sheep. (See page 117-118).

22-12 Pages 35, 36. Link follows an existing oil pipeline route which could provide access.

22-13 Page 38. Table 3.2-A Soils Northern Alternative 2 follows an existing oil pipeline route which could provide access.

22-14 Page 42. Table 3.2-B. Based on the information in this report, the biological resources for the proposed route should be high and clearly the least preferred. The land use for the proposed route should be high and clearly the least preferred based on information in this project.

22-15 Page 73. Para. 2. The presence of the Livingston Hills lambing area should be reflected on Map 11.

22-16 Page 81. Para. 4. The utility corridors are not shown on the map.

22-17 Page 82. Para. 3. While development of wildlife waters has been one of the refuge's main development activities, protection of all native plants and animals within the refuge is a major refuge objective.

22-18 Page 83. Para. 1. Compatibility for Devers-Palo Verde No. 1 was based on erroneous data as indicated elsewhere in this report (page 117-118).

22-19 Page 132. Para. 1. Based on the narrative, all of the proposed route through Kofa NWR should be listed as High Impact for visual resources.

22-8 The Lower Gila South Final Wilderness Environmental Impact Statement does not "redraw" the New Waters WSA boundary. In the proposed action, the recommendation consists of a modification of the suitable boundaries. This recommendation is based on topographic features to exclude areas with mining claims and mineral potential. The modifications would also allow a one-half mile wide utility corridor south of Interstate 10.

Wilderness Study Area boundaries cannot be redrawn by BLM action. Until Congress designates wilderness or releases a WSA from further study, no action can be taken by BLM that might impair the WSA's suitability for designation.

Permitting a corridor to cross the WSA would constitute an impairment prohibited by Section 603(c) of the Federal Land Policy and Management Act (FLPMA).

22-9 Map 1, pages 9-10 of the Draft SEIS, depicts the boundaries mentioned. Readers of the Draft SEIS can extrapolate the information to the other maps from Map 1.

22-10 Your comment is correct. The BLM does not have the jurisdiction to designate utility corridors on National Wildlife Refuges. The Fish and Wildlife Service is the only agency that can grant permits for rights-of-way across National Wildlife Refuges.

22-20 Map 2. The section of land shown as owned by the state (in western Kofa NWR) now belongs to the Federal Government.

22-21 Map 5. The Celeron/All American Line is in, not proposed. What is the dashed blue line through Kofa NWR?

22-22 Map 7. While a wilderness proposal has been prepared for the refuge, no action has been taken by Congress. This means that the entire refuge must be managed to protect whatever wilderness characteristics it has. This is similar to Bureau's WSAs.

22-23 Map 8. This map is not consistent with the narrative (page 98) which indicates link 3 has low cultural resource sensitivity.

22-24 Map 11. Proposed route should show desert bighorn sheep lambing habitat at Livingston Hills, link 2: MP 29.6-33.8.

22-25 The location of the line could be placed further away from Scadden Mountain, as suggested by the Service to reduce even further the possibility of adverse impacts to bighorn sheep. This map alone could lead the decision-maker to select the route north of the refuge.

22-26 Map 12. We would like to see the refuge returned to Class I in the area of the existing powerline.

2-73

Summary Comments

As indicated above, the Service recommends that a modified Brenda route be selected in Arizona to avoid an unacceptable level of impact to resources and the Kofa NWR.

We recommend that the Bureau immediately initiate informal Section 7 consultation with our Phoenix and Laguna Niguel Field Offices for Devers-Palo Verde No. 2.

We also recommend that the Bureau meet with involved parties to resolve unaddressed issues related to the proposed crossing of the Coachella Valley NWR, the Coachella Valley Preserve, and Mitigation Fee Lands.

If the crossing of the Colorado River should require an Army Corps of Engineer's permit, we suggest that the Bureau coordinate with our Phoenix Field Office to determine potential site-specific impacts and possible need for site-specific mitigation.

In summary, the Service believes that the SEIS does not adequately identify or discuss potential direct, indirect, or

22-11 The Northern Alternative 1 Route has the greatest potential to impact bighorn sheep. The Northern Alternative 2, or Brenda Route, also has a greater potential to impact bighorns because of road building requirements in the New Water Mountains and near Scadden Mountain (p. 122 of the Draft SEIS). However, suggested route modifications in the Draft SEIS or by the FWS in comment 22-6 would greatly reduce potential impacts to levels comparable to the preferred route through the Kofa National Wildlife Refuge. Although the preferred route crosses more high density bighorn sheep habitat and movement corridors (see pp. 117-118 of the Draft SEIS), the studies by SCE and others in the Kofa National Wildlife Refuge and Dome Rock Mountains indicate that the construction and operation of Devers-Palo Verde #1 has not had an adverse impact on bighorn sheep. Thus, the differences in the amount of habitat crossed by the two alternatives is not an appropriate criteria for describing differences in impact level between these two alternatives. Please see response 22-6 for further information on this issue.

22-12 Comment noted.

22-13 This factor was considered in the referenced Table 3.2-A.

22-14 Table 3.2-A (p. 39 of the Draft SEIS) provides a comparative summary of impacts to biological resources of the proposed and alternative routes. Based on the information in Table 3.2-A and in response 22-11, the BLM believes that the ratings presented in Table 3.2-B for biological resources are appropriate.

The land use rating of "preferred" on Table 3.2-B for the proposed route is based on the fact that the alternatives would involve impacting land uses in areas that are presently unaffected by transmission lines.

cumulative effects on resources under the Service's legal responsibility that could result from the implementation of the preferred alternative. We recommend that the final SEIS contain a detailed Impact Assessment, especially addressing the cumulative impacts on these resources from the recent proliferation of proposed ROWs and other collectively significant actions proposed across refuge lands and threatened/endangered species habitat.

We would appreciate the opportunity to work with the Bureau and the applicant to: 1) develop an environmentally acceptable project, and 2) develop mitigative measures necessary to offset impacts identified in the Impact Assessment covering direct, indirect, and cumulative effects.

If you have any specific questions, please contact the following people:

Ray Bransfield, Laguna Niguel Field Office, FTS 796-4270

Gary Kramer, Coachella NWR Manager, (619) 348-5278

Cameron Barrows, Coachella Valley Preserve, (619) 343-1234

Ron McKinstry, Phoenix Field Office, FTS 261-4720

Milton Haderlie, Kofa NWR Manager, FTS 764-6633

The Service appreciates this opportunity to provide input into the Bureau's planning process.

David F. Riley

Attachments

cc: William Haigh, Calif. Desert District, BLM
R-1, Refuges (Fields)
Laguna Niguel FO (Bransfield)
Sac SE (Kobetich)
Salton Sea NWR (Kramer)
Coachella Valley Preserve (Barrows)
Phoenix FO, (McKinstry)
Kofa NWR (Haderlie)
R-2, Refuges (Fowler)
R-2, FWE/REC
WDC/BEC
REO, PSW Region

JFowler,RBransfield,JCampbell:plm

22-15 Comment noted. We believe that adding this information to the map would not change the conclusions reached in the SEIS.

22-16 The reference to Map 5-AZ on page 81 is incorrect. BLM Utility Corridors are shown on Map 6-AZ.

22-17 Comment noted.

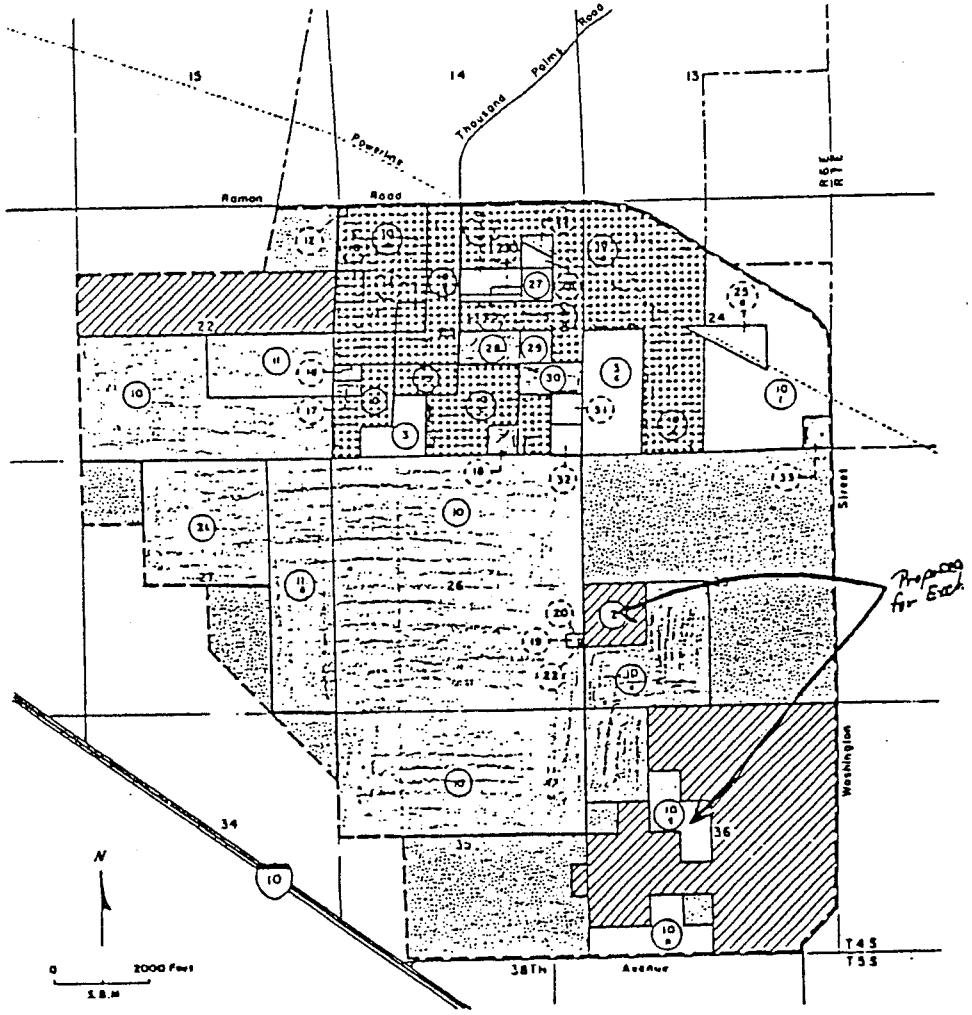
22-18 Comment noted. It may be more accurate, however, to say that the compatibility analysis for the Devers-Palo Verde #1 line through the Kofa National Wildlife Refuge was based more on incomplete or non-specific data rather than erroneous data. Please see response 3-1 for a detailed discussion on this issue.

22-19 The assessment of visual impacts is based on physical features of the landscape. The proposed route through the Kofa is described as high impact for visual resources for all but the first 2 miles from the eastern refuge boundary. This 2-mile section was not rated as high impact because it is a very similar landform to the adjacent area outside of the refuge boundary.

22-20 Correction noted.

22-21 Correction noted. The dashed blue line through the Kofa NWR was an alternative route originally considered for the Celeron/All American pipeline.

ATTACHMENT 1. Map of Coachella Valley National Wildlife Refuge, California



22-22 Comment noted.

22-23 Westec's original evaluation of high sensitivity for the Ranegras Plain is based on known high site densities that are limited to the Alamo Wash area and near the bases of mountain ranges. Some sites may also be non-randomly concentrated along Bouse Wash as well, although previous surveys have not identified such sites. Almost all previously recorded sites documented by Westec in the open Ranegras Plain are rock rings and small lithic scatters of low significance. About 90 percent of Link 3 is made up of this open environment. Only 10 percent is made up of concentrated riparian wash or mountain foothill zones. Therefore, a low sensitivity rating is appropriate for Link 3 as a whole but with the acknowledgment that specific higher sensitivity areas do exist within the link.

22-24 Please see response 22-15.

22-25 Please see response 22-6.

22-26 Please see response 22-19.

ATTACHMENT 2. May 27, 1987, Letter from Regional Director Spear to Southern California Edison Company

In Reply Refer To:
Region 2: RF

May 27, 1987

Mr. James W. Kahle
Southern California Edison Co.
P.O. Box 800
Rosemead, California 91770

Dear Mr. Kahle:

This will respond to your April 29, 1987, letter requesting information or comments on the proposed Devers-Palo Verde #2 500kV Transmission Line Project. There are several incorrect, or at least, speculative assumptions with which the U.S. Fish and Wildlife Service (Service) does not agree, contained in your reasons for selection of the preferred alternative routing of the transmission line.

Your letter states that "the preferred route is within a Bureau of Land Management (BLM) approved utility corridor and would impose no major land use conflicts." The Service has the sole authority to approve utility corridors on the Kofa National Wildlife Refuge (NWR). Your assumption that this route across the Kofa NWR would impose no major land use conflicts is not shared by the Service. We believe that the verdict is still out on the impacts to sheep management that the initial Devers-Palo Verde line is having, and we are certainly not in agreement with you that a second line with its additional width and tower requirements will not cause any major land use conflicts. The visual impact of the first line is quite apparent. A second line will certainly not lessen visual impacts related to construction of the proposed Devers-Palo Verde #2 as is suggested in your letter. It is speculation on your part that sensitive biological resources existing along the right-of-way will not be significantly impacted by the project. We believe that sheep, other wildlife resources, and their habitat may very well be significantly impacted by the project. Subalternate Routes 1 or 2 would not impact the refuge. Cultural resource assessments have been accomplished along these routes as well.

The concerns we have expressed in this letter are not new. We have relayed to Southern California Edison Company and the Riverside Office of the U.S. Bureau of Land Management that the Service is adamantly opposed to any route of this line that crosses the Kofa NWR. There are environmentally and economically acceptable alternatives.

The recently received supplementary environmental impact statement (SEIS) prepared by the Riverside, California, office of the Bureau of Land Management (page 21) states:

> The Brenda Northern Alternative 2 route actually crosses through or near less high density bighorn sheep habitat and movement areas than the proposed (Kofa) route.

The major point of adverse impact to the bighorn sheep thought to have been avoided by not selecting the Brenda route was the known sheep lambing area on Scadden Mountain, lying within 0.5 miles of the Brenda route. Selection of the Kofa route did avoid this lambing area but infringed upon the then unknown lambing area of the Livingston Hills. A slight modification to the Brenda (Northern Alternative 2) route would have avoided impacting Scadden Mountain and would still, if implemented, render the northern route much less damaging to bighorn sheep than the Kofa route. Concommitantly with this realignment, human access to the Brenda transmission line route and to the Scadden Mountain lambing area can be administratively controlled through road closures or placement of the access roads in a manner not conductive to unauthorized access.

Availability and use of utility corridors have been major factors in determining not only the alternative routes under consideration for this transmission line, but also proposed routes for any future lines. In supplying the major use markets of Southern California with electricity from developed energy sources in Arizona, the area of southwestern Arizona is the most likely site to carry the east-west transmission lines from source to market. We anticipate the need for coordinated use of adequately sized corridors. In the recently published Final Lower Gila South Wilderness Environmental Impact Statement prepared by the BLM, a 1/2 mile wide corridor capable of carrying two interstate pipelines and two ultra-high voltage (500 kV) transmission lines have been designated along portions of Interstate Highway 10. The BLM's wilderness proposal for the New Water Mountains (encompassing portions of the Service's proposed Kofa wilderness addition) has been delineated to accommodate the presence of such a corridor. Such accommodation was accomplished by drawing back the northern boundary of the wilderness proposal to allow passage of the corridor between wilderness lands and the highway.

Such accommodation can also be provided along the northern boundary of the Kofa wilderness addition proposal which extends further west along Interstate 10 than the BLM's New Water Mountains area. By pulling back our recommended northern boundary of the proposed Kofa addition south from Interstate 10, sufficient room for a corridor would be provided and the transmission line could pass through leaving the refuge without further impacts.

This office strongly urged the elimination of the Kofa route as the preferred alternative at the inception of the planning stages of this proposal. We have not altered our objections and again must state that the proposed routing is incompatible with the purpose for which the Kofa NWR was established. The preferred alternative for the Devers-Palo Verde #2 500kV Transmission Line should be the Brenda (Northern Alternative 2) route with slight modifications to protect the Scadden Mountain lambing area. The environmental impacts of the Kofa NWR alternative should be fully detailed in the SEIS analysis.

Sincerely,

/s/ Michael J. Spear

Regional Director

LETTER 23

YUMA AUDUBON SOCIETY

YUMA, ARIZONA 85364

1987 JUL 20 PM 2:14

July 8, 1987

Mr. William Haigh
California Desert District
Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh,

In 1979, the first Southern California Edison powerline gouged a path across the most wild and scenic expanse of Sonoran Desert in western Arizona: the Kofa National Wildlife Refuge. Even though in retrospect this route was obviously a very poor choice, Edison and BLM are now proposing a second powerline through the refuge. The Kofa route is being proposed even though alternative routes are available with fewer impacts to biotic resources and much less impact to visual resources. After reading the EIS, the only possible reason to select the Kofa Route is cost. The Kofa Route would cost 2% of the project cost less than the Northern Alternative #2 (Brenda Route). Saving money for your customers is important, but it is not fair to ask me or other users of Kofa Refuge to pay a price in terms of visual quality, recreation, and sensitive resources so that power can be delivered to people in Southern California at a 2% savings (and by the way, how much of that savings would the consumer really see?).

2-78

There are several inconsistencies in the EIS which lead us to believe that the only real reason to select the Kofa Route is cost:

23-1 1. The EIS downplays land management considerations. Much is said about conflicts between the northern alternatives and the BLM management plan for the area, but conflicts with refuge management are downplayed. The Fish and Wildlife Service has made a formal determination of noncompatibility for the powerline. This is not even mentioned. This determination cannot be changed without changing the project. On the other hand, BLM management plans can and often are amended to accomodate changing resource needs; and this is appropriate because BLM lands are, generally speaking, managed for multiple use. But, Fish and Wildlife Service refuge lands are not managed for multiple use; they are managed primarily for biotic resources. Given this setting of land management objectives, the EIS should have given more emphasis to conflicts with land use on Kofa Refuge, and the amendment process should have been pursued early on for alternative routes which conflict with BLM plans.

23-2 One other observation. There is an existing utility corridor along I10, approved for use by BLM. This corridor was not even considered in the EIS, even though it avoids conflicts with both BLM and Refuge management plans and objectives. Why was it not considered?

23-3 2. The existing power line road through the refuge is rough in places and must

23-1 The U.S. Fish and Wildlife Service has recommended against routing the powerline across the Kofa NWR, but no formal determination of noncompatibility or compatibility has been made. Section 4.6, p. 82, and Section 5.6, pp. 123-125 of the Draft SEIS discusses Land Use Planning considerations on the Kofa NWR and BLM lands.

23-2 Please see Section 1.3.5 of this Final SEIS for a discussion of why the I-10 corridor was eliminated from detailed study.

be travelled slowly and cautiously. Upgrading this road so that it will be passable for your equipment would make some rather remote areas easily accessible. We are afraid this road could become heavily used, especially since it is so close to Quartzite, a very popular spot for winter visitors, most of whom would love a good road to explore.

23-3 CONT.

3. We do not feel the Brenda Route poses any real or new threats to the lambing area on the northwest edge of the New Water Mountains, as claimed by the EIS. This general area is already accessible by several mining roads, some of which come closer to the lambing area than the powerline road would. Also, it is most definitely possible to close roads if needed. Discing a road so that it is, in effect, as rough as the surrounding terrain would not encourage any more vehicular use than the area now receives. There may even be places where effective barriers could be installed. The BLM has used a number of techniques to successfully close roads in the McCain Valley area of San Diego County (an area of much greater off-road vehicle use than the New Water Mountains), and no doubt in other areas as well. The technology exists, but once again, Edison chose not to pursue this idea.

23-4

4. The Kofa Route appears to be the most costly to biotic resources when compared to the Brenda Route. More quality bighorn habitat is traversed, and more sensitive plant species would be affected.

23-5

5. In case of a disaster, such as a plane crashing into the power line, parallel powerlines should be seperated by considerable distance. If a second line were strung alongside the first in the Kofa Refuge, a plane crash, or similar disaster, could take both of them out.

23-6

6. People drive Interstate 10 to get from one place to another. People drive roads in Kofa Refuge for recreation, for the scenery, and for enjoyment. We would argue that, even though many more people drive I10, the visual resources are much more valuable, much more appreciated, and much more sensitive through Kofa Refuge. One powerline is one too many, a second powerline doubles the problem.

23-7

7. The last 2 utilities to construct facilities through the project area (All American-Celeron, Pacific-Texas pipelines) selected routes north of the refuge. All American considered the Kofa Route, but selected the Brenda Route because of greater environmental impacts through Kofa Refuge. They made this decision even though routing the pipeline along I10 was more expensive. Edison's decision to save money and construct along the Kofa Route could set a precedent for future action and trigger considerable cumulative impact on the sensitive resources of Kofa Refuge in the long-term. This issue was not addressed in the EIS.

23-8

In summary, we feel the EIS gives a skewed perspective of the environmental consequences of the various alternatives, particularly the preferred route and the Brenda alternative. As a result, the least expensive alternative- the preferred route- appears to be the most desirable route. We feel Edison needs to take a closer look at all costs and benefits, both monetary and non-monetary, of the Kofa and Brenda Routes. From our perspective, costs are

23-9

23-3 No significant upgrading of the main access road through the Kofa NWR is anticipated. It is also considered unlikely that the presence of an additional transmission line would increase recreational use of this area.

23-4 Please see response 22-6 for a complete discussion of bighorn sheep issues relative to route selection.

23-5 Please see response 22-6 and Appendix B of this document for information on anticipated impacts to bighorn sheep. For Ceres greggii, a plant species of concern for this project, comparison of available suitable habitat actually indicates that the Northern Alternative 2 route crosses 23.2 to 27.3 miles of suitable habitat (depending on the use of link 4b or 17 [Draft SEIS, p. 77]) compared to 20.5 miles along the proposed route (Draft SEIS, Map II-AZ). More detailed field studies conducted by SCE since publication of the Draft SEIS have identified only two Cereus greggii plants in the Kofa NWR that may be impacted by the project (E. Linwood Smith and Associates 1987, p. 24).

23-6 The BLM acknowledges that a completely separate line would reduce the possibility of a catastrophic outage of both lines. However, the BLM believes that the probability of such an outage is so remote that it should not be a major factor in route selection. The separation distances proposed by SCE are in compliance with CPUC and BLM requirements.

23-7 The Draft SEIS (p. 132) states that the presence of a second parallel line through the Kofa NWR represents a significant cumulative impact. The Draft SEIS (p. 135) is also in general agreement with the stated assessment of the comparison between the expectations or perceptions of people visiting the Kofa NWR and those using I-10.

23-9 CONT. much higher along the Kofa Route.

23-10 On another issue, construction through any occupied or potentially occupied Coachella Valley fringe-toed lizard habitat should be carried out when the lizards are active (surface temperature of about 30-55°C). Most active lizards in the path of vehicular equipment will move out of the way. If construction is done while the lizards are inactive, especially if temperatures are low, they will most likely be killed as burrows are collapsed and blowsand is excavated or driven over.

Sincerely,

Jim Rorabaugh
Conservation Committee

23-8 The proposed project would follow a corridor through the Kofa NWR that is presently occupied by three pipelines and a 500 kV transmission line. Each project is evaluated as it is proposed for cumulative impacts with other past, present, and reasonably foreseeable future projects. The BLM does not believe, therefore, that construction of the #2 line through the Kofa NWR would be setting a precedent or that it would necessarily trigger significant long-term cumulative impacts. Also, the utilities routed around the northern boundary of the Kofa NWR were buried pipelines, not transmission lines which have much different impacts.

23-9 The BLM believes that a very thorough and objective evaluation of the environmental benefits and costs of the proposed route and its alternatives was accomplished by its interdisciplinary team. This analysis has led the BLM to select the proposed Devers-Palo Verde #2 route as its preferred alternative. Your opinion, however, that the proposed route through the Kofa NWR has much higher costs is acknowledged.

23-10 Specific mitigation requirements and construction procedures in Coachella Valley fringe-toed lizard habitat will be determined in consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Game. Your comment is noted and will be considered in this process.

LETTER 24

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 13 PM 1:32
CALIFORNIA DESERT DISTRICT
RIVERSIDE, CA

YUMA AUDUBON SOCIETY
P.O. BOX 6395
YUMA, ARIZONA 85364

July 7, 1987

William Haigh
California Desert District
U.S. Bureau of Land Management
1695 Spruce Street
Riverside, CA 92507

Dear Mr. Haigh:

The following are Yuma Audubon's comments on the Devers-Palo Verde No. 2 500 kV Transmission Line Project Supplemental Draft Environmental Impact Statement.

The two major problems with the Draft EIS are 1) failure to "explore and objectively evaluate all reasonable alternatives" as required by the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) implementing regulations (40 CFR 1502.14(a)) and 2) failure to assess cumulative impacts, as required by the CEQ NEPA implementing regulations (40 CFR 1508.25, 1508.27(b)(7)).

2-81

FAILURE TO EXPLORE AND EVALUATE ALL REASONABLE ALTERNATIVES

24-1 The EIS emphasizes how important it is to stay within BLM's designated utility corridors. We, of course, agree that it is best to designate widely accepted corridors and then stick to them rather than handle each utility line on an individual basis. However, the DEIS did not consider the only acceptable route totally within a BLM utility corridor: follow the existing Palo Verde-Devers route to where it either first crosses I-10 (about 7 miles west of Tonopah) or where it crosses I-10 for the second time (with the CAP Canal), and then follow I-10 to the Colorado River. This is utility corridor 10 in the Lower Gila South Resource Management Plan (RMP) (shown on p. 5) and utility corridor UC-7 in the Yuma District RMP (shown on Map 8). The EIS even omits this BLM-approved utility corridor from the maps in the pockets in the back of the EIS! (and it should be on Map 6-AZ, not 5-AZ as the text states on p. 81). Why was this information suppressed? Surely BLM knows where its utility corridors are.

24-2 The Preferred Alternative (the existing PV-D #1 route) follows designated utility corridors only part of the way because BLM's corridors run up to the Kofa Refuge but do not cross the refuge since BLM has no authority to designate utility

24-1 A discussion of alternative routes that were considered by BLM but eliminated from further consideration (including the referenced I-10 corridor) is presented in section 1.3.5 of this Final SEIS.

24-2 The I-10 route alternative was considered by BLM but eliminated from detailed study for the # 2 project Draft SEIS because of major visual impacts (see section 1.3.5 of this Final SEIS).

corridors in a National Wildlife Refuge. Thus, if staying within designated utility corridors is a (or the) major criterion governing route selection, utility corridors 10 (Lower Gila South) and 7 (Yuma District) are vastly superior. These utility corridors have been established since the PV-D #1 Final EIS, and therefore even if an all I-10 route was considered in that EIS (and we don't find any evidence it was), it must be considered in the Supplemental EIS, which is supposed to update what has happened since the Final EIS for PV-D #1.

24-2 CONT.

Objection to the Northern Alternative 2 (which we favor among the alternatives presented in the EIS) as being (but only in part) outside a BLM-designated utility corridor is a ruse on BLM's part to supposedly make that route look inferior to the existing powerline route (EIS, p. 124). BLM never considered their own designated utility corridor along I-10! Why bother to designate utility corridors if they will not even be evaluated in an EIS? And the most controversial part of the Northern Alternative 2, through Plomosa Pass, IS within a BLM-designated utility corridor. BLM had ample opportunity to reject I-10 as a utility corridor in the RMP process but did not. This means it is a suitable corridor to BLM and BLM should live by its decision.

24-3

Similarly, the La Posa Long Term Vehicle Area (LTVA) and high density archaeological sites in the same area (EIS, p. 128) could be avoided by following BLM utility corridors in the Yuma District if BLM wants to route the second line through Copper Bottom Pass in the Dome Rock Mountains rather than along I-10: at Quartzsite, where the line is in utility corridor (UC) 7, turn south and follow UC-9 along US 95, then turn northwest at the existing Edison line and follow UC-8 through Copper Bottom Pass.

2-82

24-4

We also note that BLM easily and rapidly approved construction of the All American crude oil pipeline outside an approved utility corridor in the California Desert Conservation Area (CDCA). The Yuma District already has considered at least one amendment to their RMP. We have seen how fast BLM plans can be changed when BLM feels the necessity and doubt that approving Northern Alternative 2 would involve a significant delay--unless BLM dragged its feet.

FAILURE TO ASSESS CUMULATIVE IMPACTS

BLM must recognize that whichever route is selected, impacts will come not only from this single power line but from future utility lines (above and below ground) from central Arizona to the Los Angeles area, the Gulf of Mexico to the Pacific Ocean, and southern transcontinental routes. Unfortunately, this EIS takes a narrow view of impacts, limiting their assessment to only this specific power line. Again, this gives a distorted

24-5

24-2 CONT. Although staying in designated utility corridors is an objective in BLM's planning process for utilities, minimizing environmental impacts is also a major factor. BLM's environmental analysis of all reasonable alternatives, including those referenced in this comment, has shown that the existing Devers-Palo Verde #1 route, including the portion through Kofa NWR, would have less overall impact to the environment.

24-3 Please see section 1.3.5 of this Final SEIS for a discussion of the I-10 alternative and why BLM did not consider it to be a feasible alternative for the Devers-Palo Verde #2 project. A comparison of potential impacts of Northern Alternative 2 and the proposed project (Draft SEIS, section 3.2, pp. 37-42) shows that the proposed route would have fewer significant impacts.

24-4 The alternative you suggest (US 95) would not avoid the La Posa LTVA and would have high visual impacts by placing a 500 kV transmission line in areas that presently contain only underground pipelines or 161 kV lines. The BLM believes that this route is not environmentally preferable to the proposed route.

24-5 Each utility project is thoroughly evaluated by BLM when it is proposed for cumulative impacts in relation to existing facilities and planned future projects, as was the Devers-Palo Verde #2 project in relation to the #1 project. CEQ guidelines specify that "reasonably foreseeable" future projects be considered.

24-5 CONT. picture which BLM uses to claim superiority of the PV-D #1 route, and fails to conform to CEQ requirements on EISs.

24-6 The Northern Alternative 2 (or perhaps an all I-10 route, but we don't know since it was never analyzed) is clearly superior to the proposed route when cumulative impacts are considered. It is true that Northern Alternative 2 would involve establishing some new right-of-way, but once established, future lines (including underground gas, petroleum, and telephone) would then follow an established right-of-way.

Why is Northern Alternative 2 superior to the Kofa route? Because the proposed Kofa route involves more adverse impacts:

24-7 —> It crosses more high density Bighorn Sheep habitat and known movement corridors (Kofa—17 miles; N. Alt. 2—10.6 miles; pp. 118, 121-122 in EIS).

24-8 —> It crosses more sensitive plant habitat involving four species: Cereus greggii (Arizona Queen-of-the-Night Cactus), Opuntia wigginsii (Wiggins' Cholla), Colubrina california (California Snake Bush), and Tetracoccus fasciculatus var. acanthodes).

24-9 —> It crosses more miles adjacent to Wilderness Study areas in the BLM Lower Gila Resource Area and the Kofa National Wildlife Refuge (this can be seen just by looking at the maps; Kofa—21 miles; N. Alt 2—6.8 miles; EIS, p. 88).

24-10 —> It crosses more miles of sensitive visual resource areas, namely those of Class A Scenic Quality (Kofa—15.2 miles, N. Alt. 2—2.8 miles; VRM Class II (Kofa—29.1 miles, N. Alt. 2—21.2 miles) and fewer miles in visual resource areas where "major modification" is allowed (Kofa—11.5 miles, N. Alt. 2—21.5 miles; EIS, p. 88).

24-11 —> It crosses more mountainous topography with moderate to high soil erosion hazards (EIS, pp. 64, 110).

24-12 In this light, Table 4-2B on p. 42 of the EIS, which claims that the proposed route is environmentally preferable, is clearly biased and overgeneralized. According to the EIS, the proposed route through the Kofa Refuge is clearly preferred over the alternatives on only three grounds: new right-of-way required, land use, and cultural-historical resources. The Northern Alternative 2 is never the least preferred route.

24-13 We have already shown that the purported right-of-way advantage of the proposed route vanishes when cumulative utility lines are considered. The preferability of the proposed alternative as regards land use is highly questionable. The incompatability decision of the Kofa Refuge negates this supposed advantage of the Kofa route. Finally, concern about cultural resources largely centers on the area of the La Posa LTVA. BLM has shown the regard it has for this sensitive cultural resource area by locating a Long Term Visitor Area there. This LTVA goes right to the east side of

24-6 The BLM does not believe that the Northern Alternative 2 route or the I-10 route is superior to the preferred route. The BLM believes that the analyses presented in section 1.3.5 of this Final SEIS and section 3.2 (pp. 37-42) of the Draft SEIS clearly show that the preferred route would have less environmental impact, including the consideration of cumulative effects.

24-7 The basic comparison of miles of bighorn sheep habitat crossed is correct; however, as described in sections 5.5.1 and 5.5.2 of the Draft SEIS, and in further detail in response 22-6, the potential for impacts to bighorn sheep along both alternatives is similar and neither route is clearly superior.

24-8 In comparing the potential impacts of the two alternatives, it should be noted that there is a greater level of existing information on rare plants along the proposed route. Therefore, the occurrence of different or more rare plants and potential impacts may appear greater for the proposed route. A direct comparison of suitable habitat for Cereus greggii (Map II-AZ) indicates more miles of habitat would be crossed along the Northern Alternative 2 route (23.2 to 27.3 miles, depending on the use of links 4b or 17, Draft SEIS, p. 77) than along the proposed route (20.5 miles, Map II-AZ).

24-9 The basic comparison is from Table 4.8-A, Summary of Affected Visual Resources, on p. 88 of the Draft SEIS. The key comparison between the two alternatives that directly affects land use decisions is that the Northern Alternative 2 route in link 4b crosses 4.8 miles of a WSA. (The proposed route does not cross any WSAs.) The Federal Land Policy and Management Act precludes permanent development within a WSA prior to a final decision by Congress as to the selection of these lands as a permanent wilderness area (Draft SEIS, p. 125).

Tyson Wash where "one particular area of high density is where the route crosses Tyson Wash" (EIS, p. 99). We think the impact of thousands of winter visitors taking walks to the wash and poking around to see what they can find is a much more significant impact than a powerline, especially when it can be located within the right-of-way so as to avoid sensitive cultural resource areas. If this area is so sensitive culturally, why is it an LTVA? Why isn't it an Area of Critical Environmental Concern (ACEC)?

24-13 CONT.

IMPACTS TO BIGHORN SHEEP

BLM's main concern about using the Northern Alternative 2 focuses on impacts to the Bighorn Sheep lambing area at Scaddan Mountain. However, the concern is not the effects of the powerline itself on the sheep, but rather that there may be increased access which may lead to greater human impacts on the sheep (EIS, p. 73).

Once again, this is a counterfeit issue. First, there already is considerable access into Scaddan Mountain. The east side is accessed by Gold Nugget Road, which ends at the Belle of Arizona mine. The north side of the mountain is accessed by a road or way to a gravel pit in Sec. 23, T. 4 N., R. 18 W. The south side (in Sec. 34, T. 4 N., R. 18 W.) is accessed by a Jeep trail which branches from the road to Plomosa. The area southwest of Scaddan Mountain is riddled with mines and tailings, making it attractive to prospectors, rockhounds, mining buffs, and general curiosity seekers. Thus it appears there is already an access "problem" at Scaddan Mountain. By contrast, there is much less access to the Livingston Hills, which also contain a Bighorn Sheep lambing area. The Livingston Hills are about the same distance (or less) from the PV-D #1 line as Scaddan Mountain would be from the PV-D #2 line.

2-84

24-14

However, as the EIS admits (p. 122), moving the centerline of Link 4b would increase the distance from the line to Scaddan Mountain and limit access. Fencing and gating could also be used if necessary to prevent new access into the area. We recommend that BLM do this. Moreover, if Scaddan Mountain is a critical Bighorn Sheep lambing site, we recommend that BLM designate it an ACEC. Why hasn't this been done already?

We object to the weight given to comments by the Arizona Desert Bighorn Sheep Society in BLM's decision to use the Kofa route (EIS, pp. 121, 126). We urge that other private organizations with an interest and expertise in wildlife be given equal weight. These would include the Wilderness Society, Sierra Club, and Audubon Society. What was the effect of PV-D #1 on access to the Livingston Hills lambing area? Surely the road was upgraded to provide access for construction of the line. These impacts were never

24-10 The resource comparisons in this comment are from Table 4.8-A, p.88, in the Draft SEIS and represent accurate depictions of visual resource categories that would be impacted by the project. The Draft SEIS (page 132) concludes that the addition of a second line through the Kofa NWR would significantly impact the quality of the visual experience. The Draft SEIS (p. 135) also describes the potential visual impacts along the Northern Alternative 2 route as significant, but the impacts are modified by visual contrast and competition from the highway and pipeline rights-of-way. The linearity and dominance of these features on the desert landscape tend to reduce the contrast the transmission line would have.

24-11 Although the Northern Alternative 2 route crosses less mountainous topography with moderate to high soil erosion hazards, potential impacts to soils (increased erosion) would be less along the proposed 24-11 route (Draft SEIS, p. 111). The primary difference is that less road cnt. grading or vegetation clearing would be required (approximately 3.0 acres per mile of transmission line along the Northern Alternative 2 route compared to 0.4 acres per mile along the proposed route).

24-12 Table 3.2-B (not 4-2B) on p. 42 of the Draft SEIS shows that the proposed route has 4 "high" and "moderate" impact ratings compared to 7 for Northern Alternative 2, and has 3 "preferred" ratings compared to 0 for Northern Alternative 2. This table was prepared by an interdisciplinary team of natural resource and other specialists; therefore, the BLM does not believe that the information presented in Table 3.2-B is biased or overgeneralized, and that it is well supported by the detailed analysis presented in the remainder of the Draft SEIS.

24-14 CONT. assessed because the Livingston Hills lambing area was not known at the time of the PV-D #1 EIS. However, these impacts should be evaluated as cumulative as part of the present PV-D #2 EIS. We find no such assessment.

24-15 Finally, the impacts of I-10 on Bighorn Sheep in the Plomosa Mountains should be assessed in this EIS. It seems likely that an Interstate Highway would have tremendous impacts on Bighorn Sheep movement, with its fenced right-of-way, speeding cars and large trucks, and blinding lights at night.

VISUAL RESOURCES

24-16 The present EIS admits that the PV-D #1 EIS seriously underestimated the visual impact of building a powerline across a National Wildlife Refuge with the Kofa's scenic grandeur (p. 132) and notes that in Plomosa Pass there are many visual distractions, such as the Interstate Highway itself, one (and eventually two) crude oil pipeline rights-of-way, and heavy vehicle traffic, including many large trucks (p. 135). Map 18-AZ should be changed to reflect this assessment.

24-17 Adding more towers to the Kofa Refuge WILL make a significant impact. Most people traveling the Kofa Refuge drive more slowly than those on I-10. They also come to see the refuge, while most travelers on I-10 don't drive it to see the Plomosa Mountains--their interest is to get from Phoenix (or farther east) to Los Angeles (or the opposite direction) as fast as they can. Given the speed of travel and the distance the powerline will parallel I-10 in Northern Alternative 2, people on I-10 will see a lot less powerline than will travelers to the Kofa Refuge. By the time they get to Blythe or Tonopah, I-10 travelers will have put the powerline in the back of their memories, if not forgotten it entirely. But travelers to the Kofa Refuge will remember colossi that loomed over them all across the refuge. Another set of towers would further compound the visual impact.

WILDERNESS

24-18 While we would prefer that Link 17 of the Northern Alternative 2 be used, which would put the powerline north of I-10 and avoid crossing a Wilderness Study Area, we could support release of enough of the New Water Mountains WSA to provide a powerline right-of-way if wilderness were also designated as part of the process. This need not be a long, drawn-out process. The entire Arizona Congressional Delegation is ready to work on a wilderness bill (see attached letter). Once Congress decides to move on an issue, progress can occur very fast. Thus we urge Southern California Edison and BLM to work with us to resolve this issue concerning the New Water Mountains WSA and wilderness. The powerline itself could well

24-13 The Tyson Wash area is about 2.5 miles south of Quartzite and approximately 1/4 to 1/2 mile west of the La Posa LTVA. It is currently designated as a "Special Management Area" which means it receives management attention similar to that of an ACEC. The BLM does not believe there are any conflicts with the LTVA; in fact, there has been no documented change in the condition of the resource over the past 10 years.

24-14 Your comments are noted. Please see response 22-6 and Appendix B for further discussions on the effects of the Davers-Palo Verde #1 project on bighorn sheep and anticipated impacts of the #2 project along the Northern Alternative 2 route and proposed route.

24-15 E. Linwood Smith (pers. comm.) and other biologists in the region believe that I-10 has created a significant barrier to north-south movement across Plomosa Pass.

24-16 The Draft SEIS (p. 132) notes the difference between Map 18-AZ and the anticipated high visual impact level that would be expected. Since a high impact rating was used in the analysis, the information does not change the conclusions in the Draft SEIS and a revised map is therefore not necessary.

24-17 The Draft SEIS on p. 132 notes that a significant cumulative impact would occur with a second set of parallel towers.

24-18 The BLM welcomes the opportunity to discuss options for the New Water Mountains WSA with members of the public. However, the BLM must base its environmental analysis for the proposed project on existing and reasonably foreseeable conditions. Unless the applicant for the proposed project requests that BLM delay the processing of its environmental review, the BLM can only consider current status and policies regarding any WSA.

24-18 CONT. serve as a further catalyst in speeding resolution of the wilderness issue.

TECHNICAL ASPECTS OF THE POWERLINE

24-19 What problems are seen with respect to production of nitrous oxide by corona resulting from the inordinately high voltage of this system? This is not addressed in the EIS.

24-20 What are the relative costs of underground vs. overhead transmission lines? The Pirelli patents of 60 years ago used 220 kV lines, and 345 kV underground lines are in use today. This was not addressed in the EIS.

24-21 What steps have been taken to avoid fouling and resultant energy losses on the PV-D #1 line? In standard practice (STANDARD HANDBOOK FOR ELECTRICAL ENGINEERS, Fink and Carroll, Section 17-287) urban areas require weekly inspection and service, while monthly intervals are preferred in more remote areas. This permits saving energy losses due to leakage and possible major accidents, which cost the consumer must ultimately bear.

24-22 The PV-D #2 line would be separated from the present transmission line by 130 feet. This represents a poor design practice to us. Hazards such as rockfalls, earthquakes, aircraft/vehicle strikes, or sabotage/terrorism would be greatly reduced by a completely separate routing for the second transmission line, especially in the remote, isolated parts of Arizona. This issue was not addressed in the EIS.

2-88

The PV-D #2 line, at 1200 megawatts (MW) is a twin of the PV-D #1 line. Together, they would supply a total of 2400 MW. Each of Palo Verde's plants will have a maximum capacity of 1270 MW, but from experience with other nuclear plants, this maximum will never be attained--some nuclear plants operate at less than 50% capacity. Theoretically, by 1988 the three Palo Verde plants will have a combined capacity of 3810 MW. According to the Arizona Corporation Commission (this state's public utilities commission), the ownership and rights are: Arizona Public Service, 29%; Public Service of New Mexico, 17%; Salt River Project, 11% (down from 29%), El Paso Electric, 17%; leaving Southern California Edison 26%.

24-23 Since SCE owns 26% of the nuclear plants' output, it would never own more than a theoretical maximum of 990.6 MW. Yet the PV-D #1 line can carry 1200 MW. It is not clear why a second PV-D line is needed. The present one is operated at a maximum of 82.5% of a theoretical maximum of the nuclear generators that will never be reached because nuclear plants just don't attain their maximum.

24-19 A separate technical report titled "Electrical Effects of High-Voltage Transmission Lines" was prepared as part of Volume II of the CPUC's Draft EIR for the project, and was included as Technical Appendix D of that EIR. Page 23 of that appendix says the following with regard to nitrogen oxides: "Nitrogen oxides are also produced by corona discharges from high voltage transmission lines. However, studies have shown that the amount of nitrogen oxides produced by corona is normally one-tenth of the quantity of ozone produced. The maximum ground-level concentration of nitrogen oxides produced by the proposed transmission line is expected to be negligible."

Because of similar conclusions for other effects of high voltage lines, these issues were not addressed specifically in the Draft SEIS (see section 6.0, p. 149).

24-20 The cost of undergrounding a 500 kV line is approximately 10 times greater than using towers (J. Kahle, Edison, pers. comm.).

24-21 Series compensation banks and routine maintenance procedures (described on p. 23 and pp. 29-30 of the Draft SEIS) will be used to avoid or minimize energy losses.

24-22 Please see response 23-6.

24-23 The applicant for the project (SCE) has stated that the Devers-Palo Verde #2 project is needed because the #1 line does not have sufficient firm transfer capability to accommodate Southern California Public Power Authority's and Modesto-Santa Clara-Redding Public Power Agency's firm resource entitlements in addition to its own Palo Verde share (Draft SEIS, p. 7). However, as part of its review, the California Public Utilities Commission (CPUC) conducted a detailed analysis of the need for the proposed project. The CPUC in San Francisco or Sacramento may be contacted for further information.

(The comments in this section were submitted by Dr. Lothar Schmidt of the Yuma Audubon Society.)

MITIGATION

24-24 While mitigation measures for California are clearly spelled out in the EIR, corresponding mitigation measures for Arizona appear to be absent from the EIS. We can hardly comment on their adequacy if we don't know what they are. The only list we can find is in Appendix E to the EIS, but mitigation measures are identified only by number and there is no table explaining what the numbers mean.

This is another inadequacy of the EIS--by the time we find out what the proposed mitigation measures are, it will be too late for public comment to influence the final EIS.

Obviously, measures similar to those for California should be included as a minimum.

24-25 We also hope that archaeological surveys will not be run during the hot months of June through August again (EIS, p. 93). This can easily lead to missed sites because of the unpleasantness of the working conditions.

24-26 How many counterpoises had to be used on PV-D #17 These can extend 100 feet (EIS, p. 28). It would seem they could have a significant effect on the vegetation, especially if a large number are used.

SUMMARY

24-27 The main point we wish to make is that Northern Alternative 2 is preferable to the route through the Kofa Refuge. A route following I-10 virtually all or most of the way through Arizona may also be preferable to the Kofa route, but we don't know because it was never analyzed in spite of the fact that it is a BLM-approved utility corridor.

We list the reasons above which support our preference, as well as the biases present in BLM's analysis which prevent reaching objective conclusions about the alternatives.

Thank you for the opportunity to comment on this proposal.

24-24 Mitigation measures for the proposed project in both Arizona and California are presented in section 3.4 (pp. 43 to 57) of the Draft SEIS. These and additional measures proposed for the project are also presented in Appendix A of this document.

24-25 Comment is noted.

24-26 No counterpoises were required on the Devers-Palo Verde #1 line. It is anticipated, therefore, that few, if any, would be required on the #2 project. If any are needed, BLM will require revegetation/rehabilitation of areas where vegetation is significantly disturbed. (Counterpoises are cables attached to the towers and firmly secured to the ground as much as 100 feet away in order to provide additional stability).

24-27 The BLM believes that when all factors are considered, the preferred route adjacent to the Devers-Palo Verde #1 line has the least potential for significant environmental impact. Please refer to section 1.3.5 for a discussion of why the route following I-10 was not considered to be a reasonable alternative.

Sincerely,

Cary W. Meister, Chairman
Conservation Committee

Encl.

2-88

Congress of the United States
Washington, DC 20515

April 8, 1987

TO INTERESTED ARIZONANS

RE: ARIZONA WILDERNESS ISSUES

Dear Friend:

Four years ago, the Arizona Congressional delegation sought the advice and comments of a broad cross-section of interested citizens throughout the State regarding wilderness designations. That detailed involvement and review by our constituents, including ranchers, miners, environmental groups, local government officials and other interested citizens, resulted in passage of the Arizona Wilderness Act of 1984.

That legislation saw more than a million acres of Forest Service (FS) and Bureau of Land Management (BLM) lands designated as wilderness. Still, most BLM roadless areas, as well as important wildlife refuges and some Forest Service and National Park wilderness proposals, are still outstanding in Arizona. It is important that these lands be removed from an administrative status and a decision made as to which should be returned to the multiple use planning process and which should be accorded the highest degree of protection allowable.

With the cooperation and involvement of interested citizens and groups in Arizona, it may be possible to resolve during the 100th Congress, the remaining wilderness issues in Arizona. We need to know of your views and concerns regarding specific areas whether currently proposed or under study, especially the BLM Wilderness Study Areas (WSAs). Your site-specific comments will help us determine whether it will be possible to reach a consensus and pursue a comprehensive legislative resolution within the next two years.

If there is going to be legislation, we need to build a grassroots consensus, as we were able to accomplish in 1984. We intend to gather and consider your comments during the year. Arizonans have already shown the determination and cooperation necessary to make this process work. We are soliciting your help in achieving that goal once again.

We know that you will have many questions and constructive suggestions and we invite you to contact our staffs for whatever assistance we can offer and to receive your comments.

Sincerely,

JOHN McCAIN

MORRIS K. UDALL

JIM KOLBE

DENNIS DeCONCINI

JOHN RHODES, III

JON KYL

BOB STUMP

LETTER 25

RECEIVED
BUREAU OF LAND MANAGEMENT
1987 JUL 30 PM
CALIF. DESERT DISTRICT
RIVERSIDE, CA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

Mr. William Haigh
Bureau of Land Management
California Desert District
1695 Spruce Street
Riverside, California 92507

Dear Mr. Haigh:

The Environmental Protection Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS) titled DEVERS-PALO VERDE #2 TRANSMISSION PROJECT.

Our review is based on the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508). Our comments on this document are enclosed.

We have classified the SEIS as Category EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of Rating Definitions and Follow-Up Action"). This SEIS is rated EC-2 because compliance with Section 404(b)(1) Guidelines of the Clean Water Act has not been demonstrated. The classification and date of EPA's comments will be published in the Federal Register in accordance with our public disclosure responsibilities under Section 309 of the Clean Air Act.

2-80

We appreciate the opportunity to review this SEIS. Please send four copies of the Final Environmental Impact Statement (FEIS) to Region 9 at the same time it is officially filed with our Washington, D.C. office. If you have any questions, please contact Harriet Hill, Federal Activities Branch, at (415) 974-8193 or FTS 454-8193.

Sincerely yours,

Deanna M. Wieman, Director
Office of External Affairs

Enclosure (3 pages)

Section 404 Permit Comments

1. The Devers-Palo Verde Transmission Line Project could involve the discharge of dredged or fill material into waters of the United States, particularly during the construction of access roads. Potential "waters of the United States" for the project include riparian areas, dry washes, and palm oases. Such actions must be authorized by Section 404 of the Clean Water Act.

   EPA will review the project for compliance with Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Material [40 CFR 230], as required by Section 404(b)(1) of the Clean Water Act.

   a. In the FEIS, BLM must document its consultations with the U.S. Army Corps of Engineers (COE), Los Angeles District, and EPA to ensure the project complies with these Guidelines.

      1) EPA's evaluation will focus on the maintenance of water quality and the protection of:

         a) fisheries and wildlife resources,

         b) threatened or endangered species, and

         c) special aquatic sites, including wetlands, as defined under Subpart E of the Guidelines.

   b. The FEIS should demonstrate the alternatives' compliance with the 404(b)(1) Guidelines, which:

      1) prohibit discharges which would result in significant degradation of the aquatic environment [230.12 (a-c)],

      2) require the selected alternative to be the least-damaging available to achieve the project purpose [230.10(a)(1-2)], and

      3) require that unavoidable adverse impacts to the aquatic environment be fully mitigated [230.10(d)].

25-1

2-81

Water Quality Comments

1. The FEIS should:

   a. Include specific Best Management Practices to minimize erosion during project construction and

25-2

25-1 The BLM has consulted with the U.S. Army Corps of Engineers (Corps) (Los Angeles District) concerning possible permit requirements. The Corps has indicated that a specific determination of areas requiring Section 404 permit and evaluation of the project's impacts and compliance with 404 (b)(1) guidelines will be conducted as part of its standard environmental assessment procedures. The formal evaluation will begin upon receipt of an application from SCE for a Section 404 permit.

25-2 Management practices designed to minimize erosion are described in Appendix A of this document. Specific measures include: Geology 4 through 6; Soils 1 and 2; Hydrology 1 through 4 (plus those proposed by SCE); and Vegetation 1, 2, 5, and 6.

25-2 CONT. Site-specific measures to control sedimentation in the Colorado River should be outlined.

25-3 2. Expand the mitigation measure on page 47 (paragraph 2) to include specific actions that will be taken to prevent surface water from being contaminated with debris, petroleum products, or other hazardous materials.

25-2 CONT. It is not anticipated that construction of the project in the flood plain would increase erosion or sedimentation into the Colorado River. Tower sites and road access on both sides of the river are on the landward side of levees, so there would be no direct drainage into the river. The Corps, however, will determine if any additional measures are necessary in its permit review of the project.

25-3 Vegetation mitigation measure 6 (Appendix A) has been expanded to require proper offsite disposal of mechanical and human waste material. Hydrology mitigation measures 12 and 13 have also been added to reduce potential contamination by hazardous materials.

3.0 MODIFICATIONS AND CORRECTIONS

3.0 MODIFICATIONS AND CORRECTIONS

3.1 TEXT REVISIONS TO THE DRAFT SEIS

Section 3.1 presents page by page text corrections to the Draft SEIS in tabular form. Column 1 indicates the page in the Draft SEIS on which the correction occurs (a partial paragraph at the top of the page is numbered as 1); Column 3 indicates the line within the paragraph; and Columns 4 and 5 present the text as it occurs in the Draft SEIS ("Is") and how it should be corrected or modified ("Should Be").

3.1 TEXT REVISIONS TO THE DRAFT SEIS

Page	Paragraph	Line	Is:	Should be:
X	5		"..Arizona Department of Game and Fish.."	Arizona Game and Fish Department
44	4	1-4	Link 9, which passes through the southern Palo Verde Valley agricultural lands, has no sensitivity to cultural resources because of alluviation of sites and extensive surface disturbance.	The portion of Link 9 that passes through the souther Palo Verde Valley agricultural lands has no sensitivity to cultural resources because of alluviation and extensive surface disturbance.
44	5	All	Helicopter construction should be considered on a site specific basic and used to avoid excessive new spur road construction in sensitive areas along alignments where there are no existing access roads close to the new tower sites. This would minimize the potential for erosion and slope instability. This alternative type of construction may be desirable in	The Authorized Officer will require, on a site specific basis, either helicopter or helicopter-assisted construction in sensitive areas. Sensitive areas are those that exhibit both: 1) High erosion potential and/or slope instability; and 2) lack of existing access roads within 1/4 mile or more of the tower site, or existing access that is not suitable for upgrading to

Page	Paragraph	Line	Is:	Should be:
44 Cnt.	5	All	the badlands areas and on the steeper slopes of the Indio Hills. However, helicopter construction recommendations for minimization of surface disturbance need to be balanced against the increased hazards and additional worker risk, particularly in areas of strong gusty winds. Helicopter construction is likely to have limited applicability in the project area.	accommodate conventional tower construction or line stringing equipment, and where it is determined that, after field review the issues of erosion and/or slope instability cannot be successfully mitigated through implementation of accepted engineering practices. This will avoid construction of excessive new spur roads and minimize surface disturbance in the "Badlands" areas and on the steeper slopes of the Indio Hills. However, these alternative methods will be balanced against potentially increased safety hazards during construction and maintenance activities, and are likely to have limited applicability.

Page	Paragraph	Line	Is:	Should be:
45	1	All	Construction of new access roads and soil disturbance should be avoided or minimized on slopes over 35 percent and all areas designated on the geology maps and soil erosion maps (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR) as having high wind and water erosion hazards or potential slope instability, and where extensive new spur access roads may be required. Placement of towers by helicopter should be considered in these areas depending on safety factors. This is likely to have limited applicability.	New access roads and soil disturbance will be avoided or minimized in all areas designated as having high erosion hazards or potential slope instability (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR). If the Authorized Officer, after consultation and review of alternatives (including helicopter or helicopter assisted construction) deems the proposed new access road feasible, design plans must be submitted for approval, in writing, prior to construction.

Page	Paragraph	Line	Is:	Should be:
124	1	2-4	This alternative crosses 1 mile of the Big Marias ACEC (Link 7, milepost 1.6 to 2.6) and approximately 3 miles of priority wildlife habitat in the Dome Rock Mountains.	This alternative crosses 1 mile of the Big Marias ACEC (Link 11, milepost 1.6 to 2.6) and approximately 3 miles of priority wildlife habitat in the Dome Rock Mountains.
144	2	1-3	The Southern Alternative may be considered to potentially cause the fewest impacts among alternatives to the proposed route by virtue of being the shortest length.	One might think that the Southern Alternative would have a lower potential for impacts because it is the shortest of the alternatives considered.
156	3	2-8	Darwin Snell, District Manager Mike Werner, Surface Protection Specialist T. Hughes, Biologist Jim Adkins, Environmental Coordinator Alan Belt, Area Manager Bob Abbey	J. Darwin Snell, District Manager Bob Abbey, Assistant District Manager for Resources Allan Belt, Yuma Resource Area Manager Mike Werner, Surface Protection Specialist

Page	Paragraph	Line	Is:	Should be:
156	3	2-8	Susanna Henry, Biologist	Tim Hughes, Biological Technician Jim Atkins, Environmental Specialist Susanna Henry, Wildlife Biologist Dennis Turowski, Outdoor Recreation Planner

4.0 LITERATURE CITED

4.0 REFERENCES AND LITERATURE CITED

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APPENDICES

APPENDIX A
MITIGATION MEASURES

MITIGATION MEASURES

BLM REQUIRED MITIGATION MEASURES

The following describes measures, listed by resource topic, which will be required by the BLM to be incorporated into the project design to mitigate potential adverse impacts of the Devers-Palo Verde #2 project. Measures incorporated by SCE into their project design or otherwise described by SCE in the Proponent's Environmental Assessment (PEA) (SCE 1985) are provided following the BLM mitigation measures.

Most described mitigation measures would be applicable to any alternative. Where a measure is specific to a single alternative, it is specifically identified as such.

Access Roads

Although the holder may restore and maintain existing access roads, they cannot be either widened or upgraded.

Geology

Measures to mitigate the potential geologic impacts and constraints are listed below and are equally applicable where appropriate to the proposed and alternative routes. It is noted that these measures have been proposed by the holder (also referred to as right-of-way holder or "holder") in general terms (See SCE Geology Mitigation Measures) and are fairly standard procedures; those described below are, however, more specific than those indicated in the PEA (SCE 1985).

1. Transmission towers will not be sited on nor straddle the mapped traces of any known fault that has been designated active or potentially active (see Figure 4.2-1 in the CPUC Draft EIR). In areas where known faults are present the holder will visually check the tower site area before clearing, and will check the tower footing holes for any trace of a previously unmapped fault. If manifestations of a fault are found, construction will immediately stop at that site and the holder will consult with the BLM Authorized Officer. The BLM Authorized Officer will determine if it is a fault trace and if so, will ascertain if it is active, potentially active, or inactive.

2. Towers will be located so that the line will span the surface traces of active and potentially active faults such that a relative lateral surface displacement would shorten the span between towers, and thus avoid potential line breaks. Where this is not feasible, the holder will incorporate slack spans to bridge the fault(s) such that the projected lateral surface displacement, as forecast by the holder's geologist and accepted by the BLM Authorized Officer, will not structurally affect the associated towers.

3. Appropriate tower design will be used to mitigate the potential for very strong seismic ground shaking. In general, an appropriate tower design which accounts for lateral wind loads and conductor loads during line stringing exceeds any credible seismic loading (ground shaking). Transmission lines have historically performed well during earthquakes, and there has never been a tower failure in California due to an earthquake.

4. Towers will be located to avoid areas of highly sensitive dune sand (see Map 10-AZ in the Draft EIS and Figure 4.5.1 in the CPUC Draft EIR). Where these areas cannot be avoided, towers will be located to minimize disturbance to the deposits at a site approved by the BLM Authorized Officer.

5. Towers will be located to avoid gullies or active drainages, and oversteepened slopes wherever possible to minimize the potential for slope instability.

6. The Authorized Officer will require, on a site specific basis, either helicopter or helicopter assisted construction in sensitive areas. Sensitive areas are those that exhibit both: 1) High erosion potential and/or slope instability; and 2) A lack of existing access roads within a reasonable distance of the tower site (generally no more than 1/4 mile), or existing access that is not suitable for upgrading to accommodate conventional tower construction or line stringing equipment, and where it is determined that after field review the issues of erosion and/or slope instability cannot be successfully mitigated through implementation of accepted engineering practices.

This will avoid construction of excessive new spur roads and minimize surface disturbance in the "Badlands" areas and on the steeper slopes of the Indio Hills. However, these alternative methods will be balanced against potentially increased safety hazards during construction and maintenance activities, and are likely to have limited applicability.

Soils

Mitigation measures to reduce adverse impacts on soil resources are applicable to the proposed and alternative routes. The following mitigation measures are recommended by BLM:

1. New access roads and soil disturbance will be avoided or minimized in all areas designated as having high erosion hazards or potential slope instability (see Maps 8 and 9-AZ, Appendix F; and Figures 4.2-1 and 4.3-1 in the Devers-Palo Verde #2 EIR). If the Authorized Officer, after consultation and review of alternatives (including helicopter or helicopter assisted construction) deems the proposed new access road feasible, design plans must be submitted for approval, in writing, prior to construction.

2. New access roads which are required will be designed to minimize ground disturbance from grading. They will follow natural ground contours as closely as possible and include specific features for road drainage, including water bars on slopes over 25 percent. Other measures could include drainage dips, side ditches, slope drains, and velocity reducers. Where temporary crossings are constructed, the crossings will be restored and repaired as soon after completion of the discrete action associated with construction of the line in the area as possible.

Hydrology

The holder has indicated in the PEA (SCE 1985) that normal engineering design will consider potential hydrologic problems. This is a standard procedure and is assumed to be adequate for mitigation; however, a more specific description than was provided in the PEA is provided here for the reviewer's information. The following measures will be required by BLM and are applicable for the proposed and alternative routes:

1. Side casting of soil during grading will be minimized. Loose, sidecast fill can be a significant source of erodible material. Excess soil will be properly stabilized or, if necessary, end-hauled to an approved disposal site.

2. During the first year following construction, potential soil erosion sites will be inspected by the holder after each major rain storm as access permits. For the purpose of this measure, a major rain storm is defined as any singular storm where the total precipitation exceeds the arithmetic mean for similar events in the area and results in flooding. Examples include cloudburst (high quantity - short duration) or storms where saturated soils produce runoff (high quantity - long duration).

3. Construction equipment will be kept out of flowing stream channels except when absolutely necessary to construct crossings.

4. Erosion control and hazardous material plans will be incorporated into the construction bidding specifications to insure compliance. A representative of the holder responsible for contract compliance inspection officer will be designated for quality assurance.

Biological Resources

Vegetation. The holder's proposed mitigation measures (SCE 1985) are generally adequate regarding botanical resources. Most sensitive features can be spanned effectively. Details of proposed transplant efforts need to be identified. Additional mitigation guidelines, as given in Appendix N by E. Linwood Smith and Associates (1985) and presented for California in Appendix B of the Devers-Palo Verde #2 EIR and for Arizona in Appendix E of the SEIS, will be required by BLM and followed to the extent feasible. A summary of the primary recommended mitigation measures follows:

1. Use existing access roads to the greatest extent possible, thereby minimizing new road construction and the associated ground disturbance.

2. Minimize the amount of road improvement needed for existing roads and for new tower access on flat terrain. This would reduce loss of individual plants.

3. 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.

4. Provide additional detailed surveys and tower-specific adjustments 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.

5. Minimize the area needed for equipment operation and material storage and assembly.

6. Prevent contamination of natural landscape and waterways with oil, grease, other chemicals, and any construction-related debris by requiring proper offsite disposal of all mechanical and human waste materials in the contract bid specifications. (Also see hydrology mitigation measures 12 and 13.)

7. Initiate transplant efforts for Ferocactus and Coryphantha 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.

8. 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.

9. Conduct preconstruction surveys of proposed construction areas in the segment west of Devers to identify if any resource features of concern are present or require specific detailed siting/avoidance measures. The methodologies and results of these surveys must be submitted to and approved in writing by the BLM Authorized Officer.

Wildlife. Significant impacts to wildlife resources will be avoided and other impacts minimized to the extent practical by adhering to mitigation measures presented by the holder in Section 7.6 of the PEA, as well as adopting the measures previously described for vegetation and additional measures required by BLM which are described below.

1. Existing tower spacings and conductor heights will be matched to the extent practical. This would reduce the potential for bird collisions with the powerline.

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) will be spanned to the extent possible (minimum habitat loss or alteration).

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 of good tortoise density, within tortoise crucial habitat, and within an area where tortoise conservation is a priority (e.g., Chuckwalla Bench ACEC). The rate of compensation will be determined by BLM after discussions with the Department of Fish and Game, the Desert Tortoise Council, and the holder. The lands delivered to the United States to be administered by the BLM.

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.

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. 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. Tortoises will be released as soon as possible at or near the site of capture.

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.

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 plants, yet be as short as possible within these requirements. Due to the presence of silty soils in Arizona, blading may occur.

8. Any desert tortoise observed on access roads or work areas will be moved immediately 100 yards away from the roadway into safe areas.

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 and Figure 4.5-2 in the Devers-Palo Verde #2 EIR. Also see Appendix E for link and milepost descriptions and mitigation measures.

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 windblown sand habitat, the road will be returned to natural conditions and effectively closed (gated or bermed) following con-

struction. This would reduce the potential for secondary impacts such as off-road vehicle use and reduce the long-term loss of this critical habitat. Pre-construction surveys will identify wind-blown sand dune habitat.

11. Where the project crosses through the Coachella Valley Preserve, the holder will cooperate with the preserve in closing (gating) existing access roads. 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, milepost 5.0. A preconstruction biological survey will also be conducted through Links 14 and 16 to identify if any additional areas of occupied CVFTL and FTHL habitat are present along the route or at construction staging areas. This survey will be conducted during appropriate seasons and conditions for species identification. For any areas of suitable habitat, mitigation measure number 11 will apply.

12. In the Coachella Valley, compacted soils should be scarified and seeded with a mix of native plant seeds, including bugseed (Dicoria canescens), to promote revegetation of plant species valuable to the lizard.

13. Where the proposed route crosses the Kofa National Wildlife Refuge, the holder will coordinate with the U.S. Fish and Wildlife Service refuge management personnel to determine specific tower site and spur road locations in order to minimize habitat disturbance and/or the loss of valuable habitat features.

14. Construction will be prohibited in or near bighorn sheep lambing areas from January 1 to March 31. These areas along the proposed route include link 2 (milepost 29.0 to 34.0) and link 6 (milepost 0.0 to 6.0).

15. The BLM will work with the Arizona Game and Fish Department to minimize temporary construction disturbance to catchment #660 and the holder will develop another catchment in a suitable location as identified by the Authorization Officer.

In addition to the previously described measures, the following measures are recommended for the Northern Alternative 1 and Northern Alternative 2 routes in order to reduce the potential for direct or indirect impacts to bighorn sheep:

16. In Link 5, where the Northern Alternative 1 route crosses the Plomosa Mountains (mileposts 7 to 14), helicopters will be utilized to construct the transmission line and ferry work crews in and out of the area. This measure would be necessary to avoid constructing new roads or creating vehicle trails which would encourage off-road vehicle use in this area.

17. In Northern Alternative 2, the transmission line in Link 4b will be routed to the west to further avoid the bighorn sheep lambing habitat on Scadden Mountain. This may be accomplished by continuing the route southwesterly, parallel to Interstate 10, from milepost 10 to an interconnection point in Link 17 at milepost 14.0. The route would then continue in Link 17 to Link 4c.

Visual

General Considerations. A number of mitigation measures will be required by BLM on Federal land throughout one or all of the alternative corridors to reduce the visual presence of transmission facilities. These measures are listed below:

1. For all alternative alignments, nonspecular conductors will be used. (An exception would be on Link 10 of the proposed route through Blythe where specular conductors are recommended for aircraft safety. See Section 5.5 of the Devers-Palo Verde #2 EIR.)

2. 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.

3. For alternatives involving new alignments, siting of any access or spur roads will follow the area's landform contours, providing that such alignment does not additionally impact resource values. Towers will be sited to avoid sensitive features and/or allow conductors to span sensitive features. At all highway and recreation routes-of-travel crossings, including the Colorado River, towers will be placed at the maximum feasible distance, and at right angles, from the crossing.

The following are site-specific mitigation measures for high impact areas along the proposed route (links 1, 2, 6, 10, 12, 13, 14, and 16).

4. Orocopia Mountains (Link 13, Milepost 52 to 53.5). As depicted in Figure 5.7-4 of the Devers-Palo Verde #2 EIR, existing access road and fill areas which create a significant visual impact will be treated with Eonite or similar treatments. This will reduce the visual contrast created by the light-valued disturbed soils with the darker-valued, vegetated surroundings. The holder will consult with BLM on a site by site basis for the use of Eonite. No new access roads will be constructed or upgraded. No widening or upgrading of existing roads will be undertaken. New towers in this section will ideally be constructed downhill from existing towers to avoid the potential for skylining. Towers will be placed to avoid sensitive features.

5. Interstate 10 Crossing (Link 13, Milepost 65). Where feasible, new towers will be aligned such that the top alignment of the towers is horizontal to the eye. Towers immediately adjacent to the highway at the crossing will be placed at right angles to the existing towers and as parallel to the Interstate as possible to avoid a "scalloping" effect of the conductors crossing over the highway.

Park, Recreation, and Preservation Area Mitigation

1. The holder will meet with Riverside County and BLM park and recreation section staff to explore possibilities of sharing rights-of-way where the project crosses the proposed County and BLM trails.

2. Through consultation with Coachella Valley Preserve (CVP) representatives, the holder will assist efforts to enclose and gate the CVP.

General Mitigation

At the end of the project's useful life, the transmission line would be abandoned. Subsequently, conductors, insulators, hardware, and towers on public land will be dismantled and removed. Dismantling of towers on private lands will be accomplished by the utility at the owners discretion. Tower footings will be removed at the owner's discretion. The removal of towers and footings will be most important in agricultural and residential areas.

Socioeconomics

Demographic changes in the project study area are anticipated to be insignificant; therefore, no mitigation is proposed. It is recommended, however, that the holder coordinate the California and Arizona work crews, as well as pipeline and state prison construction project crews and other major project personnel, to avoid significant impacts to temporary housing supply in the Blythe area, particularly during peak tourist season, and to ensure adequate accommodation for construction crews.

Acoustic Considerations

Construction Noise. To substantially reduce the short-term noise impacts during construction, the following measures are recommended:

1. Limit the hours of construction occurring within 500 feet of noise sensitive receptors (human occupied facilities such as residences and hospitals) to between ?:00 am and 5:00 pm during weekdays (proposed route; Northern Alternative 1, Link 5; Northern Alternative 2, Links 4c or 17; Southern Alternative, Link 7).

2. Locate construction yards at least 500 feet away from residences.

3. Minimize the use of helicopters within 500 feet of residences.

4. Notify residents within 500 feet of any upcoming noisy construction activities and schedule the activities, when possible, to minimize conflicts with the neighbors.

Cultural Resources

The following mitigation measures are recommended for the Devers-Palo Verde #2 transmission line relative to archaeological and historical resources. These recommendations provide a means to comply with the National Historic Preservation Act of 1966, as amended, in accordance with procedures codified in 36 CFR Part 800. These procedures provide a formal decision-making strategy to identify and protect cultural resources and to provide appropriate State Historic Preservation Officers and (SHPO) the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on federal agency actions.

The following tasks will be carried out to ensure compliance with applicable laws and regulations in accordance with Programmatic Memoranda of Agreement for California and Arizona among the BLM, SHPOs, and ACHP.

1. All resources will be inventoried by the cultural resource contractor (CRC). The nature and extent of inventory will be determined by BLM in consultation with the appropriate SHPO and will be based upon project engineering specifications.

2. The CRC will evaluate all cultural resources for significance and make recommendations for National Register eligibility. Determinations of eligibility will be made by BLM in consultation with the appropriate SHPO.

3. The CRC will prepare a Cultural Resource Treatment Plan for National Register eligible sites to mitigate identified impacts. Avoidance or testing and data recovery will be used as mitigation alternatives. Priority will be given to avoidance through project design. If avoidance is not feasible at specific sites, data recovery or other mitigation measures will be undertaken in consultation with BLM and SHPO.

4. The Advisory Council Historic Preservation will be given an opportunity to comment on proposed mitigation in accordance with the Programmatic Memoranda of Agreement applicable to California and Arizona.

5. Notices to Proceed will be issued following completion of any field work determined necessary through the inventory, evaluation and consultation process described above.

A site specific program of mitigation will be undertaken for the proposed right-of-way, if selected. Intensive cultural resources field surveys will be conducted along staked rights-of-way for all newly proposed access roads. Intensive cultural resource field surveys also be undertaken at the three new construction yards or any other projected impact areas outside of the previously surveyed corridor. Site specific field surveys will also be undertaken at all projected areas of impact within the previously surveyed corridor that coincide with previously recorded site locations. Visual inspection by a qualified archaeologist will be used to determine if prior mitigation efforts are adequate to mitigate new impacts or if further mitigation efforts in the form of project redesign or data recovery are required.

An intensive cultural resource field survey will be carried out within any alternative corridor selected. The selected right-of-way will be staked prior to this survey. The survey will be of sufficient nature and extent to identify intensive Class III inventory of all cultural resources with a staked right-of-way. The survey corridor will have to be of sufficient width to identify impacts from tower pad construction, access road installation, and transmission line construction and operation. All cultural resources must be evaluated for significance so that BLM and SHPO can make National Register eligibility determinations.

Priority will be given to avoidance through project design as the preferred mitigation alternative. If that is not feasible at specific sites, a program of data recovery will be developed within the context of an explicit research design.

SOUTHERN CALIFORNIA EDISON COMPANY'S MITIGATION MEASURES

The following mitigation measures are included by Southern California Edison Company (SCE) in their project design or otherwise described in the PEA.

Recreational Resources

1. Minimize construction during heavy recreational use periods, including major holidays in selected areas.

Geology

Mitigation of potentially significant impacts to the western end of the proposed transmission line due to (1) potential surface fault rupture along the Banning, Mission Creek, and Mecca Hills faults, and (2) potential for severe seismic shaking can be achieved by standard design methods listed below.

1. Towers will be sited so as not to straddle active fault traces.

2. The alignment will be designed to cross an active fault such that future rupture on the fault would not cause excessive stress on the line or the towers.

3. Standard foundation and structural design measures will be utilized to minimize the impact from severe seismic shaking.

Hydrology

1. Appropriate design of tower footing foundations, such as raised foundations and/or enclosing flood control dikes, will be used to prevent scour and/or inundation by a 100-year flood.

2. Towers will be located to avoid active drainage channels, especially downstream of steep hillslope areas, to minimize the potential for damage by flash flooding and mud and debris flows.

3. Appropriate design of tower foundations will be used to reduce the potential for settlement and compaction.

4. Diversion dikes will be required to divert runoff around a tower structure if: a) the location in an active channel cannot be avoided; and b) where there is a very significant flood scour/deposition threat, unless specifically exempted by the BLM Authorized Officer.

5. Runoff from roadways will be collected and diverted from steep, disturbed, or otherwise unstable slopes.

6. Ditches and drainage concourses will be designed to handle the concentrated runoff, will be located to avoid disturbed areas, and will have energy dissipations at discharge points.

7. Cut and fill slopes will be minimized by a combination of benching and following natural topography where possible.

Land Use

Potential mitigation measures were applied to high and moderate impact levels following the implementation of the impact model described in Human Environmental Resource Studies: Devers-Palo Verde #2 Transmission Line Project (Draft) conducted by WIRTH Environmental Services.

1. Link 2 Low to moderate impacts would result during the construc tion phase of the project where Link 2 crosses the Kofa National Wildlife Refuge. These impacts could be minimized by the following mitigation:

2. Existing access (gas pipeline roads) will be used during the construction and operation phases of the project. Access to each tower site will use existing spur roads off the gas pipeline roads. When access crosses the actual gas pipelines, fill dirt would be placed on top of the pipelines in order to protect the pipe from construction equipment passing over the pipe. In general, all access roads may need to be refurbished in order to provide proper access during construction. All vehicular traffic would be limited to approved access or spur roads. No off-road travel would be permitted. Construction activity would be scheduled to avoid major holidays.

3. Link 10 - The proposed route will parallel the existing right of way, use H-frame tower design in agricultural areas, and towers will be spaced to the existing Devers-Palo Verde #1 line.

4. Link 13 - Towers will be placed so as to avoid sensitive areas and/or to allow conductors to clearly span such areas.

Cultural Resources

1. Cultural resource mitigation may take one or more of the following forms: avoidance (preferred), preservation in place, and/or data recovery/recordation. Precise mitigation measures would be developed on a case-by-case basis subsequent to complete inventory and in consultation with the responsible regulatory entities and representatives of locally affected Native American groups. Mitigation measures would be undertaken prior to construction in the affected area.

Biological Resources

The following discussion presents general mitigation measures to avoid or minimize impacts to biological resources as recommended by the holder in the PEA (SEC 1985).

1. Where possible, towers or access roads will be located so as to avoid individual plants or plant communities. Where this is not feasible, affected individual plants will be transplanted. Towers will also be placed so that the lines will span critical wildlife habitat.

2. Tower sites will be selected to allow maximum spanning of sensitive features.

3. New access road construction will be kept to a minimum.

4. Conduct site-specific surveys for sensitive plant and wildlife species and note individual occurrences.

5. Limit construction activities to those months of the year when conflict with bighorn sheep would be minimal.

6. 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.

7. Avoid construction activities that would tend to create wind barriers that might result in sand stabilization in order to minimize impacts to populations of the Coachella Valley fringe-toed lizard.

Noise

1. Schedule construction activities to avoid major holiday periods where the route crosses Indio Palm's State Park in Link 14.

Visual

Several general mitigation measures to reduce the visual impact of the proposed project have been suggested by the holder in the PEA. These measures are listed below:

1. Standard tower spacing would be modified to correspond with spacing of existing transmission line towers where feasible and within limits of standard tower design to reduce visual contrast.

2. Towers would be placed so as to avoid features and/or to allow conductors to clearly span the feature (within limits of standard tower design) to minimize the amount of sensitive feature disturbed and/or reduce visual contrast (e.g., avoiding skyline situations through placement of tower to one side of a ridge or adjusting tower location to avoid highly visible locations and utilize screening of nearby landforms).

3. Conductors will be constructed of nonspecular material.

Public Health and Safety

1. While no significant or potentially significant health and safety impacts will result, this transmission line is designed to minimize exposures to electric and magnetic fields. Engineering design considerations include the height of the towers, amount of line sag allowed, and the right-of-way widths utilized to minimize the generation of electromagnetic fields. Physically grounding all

potentially conductive objects to the earth will minimize the occurrence of annoyance shocks. Finally, public concerns will be addressed by Edison as they arise.

General Mitigation

1. Site specific areas that require mitigation measures will be coordinated with the agency specifically involved with those areas, such as governmental agencies listed in Exhibit F of the application.

West of Devers Related Transmission Facilities

1. Land Use and Visual Resources. Where the existing corridor crosses State Scenic Highway 62 and Interstate 10, or where the line is close to residential areas, non-specular wire would be used to decrease the visibility of the conductors. In the few locations where new construction access may be required, grading would be done to minimize visual impacts; and where roads are not required for maintenance, they would be returned to pre-construction conditions.

2. Cultural Resources. Precise mitigation measures (avoidance, preservation in place, and/or data recovery/recordation) would be developed on a case-by-case basis subsequent to complete inventory and impact assessments, and in consultation with the responsible regulatory entities and representatives of locally affected Native American groups. Mitigation measures would be undertaken prior to construction in the affected area.

APPENDIX B
STUDIES OF DESERT BIGHORN SHEEP

DAMES & MOORE A PROFESSIONAL LIMITED PARTNERSHIP
POINTE CORPORATE CENTRE, 7500 NORTH DREAMY DRAW DRIVE, SUITE 145
PHOENIX, ARIZONA 85020 (602) 371-1110

Mr. Steve Foreman
14 Galli Drive
Suite A
Novato, CA 94949

2 November 1987

Dear Steve:

Enclosed is a revised copy of the bighorn sheep impact report synopsis. I found about a dozen other gliches in the original, all have been corrected. The one table you asked about was, as I had suspected, data for another sheep, not for sheep 10A.

If you have any other comments or questions, please do not hesitate to contact me.

Sincerely Yours,

E. Linwood Smith, Ph.D.
Regional Director,
Biological Resource Studies

3030 N. Longhorn Drive
Tucson, Arizona 85749

STUDIES OF DESERT BIGHORN SHEEP (*OVIS CANADENSIS MEXICANA*) IN WESTERN ARIZONA

IMPACTS OF THE PALO VERDE-DEVERS 500kV TRANSMISSION LINE 1

FINAL REPORT SUMMARY

Submitted To:

Southern California Edison Company
Rosemead, California

Submitted By:

E. Linwood Smith, Ph.D.
Regional Director,
Biological Resource Studies
Dames & Moore

30 October 1987

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INTRODUCTION

During the early planning stages for the Devers-Palo Verde 500kV Transmission Line 1, it became apparent that none of the potential alternative routes could be constructed without passing through or very near high quality desert bighorn sheep (Ovis canadensis mexicana) habitat in western Arizona. Moreover, discussions between the proponents of the line, Southern California Edison Company (SCE) and Arizona Public Service Company (APS), and land and wildlife management agency personnel indicated a wide divergence of opinion relative to the potential impact of a 500kV transmission line in bighorn habitat. Some wildlife experts felt that such a line would interrupt normal movement patterns, prevent sheep from using traditional water sources, interfere with lambing, and cause sheep to abandon traditional home ranges; others felt that the line would have little or no effect. Consequently, SCE management made a decision to fund a major study of desert bighorn in western Arizona in order to generate hard data on the actual effects of the proposed transmission line. A contract to conduct the studies was issued to E. Linwood Smith & Associates, Tucson, Arizona in September 1977.

The study began in late November, 1977 when the Arizona Game and Fish Department captured and radio-collared 20 bighorn in the Plomosa, New Water, and Dome Rock Mountains. The field data collection portion of the study ended on 1 January 1984. The fundamental study design revolved around collection of field data prior to construction of the transmission line (baseline data) and collection of identical kinds of data during the construction and post-construction periods. The original study was to last five years; two years baseline, one year

construction, and two years post-construction. Due to construction delays, however, the baseline data collection period extended from 1 December 1977 to 28 February 1981, construction of Palo Verde-Devers Line 1 occurred in the western Arizona study area between 1 March and 18 December 1981 and the line was energized on 17 March 1982. The post-construction period extended from 19 December 1981 to 1 January 1984.

The study area was expanded in November, 1979 when two ewes were captured and radio-collared in the Livingston Hills, situated between the Kofa and the New Water Mountains. In October, 1981 at the request of the U.S. Fish and Wildlife Seervice, Kofa National Wildlife Refuge (KNWR), the study area was further expanded with the collaring of 7 bighorn on the KNWR and the hiring of a second field biologist to monitor the KNWR radio-collared population.

The data collected, and partially summarized in the following synopsis, resulted from a total of 504 aerial relocation flights (one flight approximately every five days for the duration of the study), 11,321 relocations of radio-collared sheep, and information contained on 2242 double-sided visual observation forms. The number of radio-collared sheep in the study population ranged from a low of 13 (due to radio collar failures) in the fall of 1978 to a high of 37 in October, 1981.

Two of three volumes of the final report for the project have been completed; Volume I contained findings from the Kofa National Wildlife Refuge studies, and Volume II deals with the impacts of the Palo Verde-Devers 500kV Transmission Line 1. The following is a brief summary of Volume II and deals with human activity levels in the study area, responses of desert bighorn to human-caused disturbances, and construction and post-construction impacts to desert bighorn.

HUMAN ACTIVITY IN THE STUDY AREA

INTRODUCTION

Seasonal temperature variation is the primary determinant of human activity in the study area. Mild winter temperatures and social events sponsored by the Town of Quartzsite on Interstate 10 attract many thousands of winter visitors. The permanent population of Quartzsite is around 600 people, but this number swells to well over 12,000 during the winter months with many people residing in the large Bureau of Land Management campgrounds located south of the town. Members of this winter resident population spend considerable time in the study area gathering wood for carving and fires, rockhounding, hiking, pleasure driving (including all terrain vehicle use on washes that penetrate the heart of the study area), camping, and hunting. Peak activity occurs during the first week of February when the annual five-day Quartzsite Pow Wow is held. In 1978 750,000 people attended the pow wow and over 1,000,000 people passed through the area (Witham et al., 1980; Jones, 1979; Feitz, 1980).

During the late spring through mid-autumn months the numbers of people in the study area is greatly reduced due to extremely warm temperatures (daytime highs in excess off 110 degrees are common). Some activities that continue through these months include mining, mine claim maintenance, cattle ranching, and limited hiking and rockhounding.

METHODS

In order to attempt to quantify human activity levels in the study area, traffic counters were placed on roads that entered bighorn habitat. We assumed that the quantity of vehicular traffic on these roads would be a reasonably good barometer of the amount of human activity in the study area. Biannual samples were taken during mid-winter and mid-summer from the Plomosa Road, a county maintained road that connects the towns of Quartzsite and Bouse, the gas pipeline road in Copper Bottom Pass (also part of the transmission line corridor), and South La Posa Road, which enters the New Water Mountains. During the post-construction period the above three roads were sampled as were the north and south Gold Nugget Roads, east of Quartzsite in the Plomosa Mountains, and the north La Posa Road. Samples were also collected from Copper Bottom Pass during the height of the construction period. Unfortunately we lost many samples over the years due to stolen, vandalized, and malfunctioning traffic counters.

RESULTS

As expected the highest levels of human activity in the study area occurred between the months of December and March and the lowest between June and September. During the preconstruction period, the number of vehicles traveling in Copper Bottom Pass never exceeded an average of five per day during the winter months and averaged well below one per day during the summer. On the Plomosa Road we noted a steady annual increase in vehicular traffic as the study progressed; in 1978 we recorded a high of approximately 30 vehicles per day, a similar number in 1979, 45 in 1980, and 60 per day in 1981. On the South La

Posa Road we noticed an opposite trend in winter with more than 50 vehicles recorded per day in 1978 and 1979, about 35 in 1980, and slightly over 20 in 1981. During the summer months of those same years vehicles recorded on the Plomosa Road was consistently between 0 and 5 while on the South La Posa Road traffic recordings were almost always 0 to 1 per day.

In Copper Bottom Pass an average of 18.9 hits per day was recorded during the construction period as construction vehicles moved in and out of the area. Following construction, an average of 10 hits per day was recorded in Copper Bottom Pass in February, 1983. The latter compares with 1.8 and 3.5 hits per day in 1978 and 1979, respectively. Other roads monitored showed a pattern very similar to that recorded during the preconstruction period (i.e., maximum use in the winter months and dropping to near zero use in the summer).

It is clear that the greatest amount of human ingression into the Plomosa, New Water, and Dome Rock Mountains occurs during the cooler winter months. A similar pattern almost certainly exists in the Kofa Mountains, however we did not do any monitoring of human activity in the Kofas. Relative to impacts on desert bighorn resulting from winter human activity, winter is the least stressful season owing to the general availability of water and forage. Also, it is doubtful that very many of the occupants of vehicles entering the various mountain ranges ever get more than one-half mile from their vehicle. Our experience with observing people is that most appear to be sightseeing, collecting ironwood or rock samples and most confine these activities to areas very near where they park. We have never encountered a non-biologist in remote portions of the study area (e.g., areas that require one to walk several

kilometers). Moreover, the primary evidence of human activity in such areas is manifest in the form of rock cairns marking mining claims. Consequently it is our opinion that despite the large numbers of people present in the Quartzsite area in winter, few of them get into prime bighorn habitat and, while some disturbance to sheep does accrue, we feel that the impacts are relatively minor.

RESPONSES OF DESERT BIGHORN TO HUMAN CAUSED DISTURBANCES

METHODS

Over the course of the study we recorded a total of 2242 observations of bighorn that were of adequate duration to warrant filling out a field data sheet (see Figure 1). Frequently groups of sheep under observation were confronted by people (usually the field biologist), trucks, helicopters, airplanes or other animal species. When a potential disturbance was witnessed, we recorded the distance the sheep were from the disturbance and the distance the animal(s) moved away from the disturbing feature and the animal's reactions. From these observations we ranked sheep responses to disturbance on a scale of 0 (no observable reaction) to 4 (severe, obvious reaction). Descriptions of the five reaction categories are presented in Table 1. The majority of disturbances were cuased by a solitary individual (usually the observer), 2 individuals, the Cessna 172 aircraft used in relocation flights, and parked vehicles. The responses of groups of sheep to disturbances were evaluated based on group composition (e.g., ram, ewe, or mixed groups), the presence of lambs in the group, group size, and distance to the disturbance. In the case of airplane caused responses, it should be noted that all observations were made from inside the airplane.

S.C.E./A.P.S.
DESERT BIGHORN
STUDIES

Visual Observation No. _____
Date _____
Frequency _____
Time _____

General Location _____
Metric Coordinates _____ X _____

Band Size _____ Accurate Count: Yes No Observation Distance _____

Ad. Ewes _____ _____ Wet _____ Dry _____
Y. Ewes _____ _____ Able to age animals: Yes No
Lambs _____ _____ Newborn __ One Week ___ Months: one___ two___
Y. Rams _____ _____ three _____ four _____ four+ _____
R I _____ _____ _____
A II _____ _____ _____
M III _____ _____ _____
S IV _____ _____ _____

Initial Activity _____

Traveling: Up Down Contour Stationary

Leading Sheep _____ Order ___ ___ ___ ___ ___ ___ ___ ___

Plant Shade/ Rock Shade/ Sun/ No Sun

Weather (General) _____
Initial Temperature _____ % Cloud Cover _____ Wind Direction _____
Wind Velocity: 0, 0-5, 5-10, 10-15, 15-20, 20+

Dominant Vegetation _____

Forage Type: browse grass forbs cactus mineral water

Identified Forage Species _____

Overall Vegetation Density: absent sparse moderate dense

Physical Habitat:

Elevation of Sighting _____ Initial Aspect _____
Of Desert Floor _____ Initial Slope _____
Difference _____ Substrate _____
% Distance Upslope _____ Elevation Base to Top _____

Distance from Steep Slope: 0, 0-.25, .25-.50, .50-.75, .75-1.0 > 1 km

Habitat Type:

Wash	Butte Slopes	Butte Top	Low Hills
Bajada	Mesa Slopes	Mesa Top	Flats
Foothills	Extensive Peaks Slopes	Extensive Peaks Top	

General Habitat _____

_____

_____

FIGURE 1. An example of the field data sheet used to record ground-based observations.

TABLE 1. Categories of reactions of bighorn sheep to disturbance.

0 = No reaction	Animals aware of disturbance but no observable response.
1 = Slight reaction	Some, or all of the group noticed, stared, then ignored the disturbance.
2 = Mild reaction	Animals moved away at a walk, or stayed and stared but returned to original activity.
3 = Moderate reaction	Immediate reaction, either trotted for a short distance or walked off with head erect in alarm posture. Animals returned to original activity within 10 minutes or 100 m.
4 = Severe reaction	Immediate running/trotting. Very startled and leave the area without returning.

RESULTS

During the study we collected data on 1766 groups of sheep of which 1150 groups (involving a total of 4696 sheep) were confronted with some kind of potential disturbance while under observation. A total of 22 different types of disturbances were classified (Tables 2 and 3). The 4 most common disturbances (Table 2) accounted for over 95 percent of the observations and were analysed separately. None of the miscellaneous disturbances listed in Table 3 occurred with great enough frequency to provide a sample size that would lend itself to statistical analysis. However, some interesting points can be made from the frequency distribution of sheep reactions (Table 3). Passing cars or highway noise rarely disturbed animals (12 of 13 recorded occurrences resulted in slight or no reaction). Most of these encounters involved sheep on high ridges above roads, highways, or jeep trails. In contrast, all ground-based observations of small planes (n=3) and helicopters (N=3) resulted in moderated reaction by the

animals under observation. In 6 observations of sheep being disturbed by other sheep, all the reactions were strong. These observations occurred when one group was under observation and a second group appeared running over a ridge. In all cases the running group caused the other group to run also. In some cases the two groups merged, in others they did not.

For the 4 most common disturbances there was a significant difference in the severity of reactions of sheep to different disturbances (X^2 = 413.0, D.F. = 12, P = 0.0001)(Table 2). Inspection of the individual cells in the Chi-square contingency table revealed that sheep reacted strongly to one or two people more often than was expected, and a majority of airplane disturbed sheep (71 percent) showed no overt reaction.

TABLE 2. Frequencies of reaction of 1093 groups of bighorn sheep to the four most common disturbances. Percent of rows in parentheses.

	Reactions[a]					
Disturbance	No Reaction	Slight Reaction	Mild Reaction	Moderate Reaction	Severe Reaction	N
Observer	78 (14)	114 (20)	115 (20)	49 (9)	220[b](38)	576
Airplane	170[b](71)	30 (13)	2 (1)	20 (8)	16 (7)	238
Parked Truck	34 (19)	72 (40)	29 (16)	11 (6)	34 (19)	180
Two Humans	3 (3)	19 (19)	23 (23)	5 (5)	49[b](49)	99
TOTALS	285 (26)	235 (22)	169 (16)	85 (8)	319 (29)	1093

a/ X^2 = 413, D.F. = 12, P = 0.0001

b/ These cells contributed most of the significance to X^2 by being more frequent than expected.

TABLE 3. Frequencies of reactions to all other disturbances observed.

Disturbance	None	Slight	Mild	Moderate	Severe	N
Passing Car/Truck	1	11	-	-	1	13
Highway Noise	6	1	-	1	-	8
Other Sheep	1	1	-	-	6	8
Small Plane	2	-	-	3	-	5
Helicopter	-	-	-	4	-	4
2 Helicopters	1	-	-	-	-	1
Fox(es)	-	3	-	-	-	3
Gunshots	1	1	1	-	-	3
Military Jets	-	1	-	1	-	2
Bobcat	-	2	-	-	-	2
Mule Deer	-	-	-	1	1	2
Airliner	-	1	-	-	-	1
Work Noises	1	-	-	-	-	1
Coyotes	-	1	-	-	1	2
Explosions	-	-	1	-	-	1
Shouts	-	1	-	-	-	1
Sonic Boom	1	-	-	-	-	1
TOTALS	14	22	2	10	9	57

The sample numbers of sheep disturbed disturbed by one human, the relocation flight aircraft, parked vehicles, and two humans were adequately large to allow more detailed analysis. We looked at the data again by separating out ram, ewe, and mixed groups, and groups with and without lambs. These analyses indicated the following:

Disturbance	X^2 Significant	Reasons For X^2 Significance
Single Human	Yes	- Mixed groups less reactive than expected - Ram groups more reactive than expected
	No	- Groups with lambs compared to those with no lambs
Two Humans	No	- All groups tended to react strongly
Parked Vehicle	Yes	- 32 percent of ram groups responded moderately to strongly - 9 percent of ewe groups responded moderately to strongly - 16 percent of mixed groups responded moderately to strongly
	No	- Groups with lambs compared to those with no lambs
Airplane	No	- 71 percent of groups did not pay any attention to the airplane
		- Groups with lambs tended to react more strongly than groups without lambs

Finally, with respect to bighorn responses to human caused disturbances, we constructed a linear regression model based on distances moved from the four most common disturbance factors in order to assess the strength of response to specific disturbances. Although there was a considerable amount of scatter about the generated regression line, a general statement (that was also statistically significant) that can be made is that the closer the disturbance is to an individual or group, the farther the animal(s) moves from the disturbance. Also, larger groups tended to move farther than small groups or

individuals. There was a large amount of variability in response to disturbance relative to the distance between the sheep and the disturbance. Some animals moved 1000 m away from a disturbance that was 1000 m away when the sheep noticed it. Other animals did not move when the disturbance was very close and the majority of flights away from disturbance were on the order of 100 m only.

CONSTRUCTION AND POSTCONSTRUCTION IMPACTS

METHODS

Throughout the construction and postconstruction periods (1 March 1981 - 18 December 1981 and 19 December 1981 - 1 January 1984, respectively) we continued making aerial relocation flights every 5 days, ground-based observations were made on a near daily basis, and all other study facets initiated during the baseline study were continued.

In order to understand the magnitude of construction period impacts on desert bighorn, we selected seven sheep that normally spent all or part of their time within 5 km of the transmission centerline in Copper Bottom Pass for analysis. Similar analyses were not conducted on any of the New Water Mountain, Kofa Mountains, or Livingston Hills sheep since none of our radio-collared animals normally occurred within 3 km of the transmission line. Several other radio-collared sheep in the Copper Bottom Pass area were similarly not included in this analysis because; 1) the animal was never relocated within 5 km north or south of the line, 2) we had no preconstruction relocations for a given animal, or 3) we had no construction period relocations (e.g., animals whose radios had failed or the animal had died during the baseline study period). The sheep selected had provided a minimum of 29 preconstruction relocations (range 29-169) and 45 construction period relocations (range 45-54). Table 4 contains pertinent data on the sheep used in our examination of construction period impacts in the Copper Bottom Pass area of the Dome Rock Mountains.

In order to determine whether or not construction activities had any effect, we calculated the percent of relocations occurring within 1 km bands for a distance

TABLE 4. Relocations of Dome Rock Mountains radio-collared bighorn within one kilometer bands north and south of the Palo Verde-Devers 500kV Transmission Line 1. N = total number of relocations.

	PRECONSTRUCTION PERIOD (km)						CONSTRUCTION PERIOD (km)					
	0-1	1-2	2-3	3-4	4-5	5+	0-1	1-2	2-3	3-4	4-5	5+
RAM 19B/15C												
Relocations	4	9	10	13	25	12	4	11	8	7	9	6
Percent	5	12	14	18	34	16	9	24	18	16	20	13
Crossings	10 Total						8 Total					
N	73						45					
RAM 8C												
Relocations	7	15	17	7	17	9	9	9	6	14	5	8
Percent	10	21	23	10	24	12	18	18	12	27	10	15
Crossings	9 Total						7 Total					
N	72						51					
RAM 17C/16B												
Relocations	1	1	2	4	26	133	0	0	0	1	9	44
Percent	1	1	1	2	15	80	0	0	0	2	17	81
Crossings	None						None					
N	167						54					
EWE 9D												
Relocations	5	5	9	7	0	0	18	15	14	5	1	0
Percent	19	19	35	27	0	0	34	28	26	9	2	0
Crossings	None						10 Total					
N	26						53					
EWE 5C												
Relocations	22	38	24	7	0	1	13	20	9	6	5	0
Percent	24	41	26	8	0	1	24	38	17	11	9	0
Crossings	8 Total						22 Total					
N	92						53					

TABLE 4. Concluded

	PRECONSTRUCTION PERIOD (km)						CONTSRUCTION PERIOD (km)					
	0-1	1-2	2-3	3-4	4-5	5+	0-1	1-2	2-3	3-4	4-5	5+
EWE 20B/4C												
Relocations	2	2	2	3	5	135	1	5	5	1	1	39
Percent	1	1	1	2	4	91	2	10	10	2	2	75
Crossings	4 Total						None					
N	149						52					
EWE 3B												
Relocations	5	15	4	1	2	142	0	0	0	0	0	48
Percent	3	9	2	0	1	84	0	0	0	0	0	100
Crossings	2 Total						None					
N	169						48					

of 5 km on either side of the transmission line. The number of relocations within each 1 km band during the preconstruction and construction periods was determined for each key sheep. These numbers were then converted to percent of relocations for each band for each study period. Additionally, the number of times each sheep crossed Copper Bottom Pass before and during construction was determined. Data were treated statistically by calculating Spearman Correlation Coefficients to determine the intensity of relationship between construction activity levels and the distribution of radio-collared sheep within the 1 km bands.

The number of construction workers present in Copper Bottom Pass during each week of the construction period was plotted along with the known relocations of each radio-collared sheep. The intent of this aspect of the analysis was to show the spatial relationship between the intensity of construction activity and the distribution of sheep.

Mean distance analyses were conducted on a total of 21 sheep that might have been influenced by construction or operation of the tranmsission line. The sheep included in this analysis were all located, on average, within 12 km of the transmission line in the New Water Mountains, Livingston Hills, Dome Rock Mountains, and Trigo Peaks. Analysis of variance (Simpson et al., comparing mean distances during the preconstruction, construction and post-construction periods was conducted and the same means were supjected to Duncan's Multiple Range Test (Kirk, 1968; Winer, 1971) to identify means that were at variance with others.

Additionally, from aerial relocation data, we determined the number of times sheep crossed the transmission line corridor during the 3 study phases. Crossings were normalized to a monthly value and preconstruction values were used as expected values for conducting Chi-square analyses on construction and post-construction crossing rates.

RESULTS

Construction Period Impacts: Dome Rock Herd

Of the 7 Dome Rock sheep selected for construction period analysis, Rams 8 C and 19B/15C and Ewes 9D and 5C spent most of their preconstruction and construction period time in the vicinity of Copper Bottom Pass. The other 3 sheep, Ewes 20B/4C and 3B and Ram 17C/16B spent more than 75 percent of their preconstruction and construction period time more than 5 km from the Copper Bottom Pass area. Ram 17C/16B never crossed Copper Bottom Pass and was relocated within 4 km of the pass only 8 times during the preconstruction period (= 0.6 percent of all relocations) and only once (2.0 percent of all relocations) during the construction period. Ewe 3B was relocated within 4 km 25 times (17.6 percent of all relocations) during preconstruction and never during the construction period. Ewe 3B crossed Copper Bottom Pass twice during preconstruction, never during construction. Ewe 20B/4C was relocated within 4 km of the pass 9 times during preconstruction (6.0 percent of all relocations) and 12 times (23.1 percent of all relocations) during the construction period. Ewe 20B/4C crossed Copper Bottom Pass twice during preconstruction, never during the construction period. These 3 sheep, whose home areas were located south of Copper Bottom Pass rarely traveled north to the pass, and provided little real data on construction period impacts.

The other 4 sheep could be considered "Copper Bottom Pass residents" and they provided some very interesting information.

Ram 19B/15C was 12 years old during the construction period. He spent about the same amount of time north and south of the transmission line corridor during the construction period, and he crossed the corridor at least 8 times (Table 4, Figure 2). Ram 19B/15C apparently spent more time within 3 km of the line during the construction period than during the preconstruction period (Table 4, Figure 6). Calculation of Spearman Correlation Coefficients for both periods shows a strong correlation during the preconstruction period ($r = 0.828$), but no correlation during the construction period (0.028).

In our initial analysis of this animal's movements during the construction period, we suggested (E. Linwood Smith & Associates, 1983) that further scrutiny of his relocations during the construction period was warranted. In looking further at the data, we found that Ram 19B/15C definitely was relocated more frequently near the construction zone (51.1 percent of all relocations within 3 km) than was the case during preconstruction (31.1 percent of all relocations within 3 km). Moreover, all construction period relocations, 37 of 45 (82.2 percent) occurred north of Copper Bottom Pass compared with 55 of 73 (75.3 percent) prior to the construction period. These are not major differences between the two periods, however, and it seems unwarranted to try and explain them in terms of construction activity. The latter is particularly true when one considers the erratic movement patterns exhibited by this ram over the course of the entire study. Ram 19B/15C had a large home area, he often moved to points more than 5 km north and south of the transmission line corridor, from near Interstate 10 on the north, south to the Trigo Peaks area. On 31 August 1983, he was relocated for the last time in our study area south of Weaver Pass, 9 km south of the transmission line. On 4 October 1983 he was found dead in an irrigation canal east of Yuma and south of the Muggins Mountains.

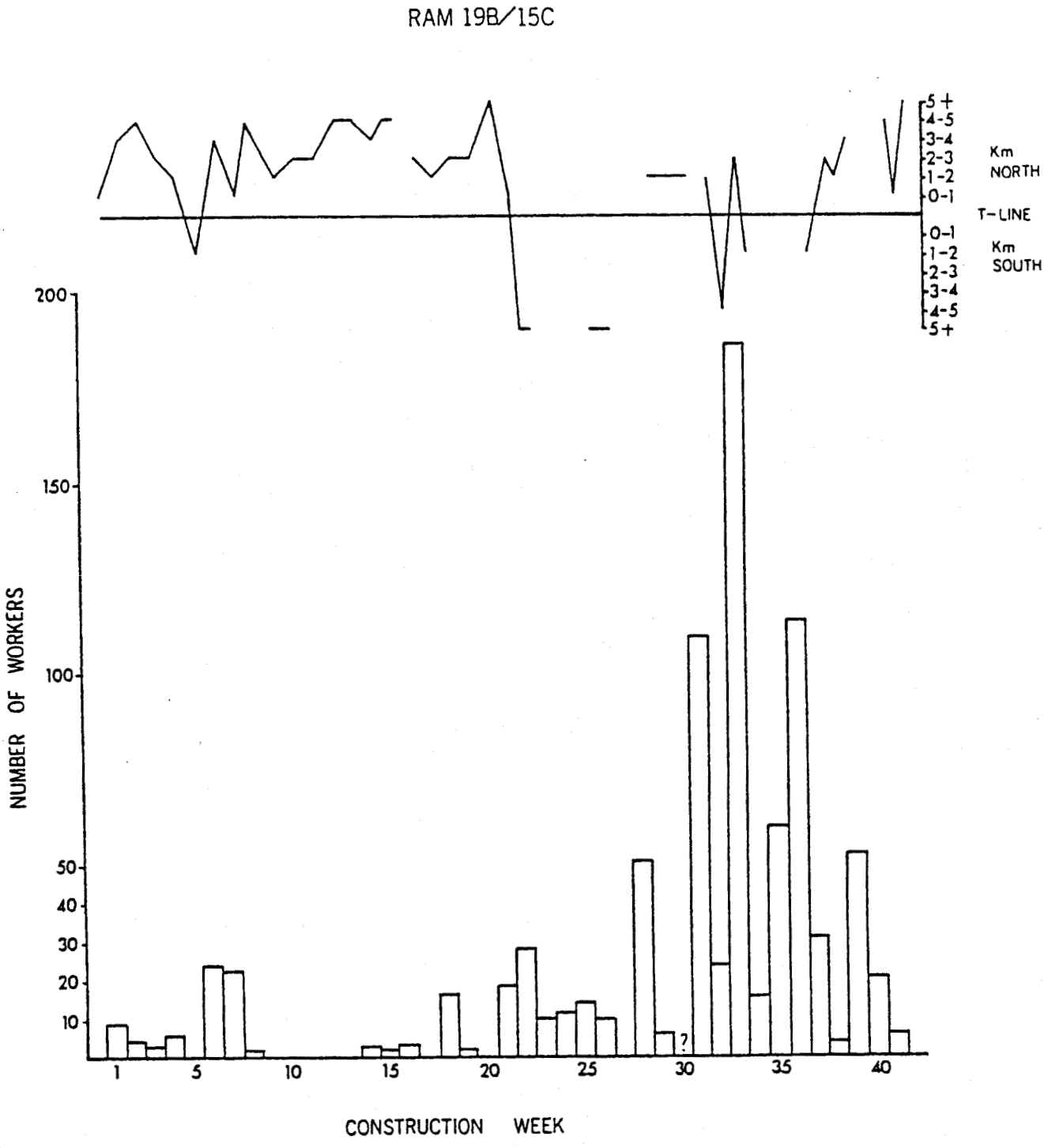

FIGURE 2. Relocations of Ram 19B/15C/871 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

Ram 8C, also a 12 year-old, spent about 87 percent of his time within 5 km of the line prior to construction and 84 percent during construction (Table 4, Figure 6). He crossed Copper Bottom Pass 9 times prior to construction and 8 times during the construction period (Figure 3). This ram also had a large home area, ranging from Interstate 10 south to the Trigo Peaks, a distance in excess of 20 km. Spearman Correlation Coefficients for the preconstruction and construction periods indicate no relationship between this ram's movements and distance from the transmission line. A strong negative correlation ($r = -0.851$) suggests that this sheep did not spend a lot of time in the immediate vicinity of the transmission line corridor (see Figure 3).

Ewe 9D was originally radio-collared on 1 November 1978 as a 3 year-old. Her home area was generally located north of Copper Bottom Pass and within 5 km of the transmission line where she was relocated 100 percent of the time both before and during construction (Figures 4 and 6, Table 4). Prior to construction 9D had not been relocated south of Copper Bottom Pass. During construction, however, she crossed the pass at least 10 times (Figure 4, Table 4). Spearman Correlation Coefficient calculations showed a weak negative relationship between relocations and distance to the transmission line prior to construction ($r = -0.500$), probably reflecting a preferred home range more than 2 km north of the line (Table 4). An extremely strong negative ($r = -1.000$) correlation found for the construction period indicates, rather forcefully, that Ewe 9D may have been attracted to the construction activity.

Ewe 5C, originally collared on 29 November 1979 as a 4 year-old, and recollared on 30 October 1981, stayed within 4 km of the transmission line corridor 98.9

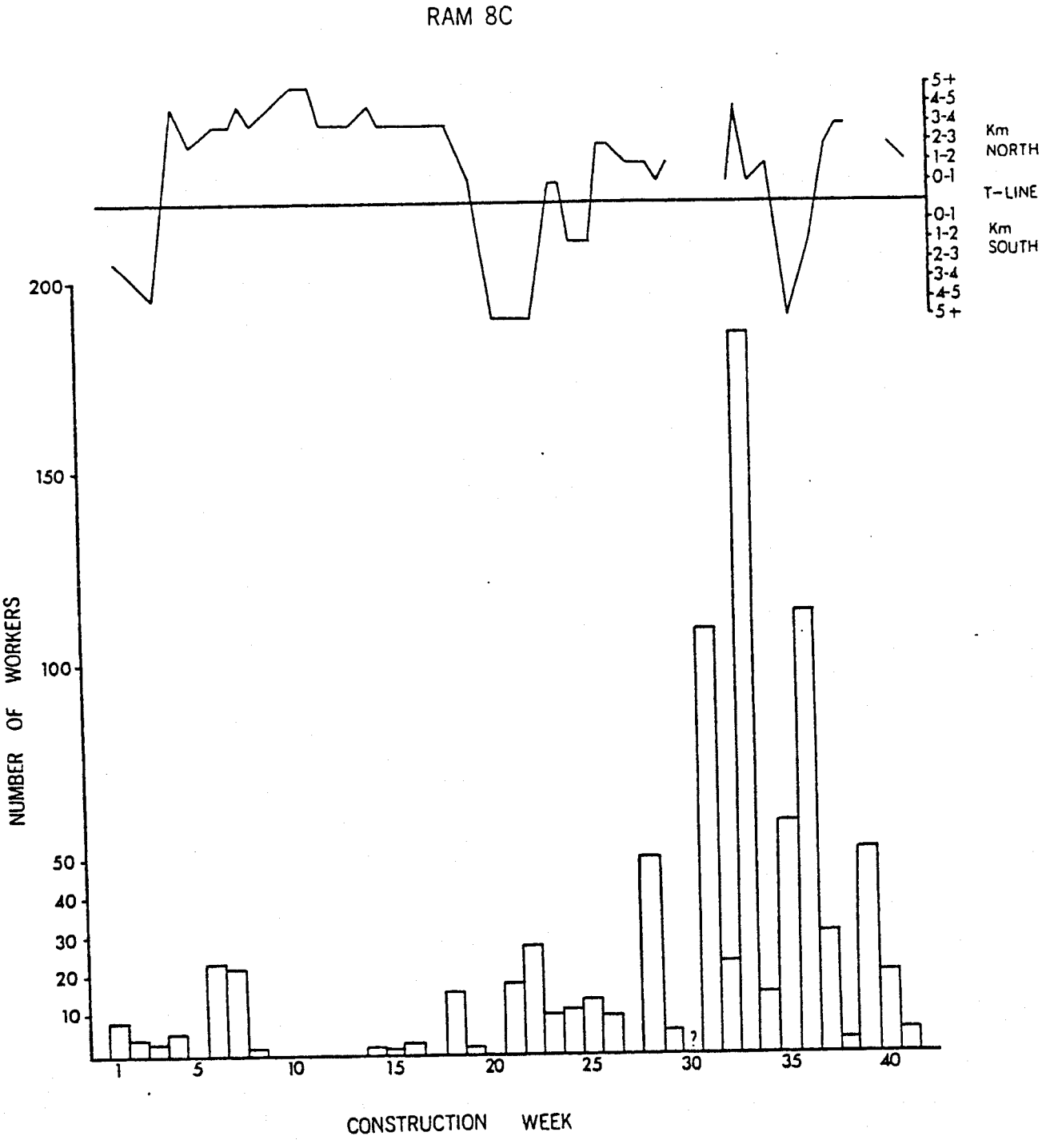

FIGURE 3. Relocations of Ram 8C/833 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

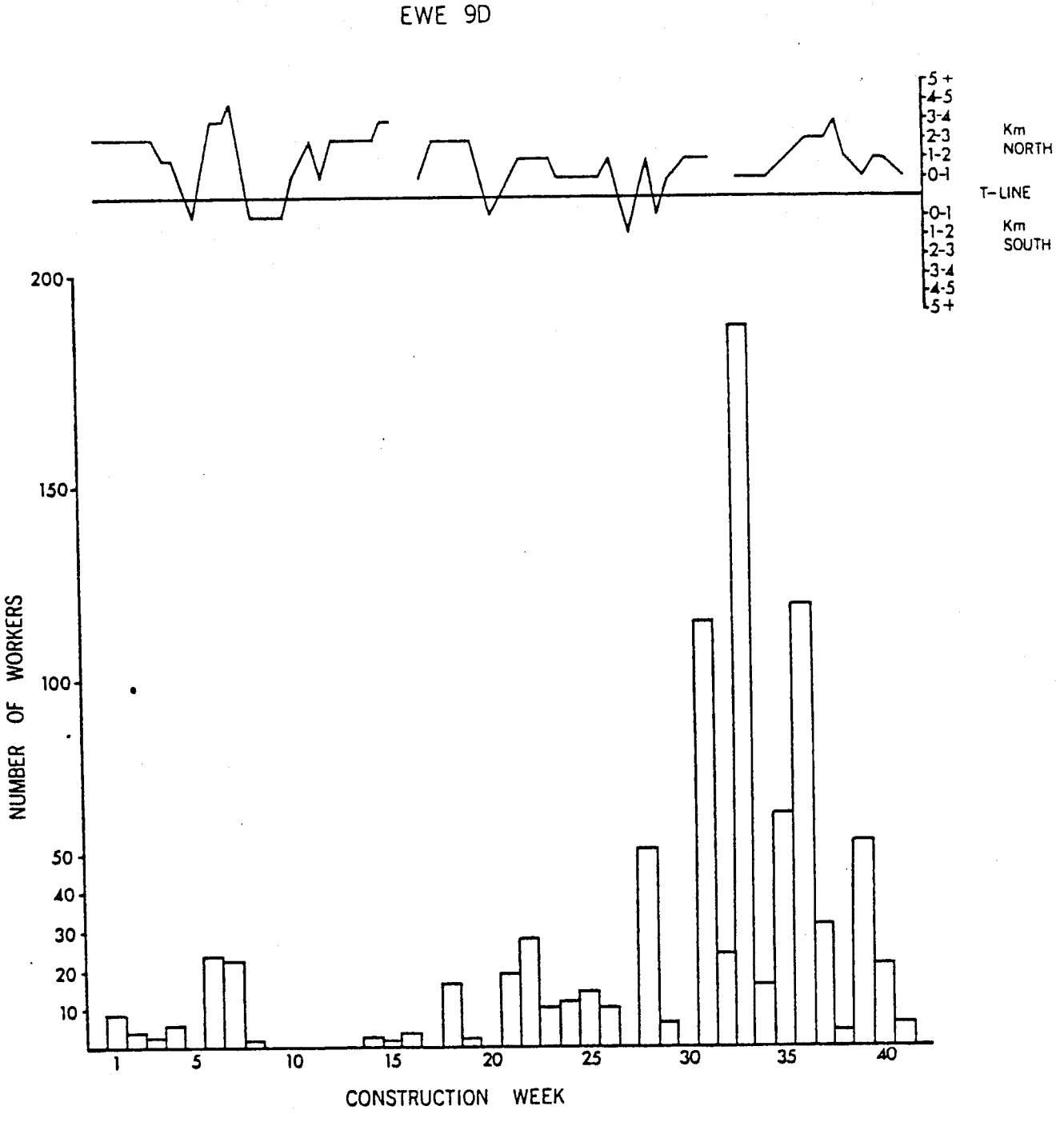

FIGURE 4. Relocations of Ewe 9D/888 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Pass area.

percent of the time during preconstruction. During the construction period she was relocated within 4 km 90.6 percent of the time (Figures 5 and 6; Table 4). Prior to construction 5C crossed the transmission line corridor a total of 9 times, compared with at least 22 crossings during the construction period. Ewe 5C did not appear to shift the location of her preferred use area as a result of construction and Spearman Correlation Coefficients for the preconstruction (r = 0.771) and construction (r = -0.942) periods bear this out. The strong negative correlation and increased number of corridor crossings during the construction period suggest that this ewe, like 9D, was actually attracted to the construction activity. This apparently clear picture is somewhat clouded, however, in that we know at least 2 of Ewe 5C's crossings were the result of being disturbed by field biologists gathering behavioral data.

Mean Distance Analysis and Corridor Crossings

Sheep selected for mean distance analysis are listed in Table 5. These animals were selected on the basis of our having at least construction and post-construction data for them and because relocations had been obtained in close proximity to the transmission line corridor.

In our final report "Impacts of the Palo Verde To Devers 500kV Transmission Line" (E. L. Smith & Associates, 1986) we presented full mean distance analyses for each of the 21 sheep listed in Table 5. For the purposes of this summary report, we are presenting data for only 5 of the 21 animals, one each from the west New Water Mountains (i.e., west of Black Mesa), east New Water Mountains (Black Mesa and eastward), Livingston Hills, Kofa Mountains, and Dome Rock Mountains. We selected a representative sheep from each of these areas based on the animal's normal proximity (i.e., closest) to the transmission line.

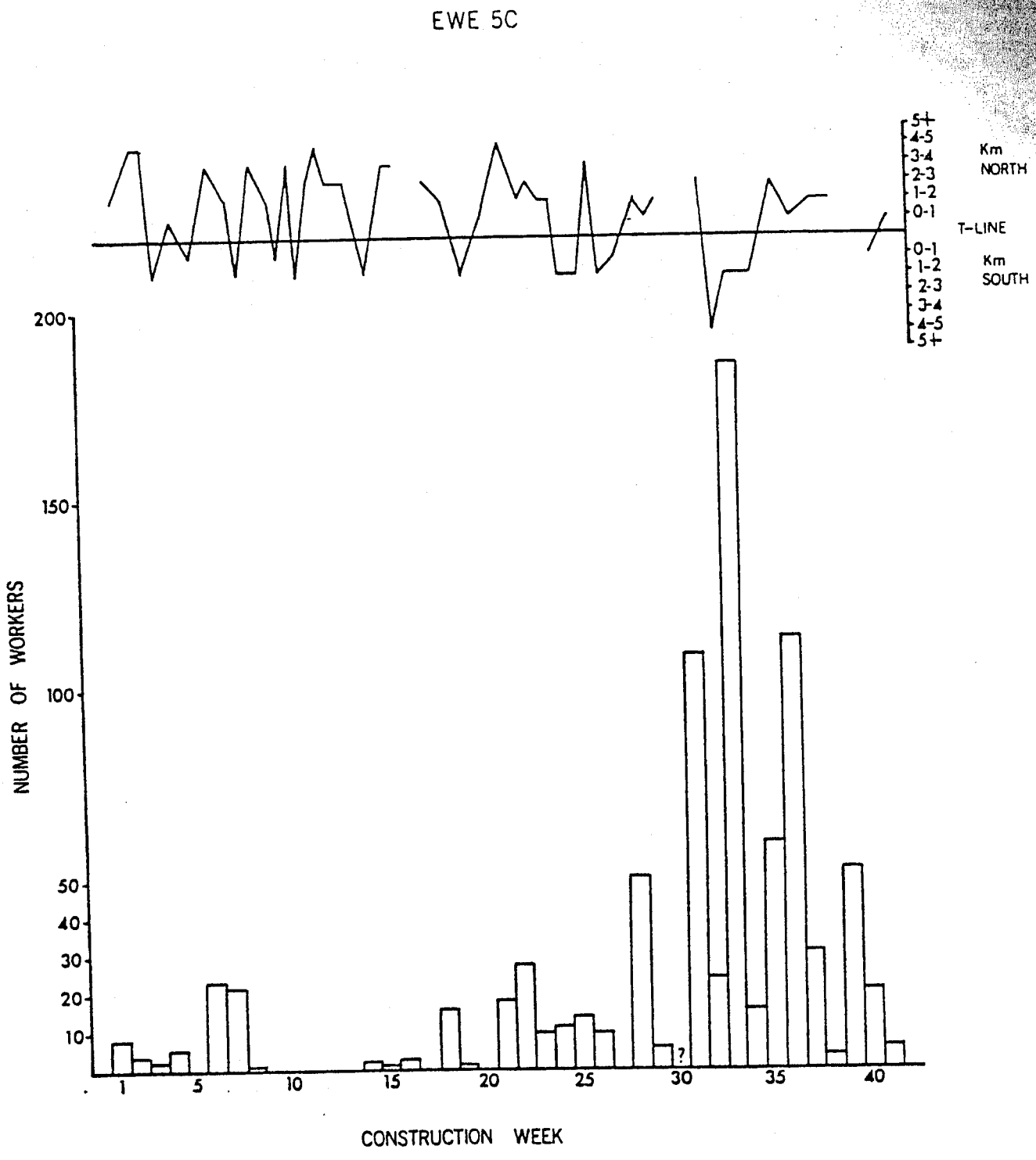

FIGURE 5. Relocations of Ewe 5C/945 north and south of the Palo Verde-Devers 500kV Transmission Line 1 during the construction period. Relocations are shown in relation to the estimated number of construction workers present in the Copper Bottom Pass area.

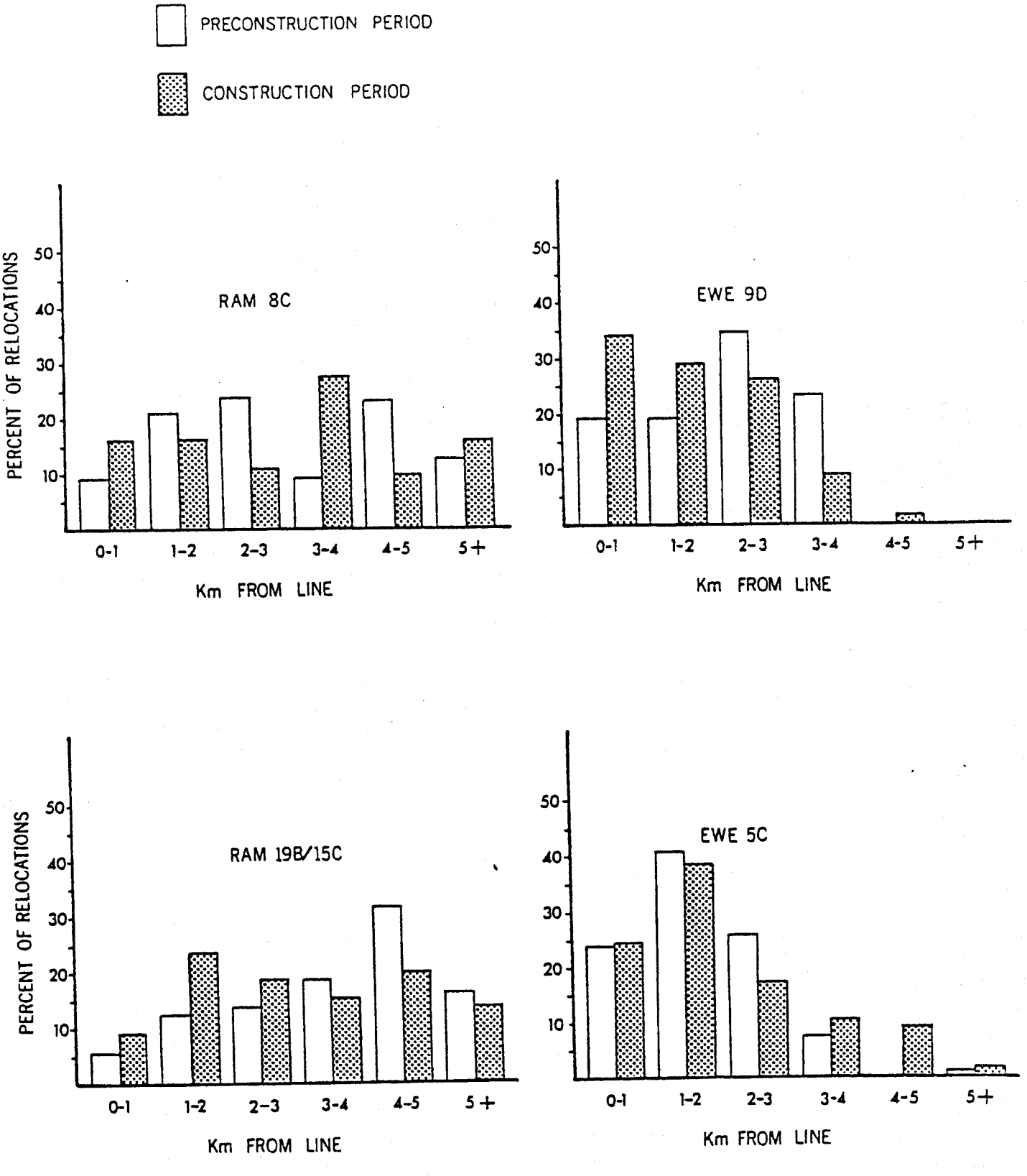

FIGURE 6. Percent of relocations of four Dome Rock Mountain sheep within five one kilometer bands north and south of the Palo Verde-Devers 500kV Transmission Line 1 before and during construction of the line.

TABLE 5. Radio-collared sheep selected for mean distance analysis.

Sheep No.	Sex	Home Area*	Number of Relocations	Nearest to Transmission Line	Mean Distance[1]
14A/15K/872	M	WNW	275	1.75 km	13.05 km
10A/10B/893	F	WNW	458	1.72	5.69
11A/12B/856	F	WNW	350	0.93	9.14
17B/7D/878	M	ENW	305	0.40	6.33
13C/861	M	ENW	151	0.45	12.14
19C/891	M	ENW	178	2.08	9.25
924	M	ENW	29	0.94	3.61
930	M	ENW	139	0.48	5.84
8B/915	F	LH	301	1.00	5.57
7C	F	LH	127	1.88	4.78
16K/921	M	LH	204	0.5	3.94
12K/857	F	LH	208	1.68	3.75
13K/862	F	LH	208	1.78	7.06
8C/883	M	DR	280	0.01	3.49
5C/945	F	DR	309	0.07	1.61
20B/4C/942	F	DR	332	0.67	7.81
3B/936	F	DR	369	0.36	8.29
9D/888	F	DR	232	0.07	1.77
19B/15C/871	M	DR	243	0.02	3.28
17C/16B/876	M	TP	328	0.22	11.18
909	M	K	127	1.80	9.06

*WNW = West New Water Mountains
ENW = East New Water Mountains
LH = Livingston Hills
DR = Dome Rock Mountains
TP = Trigo Peaks
K = Kofa Mountains

1/ Measured from the centerline of the Palo Verde-Devers 500kV Transmission Line

Sheep 10A/10B/893, a ewe, was 1.75 years-old when first radio-collared on 17 November 1977 in the west New Water Mountains. A total of 458 relocations resulted in an overall mean distance from the transmission line of 5.69 km (Table 6). This sheep was relocated within 1.75 km of the line and as far away as 12.28 km. The former occurring during the post-construction phase breeding season of the study, and the latter during the preconstruction breeding season. This ewe crossed the corridor to the Livingston Hills (29 September 1983) and returned to the west New Waters (4 November 1983) only once during the entire study.

It is interesting to note that the only seasonal mean distance from the transmission line that was statistically different from any other mean for this ewe was the construction period breeding season mean (Table 6). The preconstruction breeding season mean approaches being the same as the construction period breeding mean (6.36 km versus 7.55 km). Given the distance this animal normally occurred from the transmission line corridor and the extremely dry conditions that prevailed during the 1981 breeding season, it seems more logical to suggest that this ewe moved northward and concentrated her breeding season activities near permanent water (i.e., Dripping Springs) than to try and infer construction activity impacts. This supposition is further strengthened by the fact that Ewe 10A/10B/893's normal home range was centered in an area separated from the construction zone by 3-5 kilometers of fairly rugged terrain, which probably precluded her being disturbed at all by human activity associated with construction.

Ram 924 was captured and radio-collared on 29 October 1981 at the end of the

construction period in the New Water Pass area. Unfortunately his transmitter failed on 12 May, giving us a scant total of 29 relocations and only 2 construction period relocations. Consequently, despite the fact he was the east New Water Mountain sheep whose average mean distance from the transmission centerline was the least, for the purposes of this synopsis, we choose to substitute Ram 930 for which we have 139 relocations and whose mean distance from the transmission centerline was 5.84 km (Tables 5 and 7). His range of relocation distances fell between 0.48 and 16.00 km from the centerline, and although we have only 2 construction period relocations (930 was captured and radio-collared within the week that construction activity in the New Water Pass area ceased), we do have 137 postconstruction relocations.

Ram 930 crossed the transmission line corridor a total of 13 times following construction. Further, as can be seen by examination of Table 7, there were no significant differences in any of the mean distances calculated for this sheep, and it thus appears that the presence of an operational 500kV transmission line did not cause this sheep to move away from the facility, nor did it prevent him from crossing back and forth through the corridor.

Ewe 12K/857, collared initially as a yearling on 28 October 1980 in the Livingston Hills, had an overall mean distance of 3.75 km and a range of 1.68 km to 10.39 km based on 208 relocations (Table 8). Ewe 12K/857, like to the other radio-collared ewes in the Livingston Hills never crossed the transmission line corridor. With respect to differences in seasonal means, it should be pointed out that we obtained only 8 preconstruction breeding season relocations of this animal and only 6 construction period non-breeding relocations. Construction and post-construction breeding season means were not significantly different

TABLE 6. Mean distance analysis for sheep 10A/10B/893 between 17 November 1977 and 27 December 1983. Sheep 10A is a ewe that was 1.75 years of age when originally collared in the west New Water Mountains. The following distance analysis is based on 458 relocations. Distances presented in the table are mean distances from the centerline of the Palo Verde to Devers 500kV transmission Line 1 and are measured in kilometers (1 km = 0.62 miles). N = number of relocations and SD is the Standard Deviation. Breeding season is from June through November and non-breeding season is December through May. In Analysis of Variance, DF = degrees of freedom, Sum SQ is the sum or squares, and in Duncan's Multiple Range Test the means included above a continuous line are not significantly different from each other.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	5.84	157	2.32	3.26	11.82
Preconstruction	Breeding	6.36	120	2.27	3.35	12.28
Construction	Non-breeding	4.61	5	1.38	3.99	7.07
Construction	Breeding	7.55	17	1.95	3.85	10.12
Post-construction	Non-breeding	4.90	77	1.45	3.31	9.33
Post-construction	Breeding	4.85	82	2.02	1.72	10.56
TOTALS		5.69	458	2.21	1.72	12.28

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Construction	Non-breeding	4.61
Post-construction	Breeding	4.85
Post-construction	Non-breeding	4.90
Preconstruction	Non-breeding	5.84
Preconstruction	Breeding	6.36
Construction	Breeding	7.55

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	227.54	45.51	10.22 (P = 0.000)
Within Groups	452	2011.72	4.45	
TOTAL	457	2239.26		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

4.61	4.85	4.90	5.84	6.36	7.55

TABLE 7. Mean distance analysis for Ram 930 between 29 October 1981 and 1 January 1984. Ram 930 was 5 years of age when originally radio-collared in the east New Water Mountains (SE of Black Mesa). The distance analysis below is based on 139 relocations. Distances are measured in kilometers from the centerline of the Palo Verde-Devers 500kV Transmission Line 1. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Construction	Breeding	6.76	2	3.53	4.26	9.25
Post-construction	Non-breeding	5.00	67	3.67	0.48	13.54
Post-construction	Breeding	6.63	70	4.06	1.13	16.00
TOTALS		5.84	139	3.93	0.48	16.00

MEAN DISTANCE IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Non-breeding	5.00
Post-construction	Breeding	6.63
Construction	Breeding	6.76

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	2	92.30	46.15	3.08 (P = 0.049)

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

5.00	6.63	6.76

TABLE 8. Mean distance analysis for Sheep 12K/857 between 28 October 1980 and 28 November 1983. Ewe 12K/857 was estimated to be one year of age when collared in the Livingston Hills. The following distance analysis is based on 208 relocations of this animal. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers 500kV Transmission Line. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	4.97	32	0.74	2.67	5.69
Preconstruction	Breeding	4.64	8	1.05	2.81	5.59
Construction	Non-breeding	4.22	6	1.11	2.73	5.99
Construction	Breeding	3.96	27	1.66	1.68	9.65
Post-construction	Non-breeding	3.57	65	1.42	1.87	5.87
Post-construction	Breeding	3.13	70	1.49	1.68	10.39
TOTALS		3.75	208	1.51	1.68	10.39

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Breeding	3.13
Post-construction	Non-breeding	3.57
Construction	Breeding	3.96
Construction	Non-breeding	4.22
Preconstruction	Breeding	4.64
Preconstruction	Non-breeding	4.97

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	85.92	17.18	9.02 (P = 0.000)
Within Groups	202	384.93	1.91	
TOTALS	207	470.84		

DUNCAN'S MULTIPLE RANGE TEST

3.13	3.57	3.96	4.22	4.64	4.97

from each other although they were different from preconstruction values, being closer to the transmission line corridor (Table 8). Ewe 12K/857 made frequent forays into the west Kofa Mountains, although she did not do it as often or as regularly as her cohort 13K/862.

As a group, the Livingston Hills ewes tended to be relocated farthest from the transmission line corridor during the breeding season. Exceptions to this generalization occurred with ewes that were radio-collared late in the breeding season and provided few relocations prior to the non-breeding season. When these small samples (e.g., ewes 12K/857 and 13K/862) are discarded, there is a clear tendency for breeding season ewes in the Livingston Hills to be located farther from the transmission line in both the construction and post-construction periods. We have no good preconstruction data for some of the Livingston Hills ewes. For the two we do, 7C and 8B/915, however, it was very clear that movement to the south, away from the corridor was characteristic during the summer months and probably occurred in response to water stress. In light of this, it seems probable that breeding season movements of ewes away from the corridor during the construction and post-construction periods was probably a manifestation of normal biological requirements rather than disturbance from the transmission line construction and operation.

Ewe 5C/945 was first radio-collared on Sawtooth Ridge in the Dome Rock Mountains on 29 November 1979. She was estimated to be 4 years of age when collared. A total of 309 relocations were used to calculate her overall mean distance of 1.61 km. The range of relocation distances for this sheep was 0.07 to 6.70 km from the transmission centerline. There were no significant differences between of her seasonal means which ranged from 1.49 km to 1.79 km (Table 9). This ewe

TABLE 9. Mean distance analysis for Ewe 5C between 29 November 1979 and 27 December 1983. Ewe 5C was four years of age when first radio-collared on Sawtooth Ridge in the Dome Rock Mountains. The following mean distance analysis is based on 309 relocations of this animal. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers Transmission Line in Copper Bottom Pass. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Preconstruction	Non-breeding	1.67	53	1.04	0.38	6.70
Preconstruction	Breeding	1.49	38	0.85	0.29	3.20
Construction	Non-breeding	1.79	23	1.03	0.42	3.77
Construction	Breeding	1.73	34	0.98	0.41	4.52
Post-construction	Non-breeding	1.57	84	1.01	0.25	3.96
Post-construction	Breeding	1.58	77	0.89	0.07	3.47
TOTALS		1.61	309	0.97	0.07	6.70

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Preconstruction	Breeding	1.49
Post-construction	Non-breeding	1.57
Post-construction	Breeding	1.58
Preconstruction	Non-breeding	1.67
Construction	Breeding	1.73
Construction	Non-breeding	1.79

ANALYSIS OF VARIANCE (ANOVA) COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	5	2.18	0.44	0.47 (P = 0.801)
Within Groups	303	283.57	0.94	
TOTALS	308	285.76		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

ANOVA shows no significant differences between any means

was a true resident of the Copper Bottom Pass area, using Cunningham Mountain, Sawtooth Ridge and the rugged terrain to the west. We documented 59 corridor crossings by 5C/945, 9 during preconstruction, 22 during construction, and 28 during the post-construction period. None of the data we have for this sheep suggests that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 had any effect on her activities, with the possible exception that she seemed to be attracted to the construction activity.

Ram 909 was radio-collared near Holly Seep on the Kofa National Wildlife Refuge on 26 October 1981. We have very limited data (N = 2 relocations) on this ram for the construction period and none from the preconstruction period. A total of 125 post-construction relocations provided us with an overall mean distance from the transmission line of 9.06 km and a range of 1.80 to 16.94 km (Table 10). Ram 909 crossed the transmission line corridor 5 times during the post-construction period and had a post-construction breeding season mean distance of 6.50 km, the smallest mean distance for this sheep. The 6.50 km mean distance is significantly different from other means for Ram 909. However, owing to the substantial distance from the operational power line, it is probably not biologically meaningful and it appears that operation of the transmission line had no effect on this animal.

Throughout the preceding material we have mentioned transmission line corridor crossings by radio-collared bighorn. Table 11 summarizes these crossings in the New Water and Copper Bottom Pass areas and Table 12 provides more details on ram crossings between the Kofa Mountains/Livingston Hills and the New Water Mountains. Chi-square analysis of these data (Table 13) indicated significant

TABLE 10. Mean distance analysis for Ram 909 between 26 October 1981 and 20 December 1983. Ram 909 was four years of age when radio-collared on the Kofa National Wildlife Refuge (Holly Seep). The following distance analysis is based on 127 relocations of 909. Distances presented in the table are mean distances from the centerline of the Palo Verde-Devers 500kV Transmission Line 1 and are measured in kilometers. Symbols and seasons as in Table 6.

SUMMARY STATISTICS FOR DISTANCES BY SEASON

Period	Season	Distance	N	SD	Min	Max
Construction	Breeding	7.62	2	1.94	6.25	9.00
Post-construction	Non-breeding	11.79	61	3.92	3.08	16.94
Post-construction	Breeding	6.50	64	2.48	1.80	14.95
TOTALS		9.06	127	4.17	1.80	16.94

MEAN DISTANCES IN ORDER OF INCREASING SIZE

Period	Season	Distance
Post-construction	Breeding	6.50
Construction	Breeding	7.62
Post-construction	Non-breeding	11.79

ANALYSIS OF VARIANCE COMPARING MEAN DISTANCES

Source	DF	Sum SQ	Mean SQ	F
Between Groups	2	878.92	439.46	41.51 (P = 0.000)
Within Groups	124	1312.64	10.59	
TOTALS	126	2191.56		

DUNCAN'S MULTIPLE RANGE TEST (P = 0.05)

6.50 7.62 11.79

TABLE 11. Transmission line corridor crossings by radio-collared desert bighorn during the preconstruction, construction and post-construction phases of the study.

NEW WATER PASS

Sheep No.	Sex	Preconstruction	Construction	Post-construction	Totals
930	M	X	X	13	13
909	M	X	X	5	5
999	M	X	X	2	2
16K/920	M	0	0	10	10
13C/861	M	3	2	2	7
19C/891	M	0	0	1	1
14A/A5K/872	M	3	0	2	5
17B/7D/878	M	6	0	6	12
13A	M	3	X	X	3
924	M	X	X	X	0
00A/B/893	F	0	0	2	2
8B/915	F	0	0	0	0
11A/12B/856	F	2	0	0	2
12K/857	F	0	0	0	0
13K/862	F	0	0	0	0
7C	F	0	0	X	0
TOTALS		17	2	43	62

COPPER BOTTOM PASS

8C/883	M	9	7	12	28
17C/16B/876	M	0	0	0	0
19B/15C/871	M	10	8	19	37
5C/945	F	9	22	26	57
20B/4C/942	F	4	0	0	4
3B/936	F	2	0	0	2
9D/888	F	0	10	10	20
TOTALS		34	47	67	148

X = Sheep not a part of the study population during this period

* = A 4-5 year-old ram collared near Mohave Tanks on 6 November 1982 as part of an Arizona Game and Fish Department study on the Yuma Proving Grounds. In order to be present in the New Water Pass area of our study area, this sheep had to cross Arizona Highway 95.

TABLE 12. Transmission line corridor crossings by radio-collared rams in the New Water Pass area between 1 December 1977 and 1 January 1984.

RAM	Direction Of Crossing	From: UTM Grid Location (Date)	To: UTM Grid Location (Date)
15K/872	N to S	2228-37187 (12-01-77)	2308-37052 (12-12-77)
	S to N	2331-37053 (12-17-77)	2288-37146 (12-22-77)
	N to S	2295-37143 (01-09-78)	2293-37045 (01-16-78)
	S to N	2331-37077 (08-16-82)	2217-37191 (09-09-82)
	N to S	2223-37203 (09-27-82)	2342-37059 (10-04-82)
7D/878	N to S	2323-37179 (01-31-79)	2421-36973 (02-06-79)
	S to N	2343-36989 (03-12-79)	2299-37161 (03-17-79)
	N to S	2303-37201 (06-30-79)	2291-37043 (07-05-79)
	S to N	2253-37007 (08-15-79)	2337-37177 (08-20-79)
	N to S	2319-37203 (07-09-80)	2241-37029 (07-14-80)
	S to N	2331-37059 (08-12-80)	2319-37197 (08-22-80)
	N to S	2291-37145 (12-28-81)	2275-37119 (01-02-82)
	S to N	2269-37117 (01-16-82)	2281-37155 (01-20-82)
	N to S	2309-37205 (02-09-82)	2275-37037 (07-14-82)
	S to N	2235-37021 (07-28-82)	2367-37149 (08-02-82)
	N to S	2367-37149 (08-02-82)	2343-36999 (08-10-82)
	S to N	2291-36987 (08-29-82)	2299-37161 (09-09-82)
13C/861			
	N to S	2309-37153 (04-18-80)	2295-37121 (04-23-80)
	S to N	7771-36985 (08-12-80)	2311-37201 (08-17-80)
	N to S	2311-37201 (08-17-80)	2541-36973 (08-22-80)
	S to N	2447-37003 (08-05-81)	2299-37149 (08-10-81)
	N to S	2299-37149 (08-10-81)	2321-36829 (08-24-81)
	S to N	2407-36971 (07-26-82)	2301-37229 (08-02-82)
	N to S	2301-37229 (08-02-82)	2777-37131 (08-09-82)
19C/891			
	N to S	2257-37271 (07-30-82)	7673-37105 (08-20-82)
16K/920			
	S to N	7711-37085 (02-28-82)	7731-37139 (03-05-82)
	N to S	7777-37191 (03-19-82)	7709-37083 (03-27-82)
	S to N	7685-37101 (07-05-82)	7749-37201 (07-12-82)
	N to S	7737-37199 (07-26-82)	7719-37001 (08-02-82)
	S to N	7729-37099 (05-02-83)	7725-37135 (05-09-83)
	N to S	7729-37143 (05-19-83)	7685-37101 (05-23-83)
	S to N	7713-37085 (07-19-83)	7761-37165 (07-25-83)

TABLE 12 - concluded

RAM	Direction Of Crossing	From: UTM Grid Location (Date)		To: UTM Grid Location (Date)	
16K/920 - continued					
	N to S	7747-37213	(08-01-83)	7713-37205	(08-08-83)
	S to N	7675-37107	(11-07-83)	7673-37157	(11-14-83)
	N to S	7671-37159	(11-14-83)	7693-37093	(11-21-83)
930					
	N to S	7721-37139	(11-06-81)	7669-37069	(11-21-81)
	S to N	7673-37077	(12-11-81)	7655-37187	(12-17-81)
	N to S	7715-37233	(08-24-82)	7685-37010	(08-30-82)
	S to N	7693-37091	(11-12-82)	7731-37139	(11-15-82)
	N to S	7729-37134	(05-19-83)	7723 37097	(05-23-83)
	S to N	7723-37097	(05-23-83)	7731-37131	(05-30-83)
	N to S	7625-37141	(06-21-83)	7695-37097	(06-25-83)
	S to N	7695-37097	(06-25-83)	7757-37195	(06-26-83)
	N to S	7757-37195	(06-26-83)	7681-37097	(07-05-83)
	S to N	7709-37087	(08-08-83)	7663-37157	(08-15-83)
	N to S	7663-37157	(08-15-83)	7671-37075	(08-22-83)
	S to N	7689-37071	(09-19-83)	7719-37227	(09-26-83)
	N to S	7665-37187	(11-28-83)	7667-37111	(12-05-83)
909					
	S to N	2335-37075	(08-09-82)	2321-37179	(08-16-82)
	N to S	2287-37143	(09-27-82)	2337-37045	(10-04-82)
	S to N	2237-37047	(06-21-83)	2295-37209	(06-26-83)
	N to S	2315-37201	(07-25-83)	2309-37097	(08-01-83)
	S to N	2335-37057	(08-08-83)	2353-37165	(08-15-83)
13A					
	N to S	2327-37173	(01-08-79)	2349-37061	(01-22-79)
	S to N	2255-37025	(05-23-79)	2293-37203	(05-28-79)
	N to S	2293-37203	(05-28-79)	2331-37055	(06-02-79)
999					
	S to N	7761-36895	(08-26-83)	7727-37290	(10-09-83)
	N to S	7699-37266	(10-10-83)	7363-36945	(10-30-83)

TABLE 13. Transmission corridor crossings by radio-collared bighorn during the preconstruction, construction, and post-construction phases of the study. Num = number of crossings recorded, (N) = number of months sheep was monitored during each study phase, and #/Mo = total number of crossings/number of months observed.

		PRECONSTRUCTION		CONSTRUCTION		POST-CONSTRUCTION	
Sheep No.	Sex	Num	#/Mo	Num	#/Mo	Num	#/Mo
NEW WATER PASS CROSSINGS:							
861	M	3 (13)	0.23	2 (6)	0.33	2 (9)	0.22
872	M	3 (41)	0.07	0 (6)	0.00	2 (13)	0.15
878	M	2 (29)	0.21	0 (6)	0.00	6 (15)	0.40
856	F	2 (41)	0.05	0 (6)	0.00	0 (8)	0.00
893	F	0 (41)	0.00	0 (6)	0.00	2 (25)	0.08
COPPER BOTTOM PASS CROSSINGS:							
883	M	9 (13)	0.69	8 (6)	0.89	12 (23)	0.52
945	F	9 (15)	0.60	22 (9)	2.45	28 (24)	1.17
942	F	4 (15)	0.27	0 (9)	0.00	0 (21)	0.00
936	F	2 (27)	0.07	0 (9)	0.00	0 (24)	0.00
888	F	0 (4)	0.00	10 (9)	1.11	10 (24)	0.42
871	M	10 (27)	0.37	8 (9)	0.89	19 (21)	0.90

differences in crossing rates in the New Water Pass area during the construction period (X^2 = 2.9, DF = 1, P < 0.050), as fewer crossings per month occurred than had been expected. This could, however, have been the result of construction occurring during an unusually dry breeding season with very little plant biomass production and rams were not moving about as much, or were confining their activities to areas near reliable water sources. In looking at crossings during the same period in 1982, another very dry year with minimal annual plant biomass production, we recorded 13 crossings of the corridor compared with only 2 during the 1981 construction period. Alternatively, it is possible that construction activity was sufficient to prevent some ram crossings. A total crossing rate of 3.3/month was observed while a rate of 5.6/month was expected. No significant difference was noted in the same area during the post-construction period (X^2 = 2.27, DF = 1, P < 0.250) where an observed crossing rate of 8.5/month was compared with an expected rate of 5.6/month.

Chi-square analysis of Dome Rock crossing rates in Copper Bottom Pass indicated highly significant differences during the construction (X^2 = 73.2, DF = 1, P < 0.001) and post-construction periods (X^2 = 17.7, DF = 1, P < 0.001). The differences here, however, stem from greatly increased crossing rates in these two study phases. Construction period crossing rates of 52.3/month were compared with expected rates of 20.0/month; post-construction crossings occurred at the rate of 30.0/month. Some of the construction period crossings were caused by biologists disturbing sheep, which does introduce some error into the construction period rate. Biologist-caused crossings, however, numbered fewer than 10, a number to small to negate the observations. Dome Rock construction period crossing rates could also have been inflated by construction activity,

but the inference from other analyses of the data is that sheep were attracted to the activity rather than being repelled by it. Regardless of any interpretations of the data, it is abundantly clear that construction and operation of the transmission line did not preclude free movement of desert bighorn back and forth across the corridor in Copper Bottom Pass.

To summarize the preceding material, it generally appears that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 had little negative impact on bighorn populations in the Dome Rock Mountains, New Water Mountains, Kofa Mountains, or the Livingston Hills. Variations in seasonal mean distances from the transmission line can almost universally be given logical, biological explanations based on preconstruction observations of seasonal patterns. There were no clear indications that construction and operation of the line caused nearby, resident sheep to abandon, or even move, normal home areas. Quite the contrary, several individual sheep most directly affected actually appeared to be drawn to construction activity. One ram, 16K/920, did move out of the Livingston Hills in May, 1981; it is possible that this movement was related to construction work occurring to the north of the Livingston Hills. The ram did, however, return to the Livingston Hills in early June, 1981 and remained there until his radio failed in September. He was subsequently recollared in October, 1981 in the Livingston Hills and we suspect that he remained in that small mountain range the entire time his radio was nonfunctional. Ram 16K/920 did make similar movements out of the Livingston Hills in the post-construction period, and it is likely that his May, 1981 departure was not abnormal.

With respect to corridor crossings, there seems to be adequate information to

suggest that transmission line construction precluded normal ram corridor crossings between the New Water Mountains and the Kofa Mountains/Livingston Hills complex. A single ram (13C/861) crossed the corridor twice during the construction period compared with 4 separate rams making 15 crossings during preconstruction and 8 rams making 41 crossings in the post-construction phase. Three of 5 rams that crossed during preconstruction did so during the post-construction phase, 1 did not, and 1 of the ram's radio failed prior to construction. While construction activity may have reduced ram crossing rates in this area, it is clear that the presence of an operational 500kV transmission line has not had a similar effect.

The transmission corridor crossing issue is confounded by Dome Rock sheep which crossed the corridor with greater frequency during the construction and post-construction phases. It could be that construction activity elicited some crossings by disturbing sheep. It is also possible that sheep crossing Copper Bottom Pass are more likely to do so, even in the face of considerable human activity, because excellent escape terrain is immediately available on both sides of the pass throughout much of its length in the Dome Rock Mountains. The latter is not the case in potential crossing areas south of the New Water Mountains. In most areas where sheep might move between the Kofa Mountains or Livingston Hills and the New Water Mountains, it is necessary for sheep to cross substantial areas of flat to rolling terrain with good escape terrain 2 or more kilometers distant. Given that situation, it seems logical that a sheep traveling between the New Water Mountains and the Livingston Hills or Kofa Mountains and confronted with noisy, heavy equipment or numbers of smaller trucks and people, and isolated from good escape terrain, would be more inclined

to return to his original location than continue moving toward a destination that required "uncomfortable" passage of people and equipment.

As a result of this study, we feel confident in stating that construction and operation of the Palo Verde-Devers 500kV Transmission Line 1 may have had some short term, transient, negative impact to bighorn sheep in that portion of the corridor that passes between the New Water Mountains and the Livingston Hills/Kofa Mountains complex. The latter negativity manifest by suppressed bighorn crossing rates in that area. No similar effect was noted in the Dome Rock Mountains. With respect to having an operational 500kV transmission line present in bighorn habitat, we have no evidence at all that suggests a long term negative impact; it appears that bighorn have accepted the transmission line as part of their environment and pay no attention to it whatsoever.

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APPENDIX C
U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION

United States Department of the Interior

FISH AND WILDLIFE SERVICE

LAGUNA NIGUEL FIELD OFFICE
24000 Avila Road
Laguna Niguel, California 92656

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November 13, ~~1987~~

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Return to

Memorandum

To: State Director, Bureau of Land Management, Sacramento, California

From: Acting Field Office Supervisor, Laguna Niguel Field Office, Laguna Niguel, California

Subject: Formal Section 7 Endangered Species Consultation on Southern California's Proposed Palo Verde-Devers 500 kV Transmission Line No. 2 (1-6-87-~~F-57~~)

This is in response to your letter, dated August 14, 1987 and received by us on August 18, requesting formal consultation pursuant to Section 7 of the Endangered Species Act of 1973 (Act), as amended. This memorandum addresses the construction and operation of a 500 kV transmission line between the Palo Verde Nuclear Generating Station in Arizona and the Devers Substation, near Palm Springs, California and its potential impacts on the Yuma clapper rail (Rallus longirostris yumanensis), least Bell's vireo (Vireo bellii pusillus), and Coachella Valley fringe-toed lizard (Uma inornata).

Discussions pertaining to several candidate species that may be affected by proposed project actions are included in the text of this Opinion. Section 7 of the Endangered Species Act does not require formal consultation on the effects of a Federal action on a species that is a candidate for listing as endangered or threatened because candidate species are not protected by the Act. As such, the determination of jeopardy or non-jeopardy to such species will not be addressed. We stress consideration of candidate species because they may become listed during later planning and construction phases of a project.

The conclusions and recommendations in this Biological Opinion are based on the Bureau of Land Management's (Bureau) Biological Assessment and Supplemental Draft Environmental Impact Statement for this project, conversations with Bureau and Nature Conservancy personnel, and information contained in the Coachella Valley Fringe-toed Lizard Habitat Conservation Plan.

Biological Opinion

It is our Biological Opinion that the proposed project is not likely to jeopardize the least Bell's vireo, Yuma clapper rail,

or Coachella Valley fringe-toed lizard. No known nesting areas of the vireo occur within two miles of the proposed transmission line. Therefore, the least Bell's vireo will not be affected by the proposed project and will not be addressed in this Opinion.

Project Description

The proposed transmission line will parallel the existing Devers-Palo Verde 500 kV transmission line from approximately 40 miles west of Phoenix, Arizona to near Palm Springs, California. The length of the line would vary between 235 and 265 miles, depending on the route selected (pages 35-42 and map 1 of the Supplemental Draft Environmental Impact Statement). The line is typical of other 500 kV transmission lines in the United States. It consists of overhead wires supported by steel lattice towers. Most areas of sensitive habitat, such as Colorado River riparian woodlands, will be spanned. Tower placement can be modified slightly to reduce or eliminate adverse effects to locally important wildlife resources. Because the line will be constructed using the access road for the existing line, only short spur roads to the new tower locations will be needed. Detailed descriptions of project facilities, construction methods, and operations can be found in the Supplemental Draft Environmental Impact Statement on pages 11 to 32.

Species Accounts

LISTED SPECIES

Yuma clapper rail

The Yuma clapper rail appears to be a year-round inhabitant of the lower Colorado River drainage. During the breeding season (late March to early October), rails inhabit fresh and brackish marshes of the Colorado River from Needles, California, south to the delta in Mexico. Within Arizona, rails have also been found along the lower Gila River near Buckeye in the Dome and Mohawk Valleys, along the Salt River east of Phoenix, and in wetlands at Pichacho Reservior, and within California, they occur in marshes around the Salton Sea and in agricultural drains and canals and associated seep wetlands.

The preferred breeding habitat of the Yuma clapper rail is freshwater marshes with mature cattail (Typha latifolia) and bulrush (Scirpus acutus) as the dominant emergent vegetation. In addition, constant water levels of less than one foot, readily available mud flats for feeding, and nearby high ground also characterize their habitat. They have been observed in other vegetation types such as carrizo cane, willow, salt cedar, and arrowweed when located at the edge of marshes.

This species was federally listed as endangered on March 11, 1967. Current estimates indicate the Yuma clapper rail

population exceeds 700 birds, divided approximately equally between the United States and Mexico, from the Colorado River delta in Mexico northward to Topock Marsh, Arizona.

Destruction of habitat is the major threat to the continued existence of the Yuma clapper rail. The primary objective of the 1983 Yuma Clapper Rail Recovery Plan (Anderson 1983) is to ensure the continued survival of a total breeding population of 700-1000 Yuma clapper rails in the United States.

Coachella Valley fringe-toed lizard

The Coachella Valley fringe-toed lizard inhabits windblown sand deposits in the Coachella Valley. Low temperatures cause the species to become inactive between November and March, while high summer temperatures reduce activity periods to times of the day when its body temperature is between 20 and 45 degrees Centigrade. The fringe-toed lizard has been considered to be primarily insectivorous, but recent evidence suggests that annual plants, such as bugseed (Dicoria canescens) may be more important food items than was previously thought.

The Coachella Valley fringe-toed lizard was listed as a federally threatened species in 1980. A Habitat Conservation Plan for the protection of this species was finalized in June, 1985 (Steering Committee 1985). The Plan presents guidelines for development of lands and compensation for impacts to the lizard within most of the Coachella Valley fringe-toed lizard's historic range and portions of the existing sand transport system necessary to maintain viable lizard habitat.

The primary threats to the existence of this species result from agricultural and urban development. In addition to the direct destruction of habitat, development has eliminated sand sources or blocked movement of sand, thus indirectly affecting the quality of lizard habitat by interfering with or ceasing the transport of wind-blown sand across the Coachella Valley. Off-road vehicle use is responsible for killing individual lizards, while pesticide spraying may cause some additional losses.

CANDIDATE SPECIES

Numerous candidate species were observed or expected in or near the proposed project site. The following list notes these species and their current status:

Desert tortoise	Xerobates agassizi (Category 2)
Flat-tailed horned lizard	Phrynosoma mcallii (2)
Western yellow-billed cuckoo	Coccyzus americanus ssp. occidentalis (2)
Night-blooming cereus	Peniocereus greggii (2)
Wiggin's cholla	Opuntia wigginsii (2)
Foxtail cactus	Coryphantha vivipara var.

	alversonii (2)
Barrel cactus	Ferocactus acanthodes var. acanthodes (2)
Coachella Valley milkvetch	Astragalus lentiginosus var. coachellae (1)
Orocopia sage	Salvia greatai (2)
California ditaxis	Ditaxis californica (2)

The Biological Assessment for the proposed project contains sufficient information on the ecology of these species, the potential effects of the project, and the proposed mitigation measures. The Fish and Wildlife Service (Service) believes that impacts to these species will be mitigated in large part by the actions proposed in the Biological Assessment. We recommend that the Bureau include these actions as conditions of licensing of the proposed project, should the Bureau decide that licensing is appropriate. Therefore, except for additional comments on the desert tortoise and the flat-tailed horned lizard, these species will not be addressed further in this report.

Desert tortoise

The desert tortoise is a Category 2 candidate species which the Service has determined warrants Federal listing throughout its range in the United States (52 Federal Register 24485-24488), although this action has been precluded at this time by other pending proposals and funding and personnel limitations. The life history information available in the Biological Assessment for this project is adequate; more detailed information can be found in Berry et al. (1984). Because data on desert tortoise populations and trends are better developed for California, this Opinion will be concerned only with the tortoise in California.

The Biological Assessment notes that the proposed transmission line crosses approximately 80 km or 50 miles of desert tortoise habitat, including the Chuckwalla Bench Crucial Desert Tortoise Habitat area. Figure 4.5-2 of the Supplemental Draft Environmental Impact Statement indicates that at least eight observations of tortoises occurred along the route during May, 1985. Density estimates along the line range from low to high in the area immediately west of the Chuckwalla Mountains, but estimates of the areal extent of these densities are not provided.

Flat-tailed horned lizard

The flat-tailed horned lizard is a Category 2 candidate which occurs in California in the area roughly centered around the Salton Sea, southwestern Arizona, and northern Mexico. The horned lizard usually is found in blow sand areas of creosote bush scrub. It is active primarily in the spring and early summer and subsists almost entirely on harvester ants. More detailed life history information can be obtained from Turner and

Medica (1982) and Norris (1949). The Biological Assessment for this project did not mention the flat-tailed horned lizard, although Figure 4.5-2 of the Supplemental Draft Environmental Impact Statement indicates that it is expected to occur in approximately the same portion of the line as the Coachella Valley fringe-toed lizard.

Threats to the continued existence of the flat-tailed horned lizard include agricultural and geothermal developments, urbanization, off-road vehicle use, military operations, water projects, and possibly pesticide use.

Effects of the Proposed Action

LISTED SPECIES

Yuma clapper rail

The construction phase of the proposed project would not effect the Yuma clapper rail, nor result in the loss of any marsh habitat.

There is a potential collision hazard for Yuma clapper rails once the transmission line has been placed across the river. However, recent studies by the Service show the Yuma clapper rail to be a year-round inhabitant of the project area with limited migratory activity. Also, the rails are weak flyers and move in short, low, level flights from marsh to marsh. Therefore, the potential for collision appears to be limited, and thus, no impact to the rails is anticipated.

Coachella Valley fringe-toed lizard

The Habitat Conservation Plan (Steering Committee 1985) for the Coachella Valley fringe-toed lizard states that transmission line construction is a compatible use with lizard habitat. The proposed transmission line crosses approximately 16.6 miles of the Coachella Valley Preserve. However, the line does not cross any developed dune systems containing fringe-toed lizards. Also, the power line will not block sand transport and thus reduce habitat suitability elsewhere on the Preserve. Spur road and tower construction could result in impacts to small patches of windblown sand within the Preserve and also in the approximately 10.2 miles of potential fringe-toed lizard habitat between Towers 2414 to 2406 (Edom Hill to Flat Top Mountain) and Towers 2019 to 2010 (Palm Drive to North Palm Springs).

The proposed project crosses approximately 24.2 miles of Mitigation Fee Area as shown on Figure 8-1 of the Habitat Conservation Plan (Steering Committee 1985). This figure was determined using a digital planimeter. Therefore, we estimate that powerline construction activities will temporarily or permanently disturb 12.8 acres of land within the Mitigation Fee

Area, based on the Draft Environmental Impact Report's estimate of 0.4 acres of disturbance per mile of line plus a portion of the potential additional 17 acres of total disturbance between all the towers (page 148). As set forth in the Habitat Conservation Plan, any disturbance of previously ungraded land in the Mitigation Fee Area must be compensated by payment to The Nature Conservancy of a fee of $640.00 per acre for acquisition of lands within the Coachella Valley Preserve. Payment of the $8,192.00 fee to The Nature Conservancy is required to satisfy the conditions of the Section 10 permit, as developed in the Habitat Conservation Plan (Steering Committee 1985). Additionally, the adoption of the mitigating measures recommended in the Biological Assessment and reiterated as Conservation Recommendations in this Opinion should aid in reducing the number of lizards taken and the amount of habitat disturbed.

CANDIDATE SPECIES

Desert tortoise

The proposed transmission line crosses approximately 80 miles of desert tortoise habitat. Based on the acreage of disturbances presented on page 148 of the Draft Environmental Impact Report, we estimate that approximately 42.4 acres of tortoise habitat will be temporarily or permanently disturbed by project activities. Temporary disturbance of desert tortoise habitat would likely be of longer duration than that of fringe-toed lizard habitat, given the nature of the species' differences in preferred substratum types. Some individuals will probably be killed during construction, both on access roads and in their burrows, even if pre-construction surveys are done. Indirect impacts also will occur to a small degree. The access road already exists so no additional off-road vehicle use should occur, but the towers and powerlines will provide additional perch sites for avian predators of tortoises, such as loggerhead shrikes, common ravens, and golden eagles.

As stated in the Biological Assessment, the transmission line crosses a portion of the Chuckwalla Bench Crucial Desert Tortoise Habitat area. The adverse impacts of the project will be most pronounced in this region where tortoise densities are highest, although habitat quality along the remainder of the line will also be lowered slightly. The Biological Assessment does not quantify the acreages of habitat lost in low, medium, or high desert tortoise density areas. Because this project will result in further degragation of desert tortoise habitat, the Service recommends that, in addition to mitigating impacts during construction, the applicant, Southern California Edison, should acquire private lands within the Chuckwalla Bench area and donate them to an appropriate wildlife management agency, such as the California Department of Fish and Game, to be managed specifically for desert tortoise values.

Flat-tailed horned lizard

Impacts of the project to flat-tailed horned lizards would closely approximate those which will occur to Coachella Valley fringe-toed lizards. In general, the amount of horned lizard habitat crossed approximately equals that of the fringe-toed lizard, but is located slightly to the east. If mitigation measures designed to reduce impacts to the fringe-toed lizard were extended to the horned lizard, most impacts to this species could also be avoided.

Cumulative Impacts

Cumulative effects are those impacts of future State and private actions that are reasonably certain to occur prior to completion of the subject Federal action. A non-federal action is "reasonably certain to occur" if the action requires the approval of a State or local land use control agency, and such agencies have essentially approved the action. Those actions not requiring local government approvals should be ready to proceed.

Loss of Coachella Valley fringe-toed lizard habitat has been addressed by the development and implementation, in 1985, of a Habitat Conservation Plan for that species. This Plan has established a means of securing funds for purchase of prime lizard habitat in exchange for clearances from the Service to develop other lands occupied by the lizard. In general, the Plan seems to be functional although some development has occurred within the Mitigation Fee Area which has not resulted in payment of the appropriate fees.

Non-federal actions concerning the Yuma clapper rail in the vicinity of the project area relate primarily to habitat degradation within the Coachella Valley. These actions are the result of the unauthorized activities of private individuals and water districts illegally filling or clearing riparian habitat in the Whitewater River delta. Several resource agencies are currently attempting to solve the problem, but a resolution may not be forthcoming in the near future.

Impacts of non-federal projects and activities on the desert tortoise and flat-tailed horned lizard continue to occur throughout the ranges of these species. Off-road vehicle use and possibly pesticide use continue to cause declines in horned lizard populations. County-permitted activities, such as yucca harvesting and sand and gravel mining, continue to affect tortoises and are ongoing, particularly in the Ward Valley area. Off-road vehicle use, shooting, and collecting of individuals are responsible for continued population declines.

Quantification of State and local actions throughout the ranges of the species involved over the life of the project would be extremely difficult. The Service is often unaware of such

projects until late in the agency planning process. However, uncompensated loss of habitat for all of these species, except perhaps the fringe-toed lizard, continues to occur over all or portions of their ranges.

Biological Opinion

It is our Biological Opinion that construction and use of the Devers-Palo Verde 500 kV transmission line #2 will not jeopardize the continued existence of the Yuma clapper rail and Coachella Valley fringe-toed lizard.

Incidental Take

The Service does not anticipate that any incidental take of Yuma clapper rails will occur as a result of the proposed project.

Take of Coachella Valley fringe-toed lizards could occur through construction activities. This take would be authorized under the Section 10 permit developed in the Habitat Conservation Plan. Payment of $8,192.00 by Southern California Edison for disturbance of 12.8 acres of land within the Mitigation Fee Area should be made to The Nature Conservancy, as required by the Habitat Conservation Plan for the lizard.

Conservation Recommendation

In furtherance of the purposes of the Act [Sections 2(B), 2(c), and 7(a)(1)], which mandates Federal agencies to use their authorities to carry out programs for the conservation of listed species and to conserve the ecosystems upon which they depend, we recommend the following additional actions:

(1) To the extent possible, construction operations within suitable habitat of the Coachella Valley fringe-toed lizard should occur when the air temperatures one inch above ground in the shade are between 96 and 112 degrees Fahrenheit. The lizards should be active within this temperature range and be able to avoid crushing by vehicles and personnel.

(2) Windblown sand areas in the Coachella Valley should be avoided when constructing towers, spur roads, and other facilities, whenever possible. These localized areas could support small numbers of fringe-toed lizards. Preconstruction surveys would identify sandy areas and allow avoidance by designating specific areas to avoid.

(3) All construction activities should be restricted to designated work areas, with all vehicle use occurring only on designated roads. Any spoils should be stockpiled in previously disturbed areas which have been examined for the presence of lizards (and cleared of lizards, if necessary) by a qualified

biologist.

(4) Spur roads and other areas to be disturbed should be examined for lizards (and cleared, if necessary) by a qualified biologist immediately prior to construction.

(5) Compacted soils should be scarified and seeded with bugseed (Dicoria canescens) to promote revegetation of plant species valuable to the lizard.

(6) Southern California Edison should install locked gates at the entrances to their access roads where these roads cross Thousand Palms Road within the Coachella Valley Preserve. The Nature Conservancy's Preserve manager should be consulted prior to placement of these gates and any other work within the Preserve.

The Service also strongly recommends that Southern California Edison implement the following measures to conserve individuals and habitat of the candidate species, the flat-tailed horned lizard and the desert tortoise. Such measures, if successfully implemented, could reduce the need to list these species in the future.

(1) For flat-tailed horned lizards, conservation recommendations 3, 4, and 5 for the fringe-toed lizard should be implemented for the area described as potential horned lizard habitat on map 4.5-2 of the Supplemental Draft Environmental Impact Statement.

(2) Compensation for lost horned lizard habitat values by acquisition of private lands would occur concurrently with payment of fees associated with fringe-toed lizard habitat losses and no further action is recommended.

(3) To reduce loss of individual desert tortoises we recommend that:

(A) Within 30 days from date of proposed construction, the corridor for spur roads, tower footings, and associated work areas should be surveyed for tortoise sign. Road, footing, and work area alignments should be modified to the extent possible to avoid adversely affecting any "active" 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. Tortoises encountered above ground during preliminary surveys should be released into substantially unaltered areas within a one-mile radius from initial point of capture. Tortoises exhumed from burrows should be segregated and retained until weather conditions permit safe release into substantially unaltered areas within a one-mile radius from the initial point of capture.

(B) Employees involved during construction and later operation of the transmission line should be informed of the occurrence of the desert tortoise in the project area and measures being instituted for its protection and management. This program should note that the desert tortoise is often encountered crossing paved and unpaved roads in the general project area, is highly vulnerable to road mortality, and thus care should be exercised when commuting to and from the project site. The program should also note that the desert tortoise is protected under California law and that collection for pets is unlawful.

(C) As a means of reducing the potential "attractive" nature of the project facilities to avian predators, we recommend that any trash or potential food sources for ravens be promptly contained and removed from the areas during construction, and that associated facility design prohibit opportunity for collection of any surface waters.

(4) To compensate for loss of desert tortoise habitats resulting from transmission line construction and subsequent maintenance, we recommend:

(A) The applicant should provide for off-site compensation by purchasing desert tortoise habitat and donating this area to The Nature Conservancy, the Desert Tortoise Preserve Committee, or the California Department of Fish and Game for management. The best area for acquisition would be within the Chuckwalla Bench Crucial Habitat area. Specific areas to be acquired, and terms of management transfer should be decided upon during discussions between the applicant, U.S. Fish and Wildlife Service, and the California Department of Fish and Game. Because areas of low, medium, and high density tortoise habitat were not identified in the project's environmental documents, we recommend that all desert tortoise habitat be treated as high density habitat and be replaced at a ratio of ten acres of acquired land for each acre lost. We base this recommendation on ratios recommended for replacement of low and medium density areas elsewhere in California. The Service would be willing to fine-tune this ratio based on more detailed information on tortoise densities, should Southern California Edison desire.

(B) The applicant should provide funds to the organization responsible for management of secured lands for the operational life of the transmission line project. Funding amounts should be acceptable to the U.S. Fish and Wildlife Service, California Department of Fish and Game, and the subject management organization.

(5) Any candidate plant populations encountered in the proposed transmission line project during pre-construction surveys should be prominently marked and avoided to the extent possible during construction. A biologist familiar with these species should also be present on-site during construction to aid

in plant identification and avoidance of sensitive species.

This concludes formal consultation on the proposed construction and operation of a 500 kV transmission line from the Palo Verde Nuclear Generating Station to the Devers Substation. Should the project be significantly modified in a manner not discussed, or if new information on listed species or impacts to listed species becomes available, or if incidental take of Yuma clapper rails occurs, or if the area of Coachella Valley fringe-toed lizard habitat to be disturbed exceeds 12.8 acres, or if a new species becomes listed, then reinitiation of formal consultation should be considered. We would appreciate written notification of your intentions in light of this Biological Opinion. For further discussion, please contact Ray Bransfield of this office at FTS 796-4270 or (714) 643-4270.

Wayne D. Kaupe

for Jeffrey D. Opdycke

cc: CDFG, Region 5, Long Beach, CA
Coachella Valley Preserve, Thousand Palms, CA

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PART 1 OF 2
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To review Part 2 please see:

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