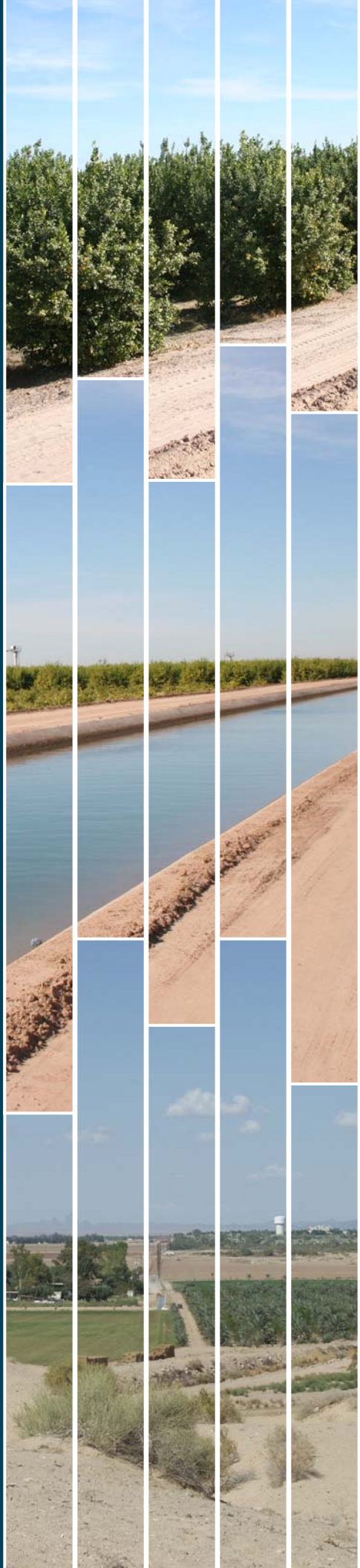

ENVIRONMENTAL ASSESSMENT

Yuma TS-8 to San Luis 69kV Project

Prepared for

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Bureau of Reclamation
Yuma Area Office

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1.0 PURPOSE AND NEED

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) and U.S. Bureau of Reclamation (Reclamation) guidelines. It summarizes the environmental effects of implementation of the proposed Yuma TS-8 to San Luis 69 kilovolt (kV) Transmission Line Project (Proposed Project). The project seeks to address load-serving and reliability concerns in the developing area south of Yuma and in the City of San Luis in southern Arizona.

The EA describes the Proposed Project, alternatives, and the potential environmental impacts of the project. It also sets forth the consultation process used in preparing this EA.

1.1 BACKGROUND

Arizona Public Service Company (APS) is the electric power supplier in southern Arizona and within Yuma County. Reclamation is in receipt of a "Right-of-Use" application from APS and will issue a Contract and License authorizing "use areas" upon lands held in fee by the United States and/or Reclamation (fee lands will include federal lands withdrawn for Reclamation project purposes and acquired lands, if any) and Consent Agreements granting "usage" of less than fee interest(s) held by Reclamation. Use grants are generally granted for an initial term of 25 years with an option to extend for an additional 25 year term.

The Proposed Project, which includes a 69kV transmission line and a 12/69kV substation, would cross federal lands withdrawn for and administered by Reclamation, lands managed by the State of Arizona, and privately owned lands. The Proposed Project would originate at an approved substation (TS-8) in southern Yuma, Arizona, and travel south and west to the proposed SW-3 Substation, located in San Luis, then on to the existing San Luis Substation. The estimated length of the proposed transmission line is approximately 19.5 miles, of which approximately 7.5 miles would cross federal lands withdrawn for and administered by Reclamation, within the required right-of-way.

APS is requesting a use area from Reclamation of up to 30 feet in width to construct, operate, and maintain the proposed transmission line and structures. Construction of the Proposed Project is anticipated to occur over 6 months. The anticipated in-service date for the SW-3 Substation and San Luis to SW-3 69kV transmission line is 2009. The TS-8 substation and TS-8 to San Luis 69kV transmission line is anticipated to be in-service in 2010. The proposed 69kV transmission line and substation would be in operation year-round to provide reliable power to the communities in the greater Yuma area.

APS has coordinated with Reclamation and the Yuma County Water Users' Association (YCWUA) to co-locate the new 69kV facilities within existing distribution facility rights-of-way, on single–pole structures, where feasible. In addition, APS would combine existing 12kV and 34.5kV transmission lines with the new 69kV transmission line, in order to consolidate facilities, where appropriate. Reclamation owns the 34.5kV line that would be co-located with

the new 69kV facilities. Where not located on federal lands, Reclamation holds the associated rights-of-way for the 34.5kV line. Yuma County Water Users Association (YCWUA), under contractual obligation to the United States, is responsible for operation and maintenance of the line.

1.2 PURPOSE AND NEED FOR THE PROPOSED PROJECT

The communities of Yuma, Somerton, and San Luis continue to be among the fastest growing areas in the country. Due to this tremendous growth, APS' electrical infrastructure is nearing its present capacity. The addition of new transmission lines and substations would help APS meet the energy requirements of its existing and future customers. The tie line to the San Luis Substation will provide a second feed to the Substation to ensure reliability. The proposed SW-3 Substation will be constructed to serve the new San Luis II Port-of-Entry and to provide support to the industrial development anticipated in the area.

1.3 PURPOSE AND NEED FOR AN ENVIRONMENTAL ASSESSMENT

Because a portion of the Proposed Project is located on Reclamation lands, it is subject to review and documentation under NEPA (40 CFR Parts 1500 et seq.) and Reclamation's NEPA Handbook (USBR 1990). This EA provides information needed by the responsible federal official to determine whether to prepare a Finding of No Significant Impact (FONSI) or an environmental impact statement (EIS).

2.0 DESCRIPTION OF THE PROPOSED PROJECT AND ALTERNATIVES

2.1 LOCATION

The Proposed Project would involve the construction of a 69kV transmission line from APS' approved TS-8 Substation (Section 25, Township 9 South, Range 23 West) to the proposed SW-3 Substation (Section 4, Township 11 South, Range 24 West) located in San Luis, then to the existing San Luis Substation (Section 6, Township 11 South, Range 24 West). The approved TS-8 Substation will be located near the alignment of County 14½ Street, just west of Avenue 4E, in southern Yuma, Arizona. The proposed 69kV route would travel west from the TS-8 Substation for approximately 4 miles on County 14½ Street. The route would then travel south and west for approximately 0.75 mile before reaching County 15th Street and Avenue A-½. The route would travel south along Avenue A-½, for approximately 4 miles, to County 19th Street. The transmission line would turn west and travel along County 19th Street for approximately 3 miles, then head southwest approximately 2.5 miles. At Avenue F the line would turn and travel south for approximately 2 miles (62 feet west of the centerline of Avenue F), across federally managed land. The line would terminate at the proposed SW-3 Substation, which would be located on 2 acres at the northeast corner of Avenue F and County 23rd Street, east of San Luis. In addition, a 69kV transmission line would be constructed from SW-3 Substation, west along County 23rd Street for approximately 2 miles, then would turn north and travel along Avenue H for approximately 0.5 mile. The transmission line would then travel southwest for approximately 0.5 mile, into the existing San Luis Substation. The existing San Luis Substation is located approximately 1.25 miles north of the U.S.-Mexico border and approximately 3 miles east of the Colorado River.

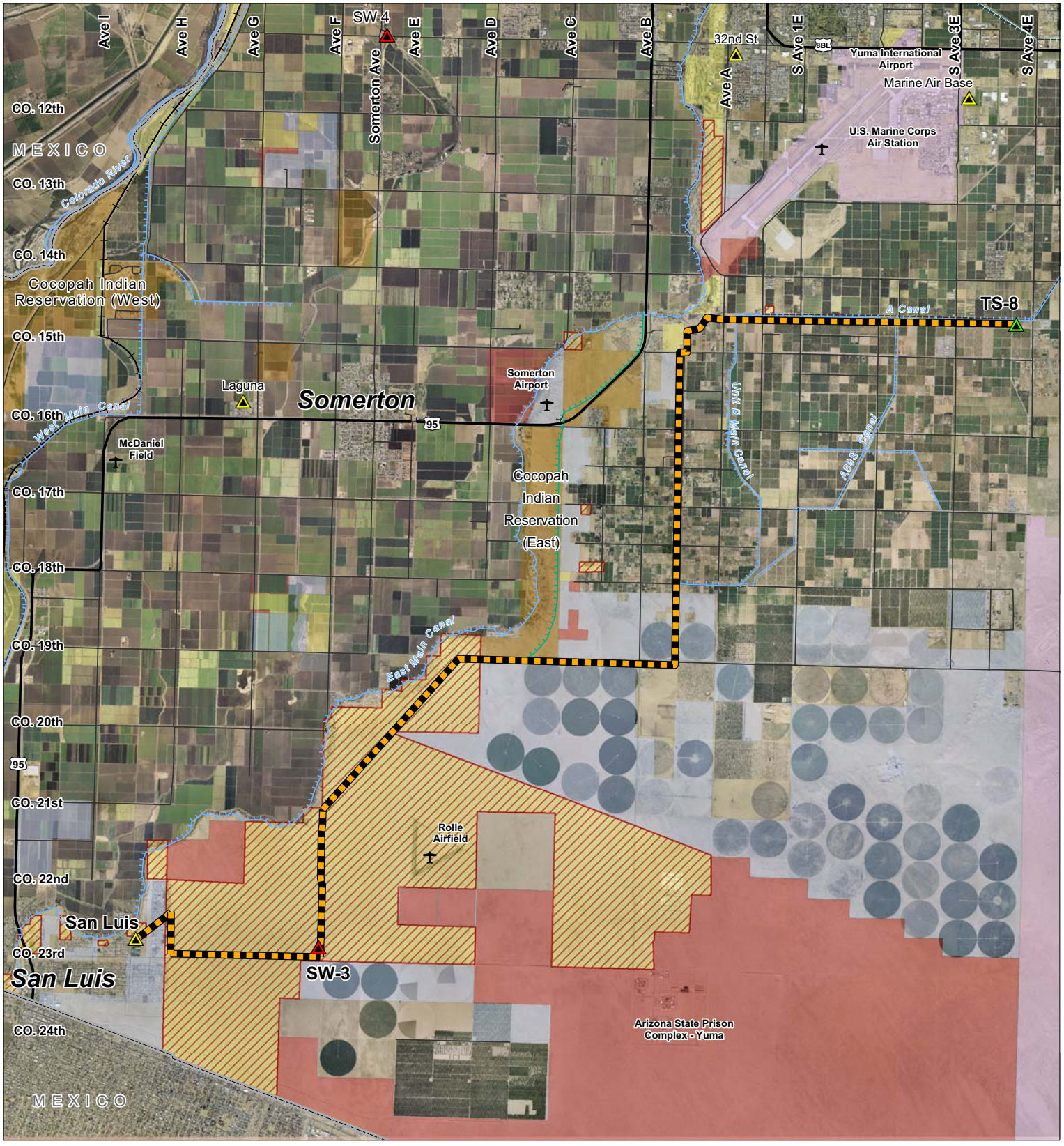
The proposed SW-3 Substation and approximately 7.5 miles of transmission line would be located on federal lands withdrawn for and administered by Reclamation. Portions of the 69kV transmission line would be collocated with existing YCWUA and APS transmission facilities. The proposed transmission line route and SW-3 Substation are shown on Figure 1.

2.2 ALTERNATIVES CONSIDERED IN DETAIL

There were two alternatives considered in detail: Alternative A, No Action, and Alternative B, the Proposed Action.

2.2.1 Alternative A – No Action

NEPA guidelines require that an EA evaluate the "No Action" alternative in addition to the Proposed Project. The No Action alternative provides a basis for comparison of the environmental consequences of the Proposed Action. In this EA, the No Action alternative assumes that no transmission line or substation would be constructed. There would be no ground disturbance or resource impacts.



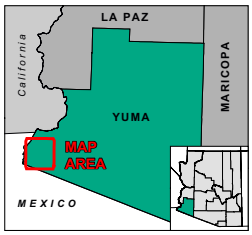
LEGEND

Land Ownership

- Bureau of Land Management
- Bureau of Reclamation
- Bureau of Land Management Administered by Bureau of Reclamation
- Department of Defense
- Bureau of Indian Affairs
- State Trust Land
- Private

Reference Features

- Proposed 69kV Transmission Line
- Distribution Substation
- Approved Substation
- Proposed Substation
- National Border
- Highway
- Road
- River
- Canal
- Drainage Canal
- Airfield



TS-8 to San Luis 69kV Project

Figure 1

Proposed Project and Land Ownership

December 2007

0 0.5 1 2 Miles

N

Source: GlobeExplorer; Arizona State Land Department; City of Yuma/County of Yuma Joint Land Use Plan; Marine Corps Air Station, 2006; Bureau of Land Management Surface Management Status 100,000 scale topographic maps, Yuma, Tinajas Mts; EPG.

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2.2.2 Alternative B – Proposed Action

Reclamation is considering approval to allow APS to construct, operate, and maintain a substation and portions of a 69kV transmission line on federal lands withdrawn for and administered by Reclamation. The Proposed Action includes the construction and operation of the 12/69kV SW-3 Substation, a 69kV transmission line from the TS-8 Substation to the proposed SW-3 Substation, and a 69kV transmission line from the SW-3 Substation to the San Luis Substation.

Where feasible, APS proposes to co-locate the proposed 69kV facilities with existing Reclamation and APS distribution facilities on single-pole structures. The proposed 69kV transmission line would be co-located (on new poles) with an existing Reclamation 34.5kV distribution line and an APS 12kV distribution line, within existing Reclamation rights-of-way, along Avenue A-½ from County 14½ Street to County 19th Street. Along County 19th Street from Avenue A-½ to Avenue D, and traveling southwest from Avenue D to Avenue F, the proposed transmission line would be collocated, within Reclamation rights-of-way, with the Reclamation 34.5kV distribution line (operated and maintained by YCWUA). Along Avenue F, County 23rd Street, and Avenue H, the proposed 69kV would be constructed within existing APS rights-of-way and would be co-located with an existing APS 12kV distribution line. A small segment traveling southwest from Avenue H to the San Luis Substation would be collocated with APS' existing 69kV transmission line.

Information regarding the design of this project is shown in Table 1-1.

TABLE 1-1
TYPICAL DESIGN CHARACTERISTICS

Line Length	Approximately 20 miles
Type of Structures	Single-pole dulled steel
Structure Height	65 to 70 feet
Span Length	200 to 500 feet
Number of Structures per Mile	8 to 10 without 12kV underbuild; 14 to 16 with 12kV underbuild
Right-of-Way Width	30 feet
Land Disturbed:	All transmission line construction would be conducted within the designated 30-foot rights-of-way for the proposed transmission line. Substation construction would be conducted within the 2-acre proposed site.
Access Roads	Existing roads would be used for the entire route, with the exception of a new road 62 feet west of Avenue F (approximately 2 miles) and a new road 62 feet east of Avenue H (approximately 0.6 mile).
Voltage	69kV
Capacity	70 megawatts
Circuit Configuration	Single-circuit or double-circuit 69kV with 12kV underbuild in some locations
Conductor Size	1.1 inches
Ground Clearance of Conductor	23 feet minimum
Tower Foundation Depth	7 to 14 feet

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

To comply with Council of Environmental Quality (CEQ) requirements for analytical and concise environmental documents (40 CFR 1502.2), resources identified as potentially affected by the Proposed Action or as a special concern are described in this section. Environmental resources could be affected during implementation of the Proposed Action. The effect, or impact, is defined as any change or alteration, produced directly or indirectly by the Proposed Action, to the pre-existing condition of the environment.

Reclamation evaluated the resource elements below in relation to the Proposed Action to determine the potential for both adverse and beneficial effects. Due to the geographic scope of the project, Reclamation determined that only elements of the environment that could be affected by the Proposed Project would be discussed in detail.

Evaluated Resources:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural/Historic Resources
- Geology and Soils
- Hazardous and Solid Waste
- Water Resources
- Land Use/Ownership
- Noise
- Indian Trust Assets
- Socioeconomics
- Environmental Justice

3.1 AESTHETICS

This section of the EA addresses visual resources potentially affected by the Proposed Project. The following is an inventory of visual resources, including the project setting (scenery), affected sensitive viewers, and Bureau of Land Management (BLM) agency management objectives. Federal lands withdrawn for and administered by Reclamation, under the 5-mile Zone Protective and Regulatory Pumping Unit Resource Management Plan (RMP) (2004), do not have established visual resource management (VRM) objectives. The established BLM VRM system will be used as a framework for assessing the Proposed Project for agency management objective compliance. Included in this section are an inventory of the visual resources affected by the Proposed Project, a description of the anticipated impacts to visual resources, and the Best Management Practices (BMPs) or mitigation, that will minimize impacts to visual resources.

3.1.1 Affected Environment

The Proposed Project is located within the Basin and Range Physiographic Province in southwest Arizona (Fenneman 1931). The Basin and Range Province is distinguished by isolated, roughly parallel mountain ranges separated by closed desert basins. The local topography of the project area is characterized by sloping plains and broad, flat valleys, with distant mountains in the background. The predominant vegetation character of the study area is

representative of the Lower Colorado River Valley subdivision (Brown and Lowe 1980). Creosote and white bursage are dominant plant species on undeveloped lands and are characterized by a sparse, open shrub canopy that is low to the ground. Developed areas typically consist of low-density residential lots intermixed with native vegetation. Agricultural areas are primarily citrus and alfalfa.

Infrastructure and cultural modifications that affect the natural landscape setting include 34.5kV and 12kV distribution lines, San Luis Substation, improved and unimproved roads, East Main Canal, Somerton Airport, Rolle Airfield, and other light industrial facilities. The majority of the proposed route has been modified primarily by agriculture and residential development. The undeveloped portions of the southern route have open expanses of native vegetation, with generally flat topography and minimal landscape features. Landscapes with significant modifications and low visual interest are described by the BLM as Class C landscapes. Class C landscapes tend to lack color, landform, and visual diversity and include cultural modifications such as roads, utility facilities, and developed areas. Based on these descriptions, the scenic quality of the area has been rated Class C (BLM VRM Manual 8400 Series 1986).

Viewers that would be affected by the Proposed Project include residences, travel routes, and recreational users. Two residential areas within 0.5 mile of the project study area include an area along Avenue A-½, from County 16th Street to County 18th Street, and within the City of San Luis. Views from either side of the proposed transmission line along Avenue A-½ include low-density residences with dispersed agriculture and existing 12kV and 34.5kV distribution lines. San Luis residences adjacent to the proposed transmission line may have views of developed or vacant land with sparse desert vegetation, existing 12kV and 34.5kV distribution lines, and the existing San Luis 69kV Substation.

Several local transportation routes, such as County 14th through 19th streets, County 23rd Street, Avenue A-½, and Avenue F would either be crossed or paralleled by the Proposed Project. Views along local travel routes are typically short in duration or have a modest level of vehicular speed associated with these routes, resulting in a moderate sensitivity. The TS-8 Substation would be located west of Avenue 4E, along County 14th Street, and would be adjacent to agricultural fields with views from residences within 0.25 mile. The proposed SW-3 Substation would be located on undeveloped lands with sparse vegetation, near County 23rd Street and Avenue F.

There are no formally designated or defined trails, parks, or trailheads within the project study area; however, dispersed recreation viewers may have views of the southern portion of the Proposed Project from Reclamation lands near San Luis.

BLM lands in Yuma County are currently managed within the framework of the Yuma RMP/EIS (1987). This plan does not have established VRM objectives. As per BLM direction, in the absence of adopted VRM classes, all lands without visual resource objectives default to Class III. Therefore, this statement designates all BLM lands within Yuma County as Class III. The BLM uses four VRM classes to manage visual resources. The objective for Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape

should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. The Proposed Project does not cross any other VRM classes.

3.1.2 Environmental Consequences/Impacts

The BLM VRM system was used to evaluate the existing landscape condition and modifications of the Proposed Project. Low impacts are anticipated to occur for the majority of the Proposed Project during construction due to existing modified landscape conditions.

Introduction of the Proposed Project would have minimal impacts on the existing landscape setting. The proposed transmission line would collocate with existing 12kV and 34.5kV distribution lines near the residences on Avenue A-½ and in San Luis. Consolidation of the proposed transmission line with existing facilities onto single structures may result in positive impacts for residences that currently have views of power lines on both sides of the street. Therefore, low impacts are anticipated for these sensitive viewers.

The proposed SW-3 Substation is anticipated to have a low visual impact because the landscape setting has already been modified by existing electrical facilities, and there are no residential viewers within 1 mile of the proposed site.

Compliance with VRM objectives for Class III-designated lands are anticipated because the Proposed Project would be consolidated with existing facilities in a modified setting. Anticipated impacts can be further minimized by implementing BMPs or mitigation regarding the construction, operation, and maintenance of the proposed transmission line.

3.1.3 Best Management Practices

The following BMPs are recommended to mitigate impacts to visual resources:

- A “dulled” or “deglared” finish on towers can be applied to reduce visibility of the transmission line in the landscape.
- Construction and maintenance traffic will utilize existing access roads, where feasible, to minimize new disturbance.
- Alignment of new access roads will follow the landform contours, where practicable, providing that such alignment does not impact additional visual resources.

3.2 AIR QUALITY

3.2.1 Affected Environment

The majority of the Proposed Project is located within the Yuma PM_{10} Non-Attainment Area. PM_{10} is defined as particulate matter with an aerodynamic diameter less than or equal to a

nominal 10 micrometers. A small portion of the Proposed Project, south of County 22nd Street, is outside of the non-attainment area. Due to the Yuma area 24-hour PM_{10} National Ambient Air Quality Standard (NAAQS) violations in 1990 and 1991, and previously in 1989 and 1990, the Arizona Department of Environmental Quality (ADEQ) completed a state implementation plan (SIP) for the Yuma Moderate PM_{10} Non-Attainment Area in 1991. Contributing PM_{10} emission sources in the Yuma area, including, Yuma, Yuma County, and the City of Somerton, are agricultural activities, paved and unpaved road dust, and disturbed areas.

The ADEQ website (www.azdeq.gov) states the current status of the non-attainment area as the following:

> The Yuma PM_{10} State Implementation Plan (SIP) that was submitted to the Environmental Protection Agency (EPA) Nov. 15, 1991, is in the process of being withdrawn by ADEQ. A revision to the PM_{10} SIP was submitted to EPA on July 12, 1994, and was determined by EPA to be complete but was never approved. ADEQ is also withdrawing this plan. ADEQ began working with stakeholders in the Yuma area in July 2001 to develop a maintenance plan based on data that showed no exceedances of the National Ambient Air Quality Standards (NAAQS) for PM_{10}. On Aug. 18, 2002, however, the Yuma area experienced a violation of the 24-hour NAAQS. This Aug. 18, 2002, exceedance was due to high winds associated with a large thunderstorm. The high wind event data met all the technical criteria to be considered a natural event. Consequently, work on the Yuma Maintenance Plan was temporarily suspended because EPA policy required the development of a Natural Events Action Plan (NEAP) to prevent the area from being downgraded to a serious nonattainment area. The NEAP was developed by the Yuma area stakeholders and ADEQ, and submitted to EPA in February 2004. A NEAP Implementation Report was submitted to EPA on August 17, 2005.

ADEQ submitted a maintenance plan for the Yuma area to the EPA on August 14, 2006, which, upon EPA's approval, will re-designate the area to attainment for PM_{10}. The NEAP and maintenance plan will be re-evaluated every 5 years.

3.2.2 Environmental Consequences/Impacts

Construction of the Proposed Project would temporarily increase dust caused by vehicles on dirt roads and exhaust odors. Substation grading may temporarily create a source of blowing dust on the cleared land. These effects, during project construction, would be local in nature.

3.2.3 Best Management Practices

The following BMPs are recommended to mitigate impacts to air quality:

- The amount of traffic and vehicle speeds on dirt roads would be limited during construction activities and dust would be abated by watering or another appropriate dust-abatement measure.
- Construction equipment and vehicles used during construction will be properly maintained to minimize exhaust emissions and equipment idling will be limited.
- Project personnel will employ dust and particulate control measures for agriculture practices, as specified by ADEQ (A.R.S. 49-457).
- A project information sign with a phone number for citizens to report dust complaints will be displayed.

3.3 BIOLOGICAL RESOURCES

3.3.1 Affected Environment

A site visit to the Proposed Project area was conducted on July 17 through July 19, 2007. The Proposed Project is located in southwestern Arizona, south of Yuma, in the Lower Colorado River Valley. Much of the land in the area, particularly to the west, north, and east, is dominated by agriculture. The landscape along the southern half of the proposed route is generally undeveloped, although the majority of the proposed route from San Luis Substation to the planned TS-8 Substation follows existing electrical transmission lines, which have associated access roads in the undeveloped portions of the route. The northern half of the proposed route features both agriculture and residential development. Rolle Airfield, a small airport, lies to the southeast of the project site, and Yuma International Airport lies approximately 1 mile northwest of the TS-8 Substation site. The existing San Luis Substation is located approximately 1.25 miles north of the U.S.-Mexico border and approximately 3 miles east of the Colorado River.

Climate and Vegetation

The Yuma Desert is very dry, usually receiving less than 100 millimeter (mm) of rainfall per year (Turner 1994). Temperatures are high in the summer, with a maximum near 120 degrees Fahrenheit. Winter maximum temperatures average in the upper 60 degrees Fahrenheit range. Daily variations of 30 to 50 degrees are common due to the low cloudiness and lack of vegetation cover to hold the heat. Low relative humidity accompanies the high summer temperatures, with daytime relative humidity readings frequently between 5 to 10 percent. Precipitation occurs primarily in the winter months (from December to February). Because of the high temperatures and low precipitation, the Lower Colorado River Valley Subdivision is the driest of the Sonoran Desert subdivisions (Turner and Brown 1982).

The project is at or near sea level and vegetation in the area is representative of the Lower Colorado River Valley Subdivision of Sonoran desertscrub, in an area referred to by some as the Yuman Desert (Jaeger 1969). The Lower Colorado River Valley Subdivision characteristically covers broad alluvial valley floors and is 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 support woodland-like communities of blue palo verde (*Parkinsonia florida*), ironwood (*Olneya tesota*), and several species of shrubs where soils are coarse and rocky. Where soils are finer-textured, mesquite (*Prosopis* sp.) may occur as a dominant. Washes may also be inhabited by shrubs such as smoke tree (*Psorothamnus spinosus*) and sweetbush (*Bebbia juncea*). Plants documented during the site visit are listed in Table 3-1.

In many places, the ground is covered with sand, and the vegetative cover is low. Sand hummocks form on the lee side of shrubs, providing fine-scale topography across an otherwise flat landscape. The shifting sands are ephemeral, and some plants and animals possess adaptations for living on the constantly moving substrate.

TABLE 3-1
PLANTS DOCUMENTED DURING SITE VISIT

Family	Common Name	Scientific Name
Nyctaginaceae	Sand verbena	*Abronia villosa*
Asteraceae	White bursage	*Ambrosia dumosa*
Papaveraceae	Prickly poppy	*Argemone polyanthemos*
Chenopodiaceae	Four-winged saltbush	*Atriplex canescens*
Chenopodiaceae	Desert saltbush	*Atriplex polycarpa*
Asteraceae	Desert marigold	*Baileya multiradiata*
Asteraceae	Sweetbush	*Bebbia juncea*
Brassicaceae	Saharan mustard	*Brassica tournefortii*
Asteraceae	Brittle bush	*Encelia farinosa*
Ephedraceae	Desert tea	*Ephedra californica*
Asteraceae	Burro bush	*Hymenoclea salsola*
Krameriaceae	White rhatany	*Krameria grayi*
Zygophyllaceae	Creosote bush	*Larrea tridentata*
Onagraceae	Evening primrose	*Oenothera sp.*
Fabaceae	Ironwood	*Olneya tesota*
Fabaceae	Mexican palo verde	*Parkinsonia aculeata*
Fabaceae	Blue palo verde	*Parkinsonia florida*
Poaceae	Big galleta grass	*Pleuraphis rigida*
Martyniaceae	Desert unicorn plant	*Proboscidea althaeifolia*
Asteraceae	Turtleback	*Psathyrotes ramosissima*
Fabaceae	Indigobush	*Psorothamnus emoryi*
Fabaceae	Smoke tree	*Psorrothamnus spinosus*
Poaceae	Arabian grass	*Schismus arabicus*
Malvaceae	Desert mallow	*Spheralcea ambigua*
Tamaricaceae	Athel tamarisk	*Tamarix aphylla*
Boraginaceae	Crinkle mats	*Tiquilia plicata*

Wildlife

The vertebrate fauna of the project area include some species that are highly adapted to life in hot, arid conditions. The Kangaroo Rats and Pocket Mice, for example, are able to complete their life cycles without free water, obtaining all of their requirements through metabolic processes. Behavioral adaptations such as a totally nocturnal activity pattern also contribute to their ability

to survive. Ammophilous species like the Yuma Desert Fringe-toed Lizard *(Uma rufopunctata*) have specific adaptations for living in fine, wind-blown sand.

Mammals

Mammals are sparse throughout the study area, with the exception of a suite of rodents including Kangaroo Rats (*Dipodomys* spp.), White-footed Mice (*Peromyscus* spp.), and Pocket Mice (*Perognathus* spp.) (Hoffmeister 1986). Coyote (*Canis latrans*) and Black-tailed Jackrabbit (*Lepus californicus*) also are likely to be present in limited numbers.

Birds

Given the habitat type in the project area, bird species diversity in the project area is low. Characteristic terrestrial species include Common Raven (*Corvus corax*), Mourning Dove (*Zenaida macroura*), Red-tailed Hawk (*Buteo jamaicensis*), Black-throated Sparrow (*Amphispiza bilineata*), LeConte's Thrasher (*Toxostoma lecontei*), Black-tailed Gnatcatcher (*Polioptila melanura*), and House Finch (*Carpodacus mexicanus*).

Amphibians and Reptiles

Amphibians and reptiles of the project area are represented by several species of toads, lizards, and snakes.

Toads likely to be present include:

- Sonoran Desert Toad (*Bufo alvarius*)
- Great Plains Toad (*Bufo cognatus*)
- Red-spotted Toad (*Bufo punctatus*)
- Woodhouse's Toad (*Bufo woodhousei*)
- Couch's Spadefoot Toad (*Scaphiopus couchii*)

Lizards include:

- Western Banded Gecko (*Coleonyx variegates*)
- Long-nosed Leopard Lizard (*Gambelia wislizenii*)
- Desert Iguana (*Dipsosaurus dorsalis*)
- Zebra-tailed Lizard (*Callisaurus draconoides*)
- Side-blotched Lizard (*Uta stansburiana*)
- Desert Horned Lizard (*Phrynosoma platyrhinos*)
- Western Whiptail (*Aspidoscelis tigris*)

Common snakes include:

- Gopher Snake (*Pituophis catenifer*)
- Western Threadsnake (*Leptotyphlops humilis*)
- Coachwhip (*Masticophus flagellum*)
- Mojave Rattlesnake (*Crotalus scutulatus*)
- Sidewinder (*Crotalus cerastes*)

Fish

No fish are present in the project area, except possibly in irrigation canals.

Federally Listed and Special Status Species

Special status species are those wildlife and plant species, which because of loss of habitat and/or decline in their numbers, have been listed by the federal and/or state government as species of concern. The U.S. Fish and Wildlife Service (USFWS) maintains a list of threatened and endangered species, as well as species that are candidates for such listing under guidelines of the Endangered Species Act of 1973 (ESA), as amended. The U.S. Forest Service (Forest Service) maintains its own list of Forest Service Sensitive Species. The Arizona Game and Fish Department (AZGFD) monitors Wildlife Species of Special Concern in Arizona (WSC), and the Arizona Department of Agriculture (ADA) provides protection for native plant species under the Arizona Native Plant Law (ANPL).

The Arizona office of the USFWS requests that information on threatened or endangered species for specific projects be obtained from their Internet website. The list of federally protected species for Yuma County was obtained from the USFWS website and was reviewed in preparing this EA. Information obtained from the AZGFD includes records from their Heritage Data Management System (HDMS) within 3 miles of the project limits. The HDMS includes listings for ESA, Forest Service, BLM, WSC, and ANPL species. The HDMS also includes the former federal species of concern, under the ESA category, which are now being monitored by the AZGFD for the USFWS. Since there is always potential for sensitive species to be present for which there are no known records, the full HDMS list for Yuma County was also reviewed. Federally listed threatened, endangered, and other sensitive species of animals and plants that were thought to have some potential for occurring within the project study area are listed in Table 3-2. Federal, Forest Service, AZGFD, and ANPL special status species that are listed as occurring in Yuma County are shown in Table 3-3. Both tables include a column listing the probability for each species occurring within the project study area. Background information, habitat suitability analyses, and potential impacts and effects of the Proposed Project on the species listed in the two tables are located in Appendix A.

Species accounts for State of Arizona Highly Safeguarded Plants and former federal species of concern with the potential to occur within the project area also are included in Appendix A.

Former federal species of concern have no federal protection, but were species under an earlier classification that are currently being monitored by the AZGFD for the USFWS.

TABLE 3-2
FEDERALLY LISTED SPECIES

Scientific Name	Common Name	Federal Status	Potential to Occur	Rationale
Antilocapra americana sonoriense	Sonoran Pronghorn	Endangered	None	Outside of current range
Xyrauchen texanus	Razorback Sucker	Endangered	None	No habitat
Empidonax traillii extimus	Southwestern Willow Flycatcher	Endangered	None	No habitat
Rallus longirostris yumanensis	Yuma Clapper Rail	Endangered	None	No habitat
Coccyzus americanus	Yellow-billed Cuckoo	Candidate	None	No habitat
Pelecanus occidentalis californicus	California Brown Pelican	Endangered	Very low	Only bodies of water present are canals

TABLE 3-3
SPECIAL STATUS SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Scientific Name	Common Name	Status	Potential to Occur	Rationale
Phrynosoma mcallii	Flat-tailed Horned Lizard	WSC	High	Within range and suitable habitat is present
Uma rufopunctata	Yuma Desert Fringe-toed Lizard	WSC	Medium	Within range and suitable habitat is present
Ardea alba	Great Egret	WSC	Low*	Within range and suitable foraging habitat is present
Athene cunicularia	Western Burrowing Owl	WSC	High	Expected to occur
Egretta thula	Snowy Egret	WSC	Low*	Within range and suitable foraging habitat is present
Sigmodon hispidus eremicus	Yuma Hispid Cotton Rat	Former USFWS species of concern	Very low	Found only at the Colorado River
Pholisma sonorae	Sand food	ADA Highly safeguarded	Low	Close to suitable habitat
*May occur in foraging habitat, but breeding rookeries are highly unlikely to occur				

3.3.2 Environmental Consequence/Impacts

Vegetation

The Proposed Project will have little impact on vegetation in the area. Vegetation will be cleared only at the site of each new 69kV pole and for 2.5 miles of new access roads. The project will not cause an increase in the amount of traffic along the existing dirt/sand road. As a result, there will be no increase in noxious or invasive weeds along the project route.

Wildlife

The Proposed Project would have little effect on the wildlife in the San Luis area. The majority of the proposed transmission line would follow existing electrical utility rights-of-way and access roads. With BMPs and mitigation measures, the 69kV transmission line and clearing of the proposed SW-3 Substation site will have minimal effect on wildlife.

3.3.3 Best Management Practices

The following BMPs are recommended to mitigate impacts to biological resources:

- Compensation will be consistent with the Flat-tailed Horned Lizard Management Strategy Plan. Impacts related to this project will be associated with the new substation located at County 23rd and Avenue F and the new access road between Avenue F and Avenue H.

- In Flat-tailed Horned Lizard habitat areas, all project work areas shall be clearly flagged or marked at the outer boundaries to define the limit of work activities. All construction workers shall restrict their activities and vehicles to designated work areas.

- Biological Monitor: A biological monitor would be on hand during all construction activities in potential Flat-tailed Horned Lizard habitat. The monitor would be qualified to conduct field monitoring for Flat-tailed Horned Lizards, would be able to recognize horned lizard tracks and scat, and would be allowed to handle and relocate horned lizards to outside the project boundaries. The monitor would have the authority to oversee all biological compliance measures and would oversee the installation of exclusionary fencing and pitfall traps. The monitor would regularly check (hourly) the extent of the active work area for Flat-tailed Horned Lizards and other wildlife and remove them to outside the project area. The Biological Monitor shall be present in each area of active surface disturbance throughout the work day beginning with the initial clearing. The biological monitor shall meet the requirements set forth in Appendix 6 of the Flat-tailed Horned Lizard Management Strategy Plan. The monitor shall perform the following functions:

- Monitor will develop and implement a worker education program as described in the Flat-tailed Horned Lizard Management Strategy Plan that will include a summary of the biology and status of the Flat-tailed Horned Lizard and detailing protection measures designed to reduce potential impacts to species.

- Monitor will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85ºF) for the presence of Flat-tailed Horned Lizards. In addition, all hazardous sites (e.g., holes, or other deep excavations) shall be inspected for the presence of Flat-tailed Horned Lizards prior to backfilling.

- The monitor will work with the project supervisor to take steps, as necessary, to avoid disturbance to Flat-tailed Horned Lizards and their habitat. If avoiding disturbance to a Flat-tailed Horned Lizard is not possible or if a Flat-tailed Horned Lizard is found trapped in an excavation, the affected lizard shall be captured by hand and relocated.

- The monitor will be familiar with Burrowing Owl identification and sign. If Burrowing Owls are found within the work area, the monitor will mark burrows for avoidance during project construction.

- Weed Abatement: All vehicles, particularly the tires and undercarriage, would be cleaned on-site in weed infested areas prior to moving to a new work area. Vehicles would be cleaned on-site with compressed air only. Vehicles that are off-site can be cleaned with water only in their designated motor pool facility. Parts having contact with infested soils or weeds (tires, undercarriage, grills, buckets, etc.) are the priority targets.

  Soil from infested areas will remain at those sites and not be transported elsewhere.

- Existing roads shall be used for travel and equipment storage whenever possible.

3.4 CULTURAL/HISTORIC RESOURCES

3.4.1 Affected Environment

A Class I records search was conducted on August 7, 2007, to support the Proposed Project. Records at the following institutions were reviewed:

- Arizona State AZSITE database (www.azsite.arizona.edu)
- BLM Arizona State Office, General Land Office Maps
- Arizona State Museum
- National Register of Historic Places
- State Register of Historic Places
- Reclamation records

The search yielded 12 cultural resource properties within 1 mile of the project area. The project area is defined as the TS-8 to San Luis 69kV right-of-way starting from the proposed TS-8 Substation near the alignment of County 14½ Street west of Avenue 4E, to its terminus at the San Luis Substation located at 22719 South Avenue H½ in San Luis, Arizona. The Class I study area included a 1-mile buffer on each side of the project right-of-way, for a total of a 2-mile-wide study area. Note that no data regarding Traditional Cultural Properties (TCPs) or Traditional Use Areas were gathered as a result of this Class I report. Information on TCPs and Traditional Use Areas may be obtained from the Reclamation consultation with Native American Tribes during the Section 106 process.

Class I Overview

Several Class III archaeological surveys have been conducted within the Class I study area of the Proposed Project. However, no previous surveys were conducted within the project area. Twelve cultural resource properties were identified as a result of the Class I records review (Table 3-4). Of these 12 sites, 10 are determined eligible as contributing elements of the historic Yuma Project by the Arizona and California State Historic Preservation Offices (SHPOs). Two sites, (AZ X:9:1 [ASM] and AZ X:9:2 [ASM]), have not been formally evaluated. All the sites that have been determined eligible are irrigation features that belong to the Yuma Project.

TABLE 3-4
SITES IDENTIFIED WITHIN THE CLASS I AREA

	Site Number	Name	Type of Site	Eligibility*
1	AZ X:6:39 (ASM)	Main Drain	Canal	Determined Eligible
2	AZ X:6:46 (ASM)	B-Lift Pumping Plant	Irrigation Associated Feature	Determined Eligible
3	AZ X:6:51 (ASM)	Headworks, Unit B	Irrigation Associated Feature	Determined Eligible
4	AZ X:6:52 (ASM)	Turnout A-8.9W Lateral	Irrigation Associated Feature	Determined Eligible
5	AZ X:6:55 (ASM)	Pipe Lateral Unit B	Canal	Determined Eligible
6	AZ X:6:57 (ASM)	Lateral, Unit B	Canal	Determined Eligible
7	AZ X:6:58 (ASM)	Lateral Standbox (Turnout) B	Irrigation Associated Feature	Determined Eligible
8	AZ X:6:64 (ASM)	Unit B Main Canal	Canal	Determined Eligible
9	AZ X:6:65 (ASM)	East Main Canal	Canal	Determined Eligible
10	AZ X:9:1 (ASM)		Sherd Scatter/Limited Activity Area	Not Evaluated
11	AZ X:9:2 (ASM)		Sherd Scatter/Limited Activity Area	Not Evaluated
12	AZ X:9:7 (ASM)		Historic Dump	Considered Eligible by SHPO

***As recommended by site recorder, unless noted

The sites identified within the Class I study area can be broken down into three categories—historic agricultural properties, historic trash dump, and prehistoric limited activity areas. The most common property type identified in the Class I study area is that associated with the historic East Main Canal (7 out of 12 sites). Of those seven identified sites, one site (AZ X:6:64 [ASM]) is located within the Proposed Project right-of-way.

The intensive pedestrian survey identified one previously recorded site (AZ X:6:64 [ASM]) and no newly recorded sites. This site is the historic Unit B Main Irrigation l canal.

3.4.2 Environmental Consequence/Impacts

One previously recorded site (AZ X:6:64 [ASM]) was re-recorded during the cultural resources survey for this project. This site is a canal associated with the Yuma Mesa Irrigation District and has been previously recommended as eligible for the National Register of Historic Places. The

Proposed Project would have no effect on this property, as it would be possible to avoid this site through careful pole placement and spanning.

3.4.3 Best Management Practices

The following BMP is recommended to mitigate any potential effects to cultural resources from the project:

- If previously unidentified archaeological or historical resources are discovered during the project, stop work and notify the Reclamation Environmental Manager immediately. Take all reasonable steps to secure the preservation of those features.

3.5 GEOLOGY AND SOILS

3.5.1 Affected Environment

The geology of the study area consists primarily of alluvial deposits of silt, sand, and gravel due to depositional activities of the Colorado River. The bedrock in the project area, consisting primarily of granite, schist, and conglomerate material, is located at a depth of more than 3,200 feet below present-day ground level.

The two main soil classifications within the project area are identified as Rositas sands and the Superstition complex. Rositas soils are deep and somewhat excessively drained. Typically, Rositas soils occur on sand dunes with slopes of 0 to 2 percent. These soils have low available water capacity and rapid permeability. Surface runoff is very slow, and the hazard of water erosion is slight. The hazard of aeolian erosion is severe if the natural surface and associated cover are disturbed.

The Superstition complex soils are deep and somewhat excessively drained. Typically, they have light brown loamy sand or sand surface and subsurface layers about 23 inches thick. Below this to more than 60 inches is light brown loamy sand or sand containing calcium carbonate in the form of soft lime masses and hard concretions, making this soil moderately alkaline and calcareous throughout. Superstition soils occur on terrace and mesa tops with slopes of 0 to 2 percent. Surface runoff of the Superstition complex is very slow. The alluvial hazard is slight; however, aeolian erosion can be severe.

The project area is located within a Zone 4 seismic hazard area as determined by the United States Geological Survey. The Yuma region has the greatest risk of earthquake-induced ground shaking within the State of Arizona (Yuma General Plan 2002). The threat of groundshaking is due to the proximity of the southernmost portion of the San Andreas Fault system that runs through California. The project area is roughly 30 miles from the Imperial Fault in California, 70 miles from the primary San Andreas Fault in California, and 40 miles from the Cerro Prieto Fault in Mexico.

The northern portion of the project crosses the Algodones Fault. Geologically, the Algodones Fault passes through the heart of the Yuma Valley and within 10 kilometers of Yuma. The fault appears to be a continuation to the southeast of the San Andreas Fault, which runs through southeastern California, southwestern Arizona, and northern Sonora. The Algodones Fault can be traced over a distance of approximately 500 kilometers, from the Salton Trough through the northern part of the Gulf of California. Epicenters for the last 24 years indicate that the fault appears moderately active throughout its length, with a lower level of seismicity at both ends. The seismic characteristics of the northern end of the Algodones Fault, from the Yuma Basin to the head of the Gulf of California, are the greatest concern for the Yuma area.

Within the area of the City of San Luis, liquefaction occurs when ground shaking increases water pressure between soil pores, causing the soil to lose strength and behave as a liquid. Therefore, structural damage occurs due to the weakening of the foundation.

3.5.2 Environmental Consequences/Impacts

The Proposed Action may have short-term direct and indirect effects on local soil composition. Construction practices for pole placement and subsequent placement of spoil disposal could potentially result in construction-related effects to soil properties at the disposal site. Construction activity would temporarily increase the risk of soil erosion at the project site. However, soils exposed during construction would be subject to aeolian and alluvial erosional action. This impact would be reduced through the use of erosion control measures during construction.

There are no apparent obstacles with respect to topography, soil type, and geology. With regards to the seismology of the project area, while there is a potential for seismic activity at the site, the potential for a surface rupture is considered less than significant due to the thickness of the surficial sands.

3.5.3 Best Management Practices

The following BMPs are recommended to mitigate any potential effects to local soils from the Project:

- Where practical, existing access roads will be utilized to enter and exit the work area.
- Soils, when replaced in the transmission towers holes, should be compacted tightly to prevent any access erosion.

3.6 HAZARDOUS AND SOLID WASTE

3.6.1 Affected Environment

Construction of the proposed transmission line and substation would create small quantities of construction wastes that would require disposal. Surface contamination could occur, resulting from accidental spills of petroleum and other potentially hazardous materials used in construction activities. The potential for soil contamination is reduced by requiring prompt removal of petroleum and other hazardous materials.

3.6.2 Environmental Consequences/Impacts

If previously unidentified or suspect hazardous materials are encountered during construction, work would stop at that location and the Reclamation Environmental Manager would be contacted. Such locations would be investigated and proper action implemented prior to continuation. There is a limited potential for contamination from incidental petroleum, oil, or lubricant (POL) spills from construction equipment. Spills are not expected and would be easily preventable through implementation of a site-specific spill contingency plan; however, if one did occur it likely would be minimal and would be addressed immediately.

3.6.3 Best Management Practices

The following BMPs are recommended to mitigate any potential effects of hazardous or solid wastes within the study area:

- A site-specific spill contingency plan will include reporting guidelines and training of employees in the use of the required equipment, in addition to proper handling and storage of potentially hazardous materials or POLs.
- If previously unidentified or suspect hazardous materials are encountered during construction, work will stop immediately and the Reclamation Environmental Manager will be contacted.

3.7 WATER RESOURCES

3.7.1 Affected Environment

Surface Water

The project area falls within the Yuma Desert Watershed and a small portion of the Lower Colorado Watershed. The Yuma Desert Watershed has no naturally occurring perennial streams within its boundaries; however, the Main and East Main canals are located within the Proposed Project area (Yuma County Department of Development Services 2001). The Colorado River is

the only perennial stream and natural stormwater conveyance in the vicinity of San Luis, due to the lack of precipitation in the area (City of San Luis General Plan 2001).

The EPA section 303(d) List Fact Sheet for both the Yuma Desert and Lower Colorado watersheds show no total maximum daily load violations within the Proposed Project area (EPA 2002).

Groundwater

Groundwater in the Proposed Project area originates almost exclusively from the Colorado River. A portion of the Proposed Project, including the SW-3 Substation and transmission line route from County 19th Street to San Luis, falls within Reclamation's Yuma 5-Mile Protective and Regulatory Groundwater Pumping Zone (Yuma 5-Mile Zone). Any new land uses that require groundwater pumping within the Yuma 5-Mile Zone must be permitted by Reclamation and must be considered significantly beneficial for the general public. New land uses within the Yuma 5-Mile Zone that require Reclamation to sell water from existing sources to the user are limited (USDI 1990). Reclamation may allow land uses within the 5-Mile Zone, if the use meets certain Reclamation-established conditions and if the use is in the best interest of the community. Under Minute No. 242 of the International Boundary and Water Commission, the United States is not allowed to pump more than 160,000 acre-feet of water per year within the designated 5 miles along the international boundary. Current pumping rates are below this maximum, but could possibly increase with time.

Water Quality

In 1995, the ADEQ conducted a baseline study to assess the groundwater quality of the Yuma Groundwater Basin (YGB). The study found that YGB groundwater had no dominant water chemistry and is chemically similar to Colorado River water (ADEQ 1998). Groundwater quality differences were a function of length of time an area had been irrigated, depth to groundwater, and the source of irrigation water. The laboratory results revealed no detection of pesticides. This data suggests that regional groundwater quality conditions in the YGB generally support drinking water uses, but residents may prefer to use treated water for some domestic purposes (ADEQ 1998).

3.7.2 Environmental Consequences/Impact

Impacts to water resources from the Proposed Project are anticipated to be minimal both on and off the project site. Minimal to no changes to drainage patterns are expected. Potential impacts could include impacts to surface water quality during construction. Spills from construction activity into nearby drainage channels or infiltration into the soil, although unlikely, could degrade surface and/or groundwater quality. If such a spill should occur, the impacts are anticipated to be temporary and minimal, because all spills would be attended to immediately.

3.7.3 Best Management Practices

The following BMP is recommended to mitigate any potential effects to water quality from the project:

- Haul oils or chemicals to an approved site for disposal to address the prevention of oil products from entering into groundwater.

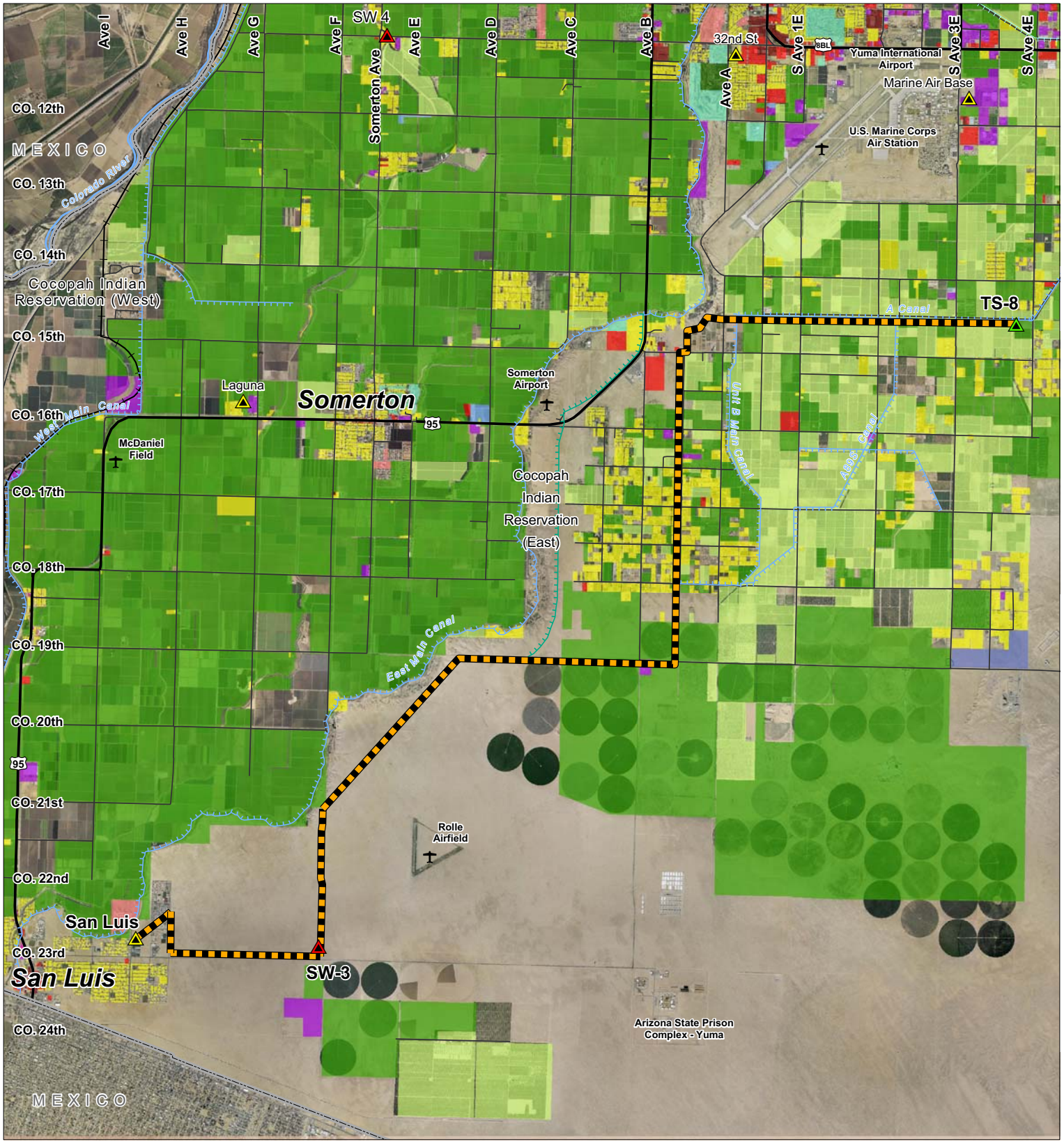
3.8 LAND USE/OWNERSHIP

3.8.1 Affected Environment

The study area for the land-use inventory is an area approximately 1 mile from all sides of the proposed transmission line route and substation.

In general, the landscape of the area is desert, with large open areas, agriculture, and pockets of residential areas. The study area analyzed includes portions of the cities of Yuma, Somerton, and San Luis, as well as unincorporated areas, all within Yuma County, Arizona. The Yuma area is a large exporter of agriculture products, and Yuma County is a primary agricultural county in Arizona (San Luis General Plan, 2001). Primary land uses within the study area include agriculture, open space, residential, utilities, and transportation. The East Main Canal flows close to some areas of the proposed transmission line route. Jurisdictional boundaries, existing land use, and future land-use designations are shown on Figure 1, Proposed Project and Land Ownership, Figure 2, Existing Land Use, and Figure 3, Planned Land Use.

The study area includes federal lands withdrawn for and administered by Reclamation, as well as lands under the jurisdiction of BLM, U.S. Department of Defense (DOD), Bureau of Indian Affairs, and Arizona State Trust. A small area of BLM land, administered by Reclamation, is located just west of the TS-8 Substation site and would not be crossed by the proposed transmission line. The U.S Marine Corps Air Station (DOD land) occurs north of the proposed TS-8 Substation site.



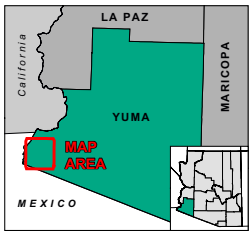
LEGEND

Existing Land Use

- Residential
- Residential - Low Density
- Residential - Med Density
- Residential - High Density
- Mobile Home
- Commercial
- Retail
- Office/Business Park
- Industrial
- Utility
- Agriculture
- Orchard
- Parks & Reserves
- Recreation
- Government
- Public/Quasi Public
- Religious
- Education
- Airfield
- Vacant Land

Reference Features

- Proposed 69kV Transmission Line
- Distribution Substation
- Approved Substation
- Proposed Substation
- National Border
- Highway
- Road
- River
- Canal
- Drainage Canal
- Airfield



TS-8 to San Luis 69kV Project

Figure 2

Existing Land Use

December 2007

0 0.5 1 2 Miles

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Source: GlobeExplorer; Arizona State Land Department; City of Yuma/County of Yuma Joint Land Use Plan; Marine Corps Air Station, 2006; Bureau of Land Management Surface Management Status 100,000 scale topographic maps, Yuma, Tinajas Mts; EPG.

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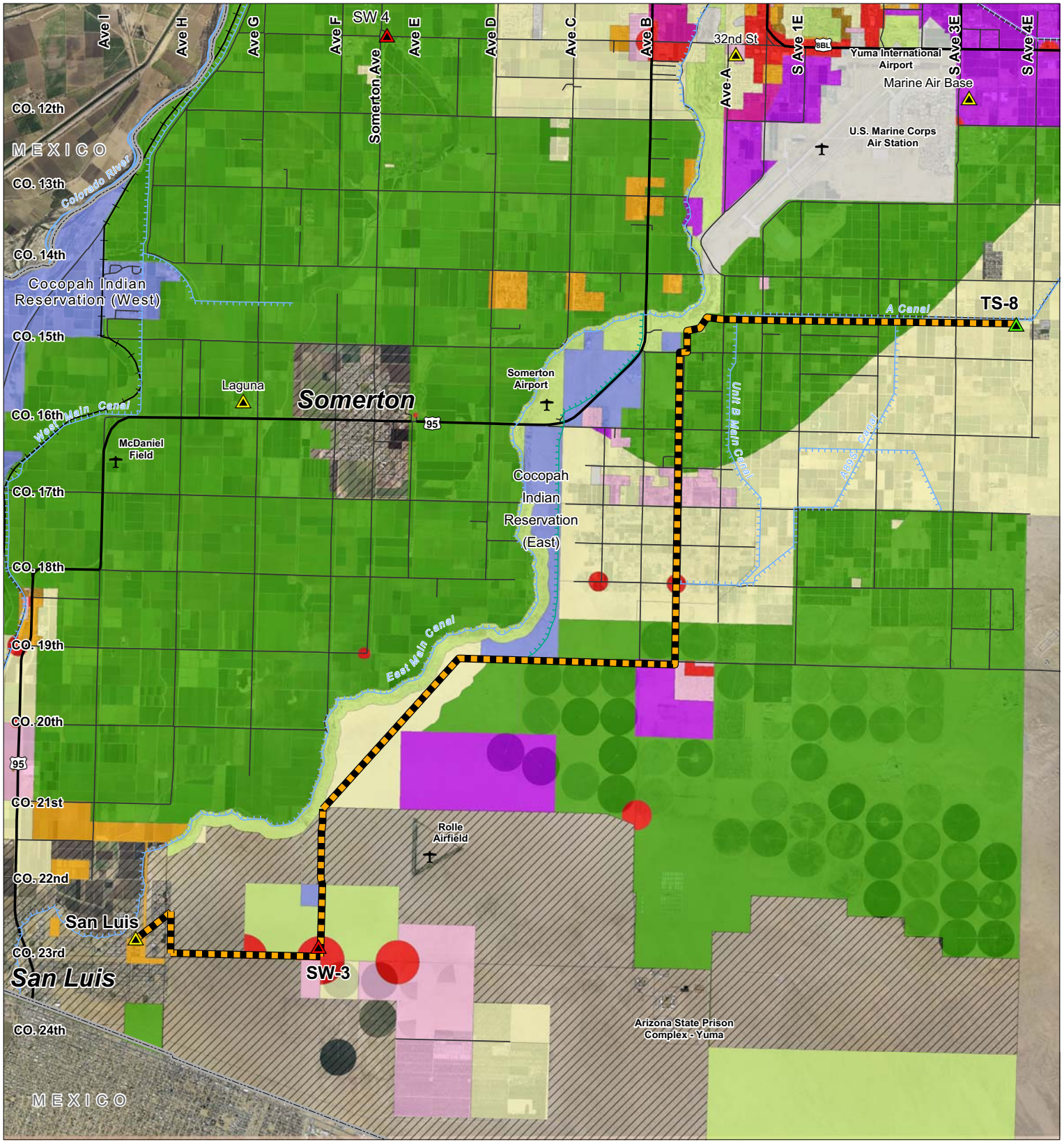


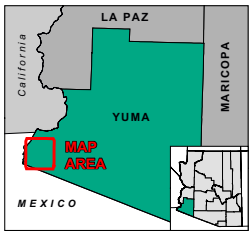
LEGEND

Future Land Use

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Office/Business Park
- Mixed Use
- Industrial
- Government
- Public/Quasi Public
- Agriculture
- Parks & Reserves/Open Space
- Municipality

Reference Features

- Proposed 69kV Transmission Line
- Distribution Substation
- Approved Substation
- Proposed Substation
- National Border
- Highway
- Road
- River
- Canal
- Drainage Canal
- Airfield



TS-8 to San Luis 69kV Project

Figure 3

Future Land Use

December 2007

0 0.5 1 2 Miles

N

Source: GlobeExplorer; Arizona State Land Department; City of Yuma/County of Yuma Joint Land Use Plan; Marine Corps Air Station, 2006; Bureau of Land Management Surface Management Status 100,000 scale topographic maps, Yuma, Tinajas Mts; EPG.

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Residential areas located in the study area typically include single-family and low-density residential. The primary residential areas within the study area occur along Avenue A½, from County 16th Street to County 18th Street, and in the vicinity of the existing San Luis Substation.

Traveling west from the proposed TS-8 Substation site, the route would cross private land, largely agriculture lands, on County 14 ½ Street. Near Avenue A-½, the transmission line would travel south, adjacent to orchards owned by the University of Arizona, for approximately 0.5 mile on Avenue A-½, north of County 15th Street. BLM land located just west of the proposed route, near Avenue A-½ and County 15th Street, would not be crossed by the route. The route would travel south on the west side of Avenue A-½ for approximately 2 miles. Along this segment the route would be located within an existing right-of-way adjacent to single-family homes and low-density residential, agriculture, and vacant lands. The route would then turn west and follow County 19th Street on the south side of the road. The proposed transmission line would cross Arizona State Trust land south of County 18th Street (on Avenue A-½) and on County 19th Street. Along County 19th Street, the route would cross vacant and agriculture lands. The southern portion of the Cocopah Indian Reservation (East) occurs within the study area, along County 19th Street, but would not be crossed.

A large area of BLM land administered by Reclamation is located east of San Luis and south of County 18th Street. From County 19th Street, the proposed transmission line would travel west and south through this area. The majority of this portion of the proposed transmission line would be located within existing rights-of-way, from Avenue A-½ to Avenue F. The portion of the Reclamation-administered land crossed by the Proposed Project is vacant/desert land. The Rolle Airfield is located near the study area, to the east of the proposed route. The proposed SW-3 Substation also would be located on Reclamation-administered land, at the northeast corner of County 23rd and Avenue F. West of Avenue H, the route would run adjacent to a small area of State Trust land and a residential area within the City of San Luis, within an existing right-of-way, before reaching the existing San Luis Substation. Southwest Junior High School is located approximately 400 feet south of San Luis Substation. Table 3-5 includes the land ownership categories that the proposed transmission line would cross, in approximate miles.

TABLE 3-5
LAND OWNERSHIP CROSSED BY THE PROPOSED PROJECT

Ownership	Proposed Route (miles)
BLM (federal lands withdrawn for and administered by Reclamation)	7.5
State Trust Land	3.9
Private	8.1
Total	**19.5**

Near the proposed TS-8 Substation, lands are zoned for agriculture. Moving west and south along the proposed transmission line route, lands are zoned for agricultural, mixed, low-density residential, commercial, and industrial use. Near the existing San Luis Substation, in an area east of 10th Avenue, land is zoned as Future Residential Low Density.

According to the Yuma County Planning and Zoning Department, there are no pending development plans along the proposed transmission line route north of County 21st Street. In addition, there are no pending rezoning or Special Use Permit cases, plan amendments related to development, or pending subdivisions along the proposed route north of County 21st Street (correspondence with Greg Nelson, 2007). The route alignment south of County 21st Street and the proposed SW-3 Substation site are within the corporate boundaries of the City of San Luis. There are no proposed development plans near the Proposed Project within the City of San Luis (correspondence with Joaquin Campa, 2007).

3.8.2 Environmental Consequence/Impacts

It is anticipated that the proposed transmission line and substation would have minimal long-term direct or indirect adverse effects on existing or planned land uses. The majority of the land crossed by the transmission line is vacant and located within existing rights-of-way. The Proposed Project would co-locate existing Reclamation 34.5kV and APS 12kV distribution lines with the proposed transmission line for the majority of the route. The proposed SW-3 Substation would be located on vacant land administered by Reclamation. No high or moderate impacts to land uses were identified along the proposed route.

3.9 NOISE

3.9.1 Affected Environment

The majority of the proposed transmission line route is within an established utility corridor. Near Somerton, south Yuma, and San Luis, the study area can be characterized as an open rural setting. Scattered residences are located adjacent to the proposed transmission line route, along Avenue A-½, and within the City of San Luis. The majority of the transmission line route south of County 19th Street, and the proposed SW-3 Substation site, largely will be built on vacant and undeveloped land. Wind, meteorological conditions, topography, human activity, and other sources cumulatively determine the noise character of any given area.

Ambient noise in the majority of the study area is minimal, with intermittent noise associated with localized vehicle traffic, adjacent agricultural activities, and low-level military and private over-flights. The TS-8 Substation and the northern portion of the proposed transmission line would be located within the noise zones associated with the U.S. Marine Corps Air Station and, therefore, would experience noise related to those facilities. Intermittent noise within San Luis is attributed to automobile, and truck traffic along U.S. 95 and Juan Sanchez Boulevard. (San Luis General Plan 2001). Construction equipment used to build the 69kV transmission line would produce temporary noise effects.

3.9.2 Environmental Consequence/Impacts

Noise levels resulting from the Proposed Project would be almost entirely due to construction-related activities, which would result in a temporary increase in noise levels during daytime hours and may cause localized impacts to people in the immediate vicinity of the project. Noise levels associated with construction activities may range from approximately 75 to 85 A-weighted decibels within 50 feet of the activity. Since the area is primarily vacant and undeveloped land with dispersed low-density housing, noise impacts to the local residents are expected to be short-term and minor. Measures would be implemented to mitigate noise impacts to noise-sensitive receivers (i.e., residences) near the proposed transmission line during construction activities. For example, levels of noise would be reduced to low or none during nighttime hours.

3.9.3 Best Management Practices

The following BMPs are recommended to mitigate any potential effects to noise from the Proposed Action:

- Adhere to the City of Yuma Noise Limitation standards where applicable (if construction is within 300 feet of a residence located within City of Yuma boundaries).
- Minimize equipment idling.
- Mufflers or other noise-suppression technology will be used.
- Construction activities will be limited to daylight operation.

3.10 INDIAN TRUST ASSETS

3.10.1 Affected Environment

It is Reclamation policy to protect Indian Trust Assets (ITAs), whenever possible, from adverse impacts caused by its programs and activities. ITAs are legal asset interests held in trust by the federal government for Indian Tribes or individual Indians. Types of actions that could affect ITAs include interference with the exercise of a reserved water right, degradation of water quality where there is a water right, impacts on fish and wildlife where there is a hunting or fishing right, and noise near a land asset where it adversely affects use of the reserved land. No ITAs have been identified within the study area.

3.11 SOCIOECONIMICS

3.11.1 Affected Environment

This section describes the demographic and economic characteristics found in the study area and potential changes that could result from the Proposed Project. The primary socioeconomic

effects associated with transmission line and substation construction include potential impacts to the project area, particularly during construction (e.g., influx of construction personnel).

Yuma County encompasses 5,514 square miles and acts as a crossroads for international and interstate trade in the Southwest. Yuma County has a population of 160,026 and a population density of 29 persons per square mile. The racial composition consists of 68.3 percent white, 2.2 percent African American, 1.6 percent Native American, 0.9 percent Asian, and 26.9 other. "Other" is intended to capture responses from people who consider themselves of more than one race, such as Mulatto, Creole, and Mestizo. Half of Yuma County residents (50.5 percent) consider themselves to be of Hispanic heritage (Census Bureau 2000). Hispanic heritage can be defined as persons of any race who trace their roots to Spain, Mexico, and the Spanish-speaking nations of Central America, South America, and the Caribbean.

Within Yuma County, the BLM accounts for approximately 15 percent of land ownership; DOD, approximately 40 percent; Indian reservations, less than 0.5 percent; the State of Arizona, approximately 6 percent; private, approximately 11 percent; Reclamation, approximately 1 percent; and other federal lands, approximately 28 percent (Yuma County Department of Developmental Services 2006).

Yuma County has a labor force of 71,586 persons (Census 2000). Major industries include agriculture, military, government, manufacturing, and public utilities (ADOC 2007). Median household income for the county in 1999 was $33,182, less than the state median of $41,994 (Census Bureau 2000).

The City of Yuma contains over 110 square miles. Population projections for the city indicate a population of 81,836 by the year 2010 (Department of Economic Security 1997). The 2000 population for the City of Yuma was 77,515 (Census 2000). The racial composition consists of 68.3 percent white, 3.2 percent African American, 1.5 percent Native American, 1.5 percent Asian, and 25.3 other (Census Bureau 2000). Residents of Hispanic heritage account for 45.7 percent of all residents in the City of Yuma (Census Bureau 2000).

Yuma has a labor force of 33,904 persons (Census 2000). Major industries include agriculture, tourism, military, and light industry (ADOC 2007). Median household income for the city in 1999 was $35,374, less than the state median of $41,994 (Census Bureau 2000).

The City of Somerton is a community of approximately 7,226 residents, and the population is expected to reach 16,000 by the year 2020 (a 4.2 percent annual increase). The racial composition consists of 44.5 percent white, 0.4 percent African American, 0.6 percent Native American, 0.3 percent Asian, and 54.1 other (Census Bureau 2000). Residents of Hispanic heritage account for 95.2 percent of all residents in the City of Somerton (Census Bureau 2000).

Somerton has a labor force of 3,077 persons (Census 2000). The economy depends mostly on agriculture and a small commercial sector with room to grow (ADOC 2007). Median household income for the city in 1999 was $26,554, with 24 percent of families living below the poverty level (Census 2000).

The City of San Luis is the termination point for the proposed transmission line. San Luis sits in the southwestern corner of Arizona, immediately adjacent to both Mexico and California, and is considered one of the fastest growing communities in Yuma County (ADOC 2007). The population of San Luis is 15,322 residents, with a labor force of 5,182 and an unemployment rate of 35.5 percent (ADOC 2007). The racial composition is 58.8 percent white, 3.0 percent African American, 1.5 percent American Indian, 0.2 percent Asian, and 36.7 other. Residents of Hispanic heritage account for approximately 89 percent of the San Luis population (Census Bureau 2000).

There are 3,018 total housing units in San Luis, with a 9.2 percent vacant-housing rate (Census Bureau 2000). Retail trade, agriculture, and manufacturing form a large portion of the local economy. The median household income is $22,966, and 36.3 percent of the families live below the poverty level (Census Bureau 2000).

3.11.2 Environmental Consequence/Impacts

In general, the effects of transmission lines and associated facilities on existing social structures and economic activities are relatively small. Social and economic issues associated with the construction of such facilities include potential effects from the influx of construction workers and right-of-way compensation. Impacts related to construction are typically minimal, due to the small size and short-term workforce characteristics of transmission line and substation construction. APS estimates that approximately 10 personnel, over the course of 6 months, will be required for construction of the transmission line and substation.

The demand for temporary accommodations during construction would depend on the workers' places of residence. It is likely that several workers would commute from homes in the Yuma area. For those who may require temporary accommodations, it is expected that existing facilities in the Yuma area would be adequate. Local businesses may benefit from purchases by workers during the construction phase of the project. However, because the workforce is relatively small, these expenditures would not result in a noticeable impact to the local or regional economy.

The proposed transmission line and substation occur on land owned by individuals and the federal government; therefore, individuals and the federal government would receive right-of-way payments.

The Proposed Project would result in positive economic impacts that are directly related to the Proposed Project. Locally, there would be increased revenues associated with right-of-way lease agreements and purchase of goods and services during the construction phase of the project. Positive, long-term socioeconomic impacts also would be associated with mitigating current problems related to inadequate electric reliability for existing and potential customers in San Luis and the surrounding areas. Finally, the Proposed Project will accommodate future electrical needs associated with the new San Luis II Port-of-Entry and associated industrial development within the Proposed Project area.

3.12 ENVIRONMENTAL JUSTICE

3.12.1 Affected Environment

Executive Order 12898 requires each federal agency to achieve environmental justice as a part of its mission, by identifying and addressing disproportionately high adverse human health or environmental effects (including social and economic effects) of its programs and activities on minority and low-income populations.

3.12.2 Environmental Consequence/Impacts

The project will have a beneficial impact to the local community by maintaining the infrastructure vital to growth and development in the area. Because the project is small in scope, it would have no negative impact on low-income or minority populations and American Indian tribes in the study area or the region at large.

3.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

NEPA guidelines (40 CFR 1502.16) require the discussion of any irreversible or irretrievable environmental changes that would be involved with the Proposed Action.

Irreversible commitments are decisions affecting renewable resources such as soils, wetlands, and wildlife habitat. Such decisions are considered irreversible because their implementation would affect a resource deterioration to the point that renewal could occur only over a long period of time or at great expense, or because they would cause the resources to be destroyed or removed.

Irretrievable commitment describes loss of production or use of resources as a result of a decision. It represents opportunities foregone for the period that a resource cannot be used. Irretrievable refers to the permanent loss of a resource, including production, harvest, or use of natural resources. For example, production loss of agriculture lands can be irretrievable, while the action itself may not be irreversible.

The Proposed Project would require the consumption of fossil fuels during construction, which are irretrievable resources. The commitment of these resources would be relatively small, short-term, and focused toward a specific goal.

3.14 CUMULATIVE IMPACTS

Cumulative impacts may result from individually minor but collectively significant actions that occur within the same temporal study area and surrounding communities. The Proposed Project will have a positive impact to the project area and surrounding community by helping APS meet

the energy requirements of its existing and future customers, ensuring the reliability the San Luis Substation, and serving the new San Luis II Port-of-Entry. This project, along with other electrical improvements in the area, will cumulatively improve the electrical service to Yuma, Somerton, San Luis, and surrounding communities.

4.0 CONSULTATION AND COORDINATION

The preparation of this EA required communication and consultation with various federal, state, and local agencies and citizens. A notice of availability of project information was published in the Yuma Sun, and a public open house meeting was held at the Western Arizona Area Health Education Center on March 13, 2007.

The following list summarizes the agencies contacted during the preparation of the Yuma TS-8 to San Luis 69kV Transmission Line Project EA.

FEDERAL AGENCIES

U.S. Department of the Interior
- Bureau of Land Management
- Bureau of Reclamation
  - Yuma Area Office

U.S. Fish and Wildlife Service

STATE AGENCIES

Arizona Game and Fish Department
Arizona State Historic Preservation Office
Arizona State Museum

LOCAL AGENCIES

City of San Luis
Yuma County
- Community Development Department
- County Assessor's Office

Yuma County Water Users' Association

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APPENDIX A

SPECIES ACCOUNTS AND EVALUATIONS

The following discussion provides information on the species with potential to occur within the project area.

Species Accounts

Federally Listed Species

Sonoran Pronghorn *(Antilocapra americana sonoriensis)*

Status: The Sonoran Pronghorn was listed as an endangered species on March 11, 1967 (Federal Register 1967). A supplement and amendment to the Sonoran Pronghorn recovery plan was finalized in 2003 (USFWS 2003). The AZGFD considers the Sonoran Pronghorn a Wildlife Species of Concern (WSC) (AZGFD 1996; AZGFD 2003a). The current population of this subspecies at the Cabeza Prieta National Wildlife Refuge is approximately 75 animals (USFWS 2002).

Background: The Sonoran Pronghorn requires long-range visibility to avoid predators and so lives in open cover, grassland, or grassland with low shrubs, where the vegetation is at a mean height of about 15 inches. It prefers low, rolling, expansive lands of less than 30 percent slope, with about 5 percent being ideal (Howard 1995). While it selects low shrubs for bedding cover, it seeks taller vegetative cover for fawning. A water source must be readily accessible. The pronghorn is active day and night. Daily movements vary with resource availability.

Pronghorn diet is variable depending on resource availability, with a preference for succulent forbs during spring, summer, and fall. Spring is the only season when grasses are heavily grazed. In winter, when forbs are scarce, Pronghorns select the most succulent, high protein browse or grasses. Habitat is greatly enhanced by fire, which increases the number of herbaceous species and reduces shrub cover (Howard 1995).

Threats to the pronghorn include Coyote (*Canis latrans*), Bobcat (*Lynx rufus*), Mountain Lion (*Puma concolor*), and Golden Eagle (*Aquila chrysaetos*). Low ground cover favors high survival of fawns, while dense, tall shrubs provide predator cover and contribute to high fawn mortality.

Populations in Study Area: Suitable habitat for the Sonoran Pronghorn is not present along the proposed 69kV transmission line route. The nearest population of the Sonoran Pronghorn is located on the Cabeza Prieta National Wildlife Refuge, approximately 95 miles southeast of the project corridor.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Sonoran Pronghorn or its habitat.

Razorback Sucker (*Xyrauchen texanus*)

Status: The Razorback Sucker is listed as an endangered species by USFWS and as a species of special concern by AZGFD (AZGFD 2002c; USFWS 2001). This species is also listed as a Group 2 (endangered) species by the Navajo Nation (Navajo Fish and Wildlife Department [NFWD] 2001). *Xyrauchen* is a monotypic genus in the family Catostomidae. The Razorback Sucker is readily distinguished from all other catostomids by the dorsal keel rising from the back of the head (Minckley 1973).

Background: The historic range of the razorback sucker included the medium to large rivers of the Colorado River Basin, from Wyoming and Colorado to Baja California (Page and Burr 1991). Populations at one time supported a commercial fishery in Arizona. The Razorback Sucker was extirpated from the Gila River Basin, where it formerly occupied all large streams (Minckley 1973). Natural populations are now found in the Green River, in the upper Colorado River Basin, and in Lakes Mead, Mohave, and Havasu, in the lower Colorado River (Page and Burr 1991). The populations in the three reservoirs on the Colorado River are decreasing due to lack of recruitment. The Razorback Sucker was reintroduced in the Gila, Verde, and Salt rivers between 1981 and 1984, but there is little evidence that the fish have successfully re-established in these tributaries (Modde and Wydoski 1995).

Adult Razorback Suckers are flexible in their habitat use, surviving well in swift-moving riverine habitats and in lakes and reservoirs (Modde and Wydoski 1995). They prefer silt to rock bottom backwaters near strong currents and deep pools in medium to large rivers (Page and Burr 1991). In rivers, juveniles occupy low-velocity, main-channel backwaters or off-channel wetlands (Modde and Wydoski 1995). Adults spawn along shorelines or in bays, between November and May (Modde and Wydoski 1995; Page and Burr 1991). Larvae hatch successfully in the lower Colorado Basin reservoirs, but recruitment is negligible due to predation by non-native fish and possible low prey densities.

Adults feed primarily on plant debris, water fleas (cladocerans), aquatic insect larvae, mayflies (ephemeroptera), and caddisflies (trichoptera) (Modde and Wydoski 1995). In lakes, the primary food is cladocera. The larvae feed on phytoplankton and small zooplankton.

The major threats to the Razorback Sucker are environmental changes caused by dams and impoundments on the Colorado River, predation by non-native fish, and the possibility of parasites (BISON 2000). Dams on the Colorado River create barriers to spawning migration and eliminate the natural seasonal changes in water levels that may have been cues to spawning migration (Modde and Wydoski 1995). These impoundments have transformed warm turbid waters with variable flows into clear, cool water environments more suited to non-native fish species. Non-native species such as Red Shiners (*Cyprinella lutrensis*) prey on the larvae, and

Sunfish (*Centrarchus* spp.) and Bullhead Catfish (*Ictalurus* spp.) prey on the juveniles, while historic observations correlate Razorback Sucker declines with the introductions of Channel Catfish (*Ictalurus punctatus*) and Largemouth Bass (*Micropterus salmoides*) (USFWS 1998).

Populations in Study Area: Suitable habitat for the Razorback Sucker is not present along the proposed 69kV transmission line route. The nearest population of the Razorback Sucker is located in Lake Havasu, a considerable distance north of the project corridor.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Razorback Sucker or its habitat.

Southwestern Willow Flycatcher *(Empidonax traillii extimus)*

Status: The Southwestern Willow Flycatcher was listed as endangered, without designated critical habitat, on February 27, 1995, primarily because of riparian habitat loss or modification. Critical habitat was designated on July 22, 1997, and a Final Rule designating critical habitat for this species was published in the Federal Register on October 19, 2005. Eighteen critical habitat units, totaling 599 river miles in Arizona, California, Nevada, Utah, and New Mexico, were designated. Knowledge of important habitat areas for Willow Flycatchers has improved since 1997, and some designated critical habitats may not provide the most accurate description of critical requirements for these birds. A Draft Recovery Plan (USFWS 2001a) for the Southwestern Willow Flycatcher was released for public review on June 8, 2001.

Background: In the western United States, Willow Flycatchers are often found on willow (*Salix* spp.)-covered islands, in dense brush along watercourses, beaver meadows, and mountain parks. They may be found as high as 2,400 meters (m) (7,875 feet) and they also follow willow or cottonwood (*Populus* spp.)-lined streams out into desert regions (Terres 1980). Four specific habitat types have been described as breeding areas for the Southwestern Willow Flycatcher (Sogge et al. 1997). The first of these types is monotypic high-elevation willow. This habitat occurs above 300 m (984 feet) in Arizona and has dense stands of willow with no distinct overstory. This community is often associated with sedges, rushes, or other herbaceous wetland plants. This habitat is relatively rare in Arizona. A second habitat type is monotypic, exotic, dense stands of salt cedar (*Tamarix* spp.) or Russian olive (*Elaeagnus angustifolia*) up to 10 m (33 feet) in height. These species form a dense, closed canopy, with no distinct overstory layer. Native broadleaf-dominated communities form a third habitat type. This habitat may be composed of a single species, such as Goodding willow (*Salix gooddingii*), but often includes other broadleaf tree and shrub species, including cottonwood, other willows, boxelder (*Acer negundo*), ash (*Fraxinus* spp.), alder (*Alnus* spp.), and buttonbush (*Cephalanthus occidentalis*). The vegetation in this habitat type ranges in height from 3 to 15 m (10 to 49 feet). There are trees of various size classes, and there is often a distinct overstory. The final habitat type is a mixture of native and exotic species, including those listed above. Within any particular area, the native and exotic species may be dispersed as patches dominated by natives or exotics, or they may be more evenly distributed throughout the area.

Regardless of the species composition, all of these habitats share common structural characteristics (Sogge et al. 1997). Occupied habitats always have dense vegetation in the patch interior, and dense patches are often interspersed with small clearings, open water, or areas of sparse shrubs. Habitat patches can vary in size and shape, with some occupied areas being relatively dense, linear, contiguous stands, and others being large, irregularly shaped mosaics of dense vegetation intermingled with open areas. Patch sizes can range from as little as 0.8 hectare (2.0 acres) to several hundred hectares (several hundred to a thousand acres). Southwestern Willow Flycatchers have not been found nesting in narrow riparian habitats less than 10 m (33 feet) wide.

Like most other flycatchers, the Willow Flycatcher forages primarily by flying out from a perch to capture flying insects. They tend to be fairly active, moving frequently from perch to perch (Bent 1942). They will also use gleaning techniques when foraging for spiders, millipedes, and other arthropods and also when feeding on berries.

Two primary factors have been identified as serious threats to the continued existence of the Southwestern Willow Flycatcher (Federal Register 1995). These threats are the loss or degradation of riparian habitat and brood parasitism by Brown-headed Cowbirds. It has been estimated that the State of Arizona lost 36 percent of its wetlands between 1780 and 1980 (Dahl 1990), and as much as 90 percent of lowland riparian habitat in Arizona has been lost or modified (State of Arizona 1990). The primary causes for riparian degradation include urban and agricultural development, water diversion and impoundment, stream channelization, livestock grazing, off-road vehicles and other recreational use, and hydrological changes resulting from these uses (Federal Register 1995).

Populations in Study Area: Suitable habitat for the Southwestern Willow Flycatcher is not present along the proposed 69kV transmission line route. The nearest populations are found along the lower Colorado River, at a distance of approximately 6 miles.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Southwestern Willow Flycatcher or its habitat.

Yuma Clapper Rail (*Rallus longirostris yumanensis*)

Status: The Yuma Clapper Rail was listed on March 11, 1967 (Federal Register 1967), under endangered species legislation enacted in 1966 (Public Law 89-669). This listing protects the populations in California and Arizona. No critical habitat has been designated for this species. The Yuma Clapper Rail Recovery Plan was released in 1983 (USFWS 1983). The Yuma Clapper Rail is a subspecies of Clapper Rail that lives and sometimes breeds in freshwater marshes in the Salton Sea area of California, along the lower Colorado River, in the Colorado River delta of Sonora and Baja California del Norte, on the Salt and Gila rivers upstream to the confluence with the Verde River, and at Picacho Reservoir (AZGFD 1996; Todd 1986).

Background: Yuma Clapper Rails in Arizona breed in freshwater marshes with dense vegetation such as cattail and giant bulrush (*Schoenoplectus californicus*). Todd (1986) reported that Yuma Clapper Rails require dense woody or herbaceous vegetation that exceeds 16 inches in height. Pond openings and flowing channels are also important, as are emergent soils. Water depth at preferred sites is 12 inches or less. The interface between water and soil is important, and rails use areas where the slope of the soil-to-water contact is relatively gentle. Conway et al. (1993) compared habitat variables between random sites and sites used heavily by Yuma Clapper Rails. They reported that during the breeding season, the rails used sites that had less residual vegetation, were farther from upland habitat, and were closer to vegetative edges, open water, and dry ground than were random sites. Yuma Clapper Rails usually build their nests on the ground or suspended in dense vegetation a few inches over the ground or over water (Todd 1986). Nests are usually placed along channels near the water's edge or on a mud hummock within the marsh. Nests are often placed in locations that provide overhead cover, and, if vegetation is relatively sparse, rails will pull grasses together over the nest to form a canopy (Conway and Eddleman 2000).

Yuma Clapper Rails feed on wetland invertebrates and small vertebrates. The birds forage by probing mud or sand with their long bills, spearing prey beneath the water surface, and picking prey off vegetation or the ground (Conway and Eddleman 2000). Their primary food source is crayfish, but they also feed on isopods, beetles, small fish, dragonfly and damselfly nymphs, and freshwater shrimp and clams (Ohmart and Tomlinson 1977). On the Colorado River Yuma Clapper Rails feed very heavily on introduced crayfish (BISON 2001; LCRMSCP 2001). Of the 10 specimens examined from the Colorado River north of the Gila River, 95 percent of the diet by volume consisted of crayfish. The distribution of Yuma Clapper Rails appears to be closely related to the abundance and availability of crayfish, and the lack of crayfish might explain the absence of rails in otherwise suitable marshes (Virginia Tech 1996).

The primary threat to Yuma Clapper Rails is habitat destruction (AZGFD 1996). Marshes may be destroyed as the result of stream channelization, dam construction, or appropriations of water for human uses. Marshland may also be affected by livestock grazing, and agricultural runoff may have high concentrations of pesticides (Todd 1986).

Populations in Study Area: Suitable habitat for the Yuma Clapper Rail is not present along the proposed 69kV transmission line route. While canals are present in the project area, they lack vegetation dense enough for the rails to utilize. The nearest populations are found along the lower Colorado River, at a distance of approximately 6 miles.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Yuma Clapper Rail or its habitat.

Western Yellow-billed Cuckoo *(Coccyzus americanus occidentalis)*

Status: The Western Yellow-billed Cuckoo is a federal candidate for listing as threatened or endangered, the State of Arizona lists it as a WSC, and the Forest Service considers it a sensitive species (AZGFD 2003).

Background: The Western Yellow-billed Cuckoo is a rare summer resident in riparian forests along the Colorado River (Schram 1998). They are very late migrants and do not normally arrive at the breeding habitats until early June (Phillips et al. 1964). In contrast to European cuckoos, which are well-known nest parasites, Yellow-billed Cuckoos build their own nests and only rarely parasitize other species (Ehrlich et al. 1992). The primary prey items for this species are tent caterpillars, but their diet may also include other insects, bird eggs, frogs, lizards, berries, and fruit (AZGFD 2002b; Ehrlich et al. 1988). The primary threats to the Yellow-billed Cuckoo appear to be loss of riparian forest by habitat destruction and scarcity of caterpillar prey as a result of pesticide spraying (Ehrlich et al. 1992).

Populations in Study Area: Suitable habitat for the Western Yellow-billed Cuckoo is not present along the proposed 69kV transmission line route. The nearest populations are found along the lower Colorado River, at a distance of approximately 6 miles.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Western Yellow-billed Cuckoo or its habitat.

California Brown Pelican (*Pelecanus occidentalis californicus*)

Status: The Brown Pelican has been listed as endangered under legislation predating the Endangered Species Act (Federal Register 1970). It has since been delisted along the Atlantic coast, Florida, and Alabama.

Background: The adult Brown Pelican is a large, dark, gray-brown water bird with white about the head and neck. Immature birds are gray-brown above and on the neck, with white underparts. This species can reach up to 8 pounds, and larger individuals have a wing span of over 7 feet.

The Brown Pelican eats mainly fish, especially mullet, menhaden, pinfish, sardines, and anchovies. Brown Pelicans dive into the water from the air and forage in shallow estuarine and inshore waters, mostly within 10 kilometers of the coast (Johnsgard 1993). Pelicans are rarely reported scavenging or preying on eggs or young of water birds.

Brown Pelicans nest in colonies mostly on small coastal islands, protected from mammalian predators, especially raccoons. All courtship behavior is confined to the nest site. The male carries nesting materials to the female, and she builds the nest. The nests are usually built in mangroves, but ground-nesting may also occur. Ground nests may consist of sticks, reeds, straws, palmetto leaves, and grasses, while tree nests are made of similar material, only are more

firmly constructed. Normal clutch size for this species is three eggs. Both males and females share in incubation and rearing duties.

The habitat of the Brown Pelican is mainly coastal, but these birds are occasionally spotted along the Colorado River, probably blown in by storms on the Gulf of California. Pelicans make extensive use of sand spits, offshore sand bars, and islets for nocturnal roosting and daily loafing. Dry roosting sites are essential, and some roosting sites eventually may become nesting areas.

Populations are extremely vulnerable to chemical/pesticide pollution, which can result in eggshell thinning (Anderson and Hickey 1970; Blus et al. 1974) and presumably lethal poisoning. Other threats include disturbance of nesting birds by humans, declining fish populations, increased turbidity (e.g., from dredging, resulting in reduced visibility of prey), oil and other chemical spills, entanglement in fishing gear, shooting, extreme weather conditions, disease, and parasitism.

Populations in Study Area: Suitable habitat for the California Brown Pelican is not present along the proposed 69kV transmission line route. The nearest suitable habitat is found south of the project area, in the Gulf of California.

Potential Impacts and Determination of Effects: Construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the California Brown Pelican or its habitat.

State of Arizona Wildlife Species of Special Concern

Flat-tailed Horned Lizard (*Phrynosoma mcallii*)

Status: The Flat-tailed Horned Lizard (*Phrynosoma mcallii*) was originally proposed for federal listing under the ESA in 1993. The proposal has been withdrawn and resubmitted several times since then, and this species has no federal status as of June 2006 (Federal Register 2006). The Flat-tailed Horned Lizard is listed as a WSC by the AZGFD (1996) and is covered under a range-wide management strategy of which Reclamation is a participant, among other federal and state management agencies.

Background: Adult Flat-tailed Horned Lizards are 2.5 to 4.0 inches in length, from head to the base of the tail (snout-vent length, Sherbrooke 2003). Like most horned lizards (*Phrynosoma* spp.), the Flat-tailed Horned Lizard has a flattened, oval body, with large spines on the rear and sides of its head (Sherbrooke 2003). Two rows of fringe scales run laterally on either side of its body, and this species is the only horned lizard with a dark stripe running dorsally from the back of the head to the tail. It has a distinctive broad, flattened tail, from which it derives its common name (Sherbrooke 2003). The range of this species includes extreme western Arizona, south and west from Yuma.

Flat-tailed Horned Lizards are restricted to sparsely vegetated sites in low hills, alkali flats, or areas of small pebbles or desert pavement where surface soils include loose, windblown sand, at elevations from about 50 m below sea level up to 300 m (Jennings and Hayes 1994). Typical vegetation in these areas can include creosote bush, white bursage, Emory dalea (*Psorothamnus emoryi*), saltbush (*Atriplex* sp.), and ocotillo (*Fouquieria splendens*) (Jennings and Hayes 1994; NatureServe 2002). Although they are generally restricted to areas of fine sand with little or no vegetation, they are sometimes found in slightly harder or coarser sands (Turner and Medica 1982).

Flat-tailed Horned Lizards eat ants almost exclusively, with 97 percent of their diet comprised of harvester ants (*Pogonomyrmex* spp. and *Messor* spp.). There is a positive relationship between the number of harvester ant nests and numbers of Flat-tailed Horned Lizard sign (Rorabaugh et al. 1987; Turner and Medica 1982). They may also capitalize on short-term outbreaks of other arthropods, with the proportion of items in their diet changing in relation to these outbreaks (FTHLICC 2003). Most water is obtained through the prey they eat, although they likely harvest rainwater (and condensation) when available (FTHLICC 2003).

Potential predators include Round-tailed Ground Squirrels (*Spermophilus tereticaudus*) and other rodents, Loggerhead Shrikes (*Lanius ludovicianus*), canids (*Canis latrans*, *Canis familiaris*, *Vulpes macrotis*), raptors, Common Ravens (*Corvus corax*), and felids (*Lynx rufus*, *Felis silvestris*). Other threats to Flat-tailed Horned Lizards include loss of habitat to urban and agricultural development, recreational off-road vehicle use, roadways, energy development, military activities, introduction of non-native plants, and sand and gravel quarry operations (Federal Register 2001; Jennings and Hayes 1994). They do not cope well with anthropogenic changes and need intact landscapes to maintain healthy populations.

Populations in Study Area: Flat-tailed Horned Lizards have been documented on the runway at Rolle Airfield, approximately 1.2 miles east of the project (Michael Vandevelde, Reclamation, *in litt*), and habitat exists in the southern half of the proposed transmission line. The proposed APS Yuma to San Luis transmission line occurs approximately 3 miles west of the Yuma Desert Flat-tailed Horned Lizard Management Area (FTHLICC 2003).

Potential Impacts and Determination of Effects: The considered project elements include the installation of new poles and stringing of wire, the installation and maintenance of approximately 2.6 miles of new access roads, and the construction and maintenance of the new 2-acre SW-3 Substation.

Direct impacts to Flat-tailed Horned Lizards, such as mortality, may result from the movement of construction equipment along roads, in construction areas, or during grading of access roads through undisturbed habitat. Any of these activities could lead to the loss of individuals through crushing.

Indirect impacts include changes to habitat that render conditions less suitable for the survival of Flat-tailed Horned Lizards, that reduce reproductive output, or that lead to altered behaviors that compromise fitness. For example, sand may become compacted by heavy equipment, rendering

formerly loose soils unusable. Soil compaction could result in lizards not being able to easily burrow beneath the surface, leading to higher exposure to predators and limiting the ability of lizards to thermoregulate adequately. Compaction of soils also can negatively impact native arthropods that Flat-tailed Horned Lizards eat.

Power lines and supporting poles can increase perch sites for predators (Loggerhead Shrikes [*Lanius ludovicianus*], American Kestrels [*Falco sparverius*]), leading to increased predation on horned lizards. However, because an existing powerline corridor already exists, these impacts have already occurred in the project study area. The addition of a new transmission line in an already occupied corridor would probably not increase predation on Flat-tailed Horned Lizards.

Non-native plants (e.g., Sahara mustard [*Brassica tournefortii*]) and animals may infiltrate an area along a disturbed right-of-way. Invasion by non-native plants such as Sahara mustard can lead to changes in fire regime, soil structure, and/or arthropod community composition, any of which can have negative consequences for Flat-tailed Horned Lizards. In western California, disturbed areas are quickly colonized by non-native Argentine Ants (*Linepithema humile*), which has a negative impact on closely-related Coast Horned Lizards (*P. coronatum*). A potential outcome of non-native ant introductions is the loss of native ant colonies, the primary food source for horned lizards. An important consideration is that Argentine Ants are less tolerant of xeric conditions than are native harvester ants, and they generally have not invaded the Yuma area.

Heavily traveled paved roads would be expected to have a much larger impact on horned lizard populations than little-traveled utility corridors. Lastly, increased access into an area may lead to increased illegal collection of Flat-tailed Horned Lizards. The extent of illegal collection of Flat-tailed Horned Lizards is unknown.

Flat-tailed Horned Lizards reach highest abundance in areas of fine wind-blown sands, which can be negatively impacted by structures that function as windbreaks. Transmission towers generally do not obstruct natural sand transport mechanisms, thus will not have an effect on sand-transport processes and substrate quality. Areas cleared for new poles, access roads, and the SW-3 Substation will alter or remove some habitat from the project area; however, overall disturbance will be minimal.

Yuma Desert Fringe-toed Lizard (*Uma rufopunctata*)

Status: The Yuma Desert Fringe-toed Lizard is currently listed as a WSC by the AZGFD and a Sensitive species by the US Forest Service and BLM.

Background: The Yuma Desert Fringe-toed Lizard is a medium-sized lizard with a flattened, pear shaped body and small fringe-like scales projecting from the toes (AZGFD 2003b). Average lengths range between 2.5 and 4.75 inches (snout to vent). The base coloration, which closely matches the sand on which it lives, is yellow-tan to light cream to reddish, with small brown to orange spots on the back surrounded by a network of black reticulations. The black reticulations

give the appearance of lines near the forelimbs. Black bands are present on the underside of the tail, and there is a black spot surrounded by an orange bar on each side of the belly (AZGFD 2003b).

Uma rufopunctata is well adapted to living in sand and is a diurnal lizard that is inactive in cold temperature and extreme heat. The fringed toes function similarly to snowshoes and distribute a lizards weight across the sand. When fleeing from predators, they may run bipedally on their hind legs. They "swim" into the sand (head first) to avoid capture and to escape extreme heat or cold. The setback jaw, scaly flaps over the ear, overlapping eyelids, and valves in the nostrils all serve to keep out sand while the lizard is burrowing. (Behler 1979). The lizard's sand-like pattern serves as camouflage, which enhances its ability to avoid predators.

Populations in Study Area: Yuma Desert Fringe-toed Lizard habitat exists in the southern half of the proposed transmission line, and records exist for lizards in the general project area (AZGFD 2003b).

Potential Impacts and Determination of Effects: The considered project elements include the installation of new poles and stringing of wire, the installation and maintenance of approximately 2.6 miles of new access roads, and the construction and maintenance of the new 2-acre SW-3 Substation.

If present, direct impacts to the Yuma Desert Fringe-toed Lizard (mortality) may result from the movement of construction equipment along roads or in construction areas or through the grading of access roads through undisturbed habitat. Any of those activities can lead to the loss of individuals through crushing.

Indirect impacts include changes to habitat that render conditions less suitable for the survival of Yuma Desert Fringe-toed Lizards, that reduce reproductive output, or that lead to altered behaviors that compromise fitness. For example, sand may become compacted by heavy equipment, rendering formerly loose soils unusable. In such a case, Fringe-toed Lizards would be less able to burrow, potentially leading to higher exposure to predators and limiting their ability to thermoregulate adequately. Compaction of soils also can negatively impact the survival of the native arthropods that Yuma Desert Fringe-toed Lizards eat.

Non-native plants (e.g., Sahara mustard [*Brassica tournefortii*]) and animals may infiltrate an area along a disturbed right-of-way. Invasion by non-native plants such as Sahara mustard can lead to changes in soil structure, fire regime, and/or arthropod community composition, any of which can have negative consequences for Yuma Desert Fringe-toed Lizards.

Yuma Desert Fringe-toed Lizards reach highest abundance in areas of fine wind-blown sands, which are negatively impacted by structures that function as windbreaks. Transmission towers generally do not obstruct natural sand transport mechanisms, thus will not have an effect on sand-transport processes and substrate quality. Areas cleared for new poles, access roads, and the SW-3 Substation will alter or remove some habitat from the project area, however, overall disturbance will be minimal.

Great Egret (*Ardea alba*)

Status: The Great Egret is currently listed as a WSC by the AZGFD (AZGFD 2006).

Background: Great Egrets are migratory in the north, with extensive post-breeding dispersal occurring prior to southward migration. Their call is a very deep, low, gravelly *kroow*, grating, unmusical *karrr*, and other low croaks; fading at the end; and lower and coarser than the Great Blue Heron, without the trumpeting quality. Their territorial defense display includes erect posturing and supplanting flights. Predators of eggs and young include raccoons, American Crows, Stellar's Jays, California Brown Pelicans, Common Ravens, Boat-tailed Grackles, Black Vultures, Turkey Vultures, Red-tailed Hawks, Peregrine Falcons, Great Horned Owls, and Western Gulls (AZGFD 2002a)

Great Egrets nest singly or in rookeries of varying size, often with other heron species or with Wood Storks. In Arizona, they have been found to nest in mature cottonwoods, willows and salt cedars (AZGFD 2002a). They nest in trees of woodlands or swamps, often 15 to 40 feet above the ground. The nest is a large flat platform that may become very bulky because it is used over and over again.

The Great Egret mainly eats fish, amphibians, snakes, snails, crustaceans, insects, and small mammals. Due to their size, they are able to forage in deeper water than other birds. Adults regularly drink both salt and fresh water. Great Egrets may gather in groups but usually forage singly, spreading out over available area. They commonly forage during the day in marshes and shallow water of ponds but also will hunt in fields. Great Egrets will occasionally steal food from smaller species. They generally hunt by slowly stalking their prey or using a stand-and-wait technique.

Populations in Study Area: Suitable foraging habitat for the Great Egret is present along the route of the proposed 69kV transmission line where it passes by agricultural fields, canals, or other areas that are flooded frequently.

Potential Impacts and Determination of Effects: Because Great Egrets would only be present in foraging areas and they flee readily when disturbed, construction and operation of the proposed transmission line and SW-3 Substation would have no effect on the Great Egret or its habitat.

Western Burrowing Owl (Athene cunicularia hypugaea)

Status: The Burrowing Owl is listed as a federal species of concern and is a BLM sensitive species.

Background: Burrowing Owls inhabit open areas in deserts, grasslands, and agricultural and range lands. They use well-drained areas with gentle slopes and sparse vegetation and may occupy areas near human habitation, such as golf courses and airports (Dechant et al. 1999;

Ehrlich et al. 1988; Terres 1980). Burrowing Owls often select burrows where surrounding vegetation is kept short by grazing, dry conditions, or burning (Dechant et al. 1999; Hjertaas et al. 1995). In Arizona, Burrowing Owls prefer grasslands, creosote bush/bursage desertscrub communities, and agricultural lands (deVos 1998).

Burrowing Owls are semi-colonial and usually occupy burrows excavated by small mammals, often at the edges of active colonies of Black-tailed Prairie Dogs or Richardson's Ground Squirrels (*Spermophilus richardsonii*). In areas that lack colonial burrowing mammals, burrowing owls will use excavations made by other mammals, such as Badgers, Woodchucks, Skunks, Foxes, Armadillos, and Coyotes. They may also use natural cavities in rocks. In addition to the nest burrow, the owls also may use several satellite burrows. Satellite burrows may serve as protection from predators and parasites (Dechant et al. 1999).

Burrowing Owls lay clutches averaging 5 to 7 eggs. The female remains in the burrow and is fed by the male through egg-laying, incubation, and brooding. The eggs hatch after 21 to 28 days of incubation, and young fledge from the nest approximately 28 days after hatching (Ehrlich et al. 1988).

Burrowing Owls are opportunistic feeders, preying on a variety of arthropods and small vertebrates (Dechant et al. 1999; Hjertaas et al. 1995). They may forage during the day or night, but tend to forage closer to the nest during the day. Foraging habitat is variable, depending on prey availability and abundance.

Widespread declines in the range and abundance of burrowing owls have been attributed to habitat loss and fragmentation and to control and extermination of colonial burrowing mammals (Dechant et al. 1999; Hjertaas et al. 1995). Reductions in Burrowing Owl populations have been associated with reductions in populations of both Black-tailed Prairie Dogs and Richardson's Ground Squirrels.

Populations in Study Area: Suitable habitat for the Burrowing Owl is present along the route of the proposed 69kV transmission line where it passes agricultural fields or other open fields. The AZGFD has mapped occurrences in the general vicinity of the project area (AZGFD 2001).

Potential Impacts and Determination of Effects: Short-term impacts to nesting and foraging habitat suitable for the Burrowing Owl could occur from the construction of the proposed transmission line, access roads, and SW-3 Substation due to the removal of ground cover. Because of their mobility, adult Burrowing Owls are unlikely to be harmed by construction equipment, although there is a possibility of vehicular impacts on access roads. Burrows, nestlings, or eggs in burrows could be crushed by construction equipment during installation and construction of the Proposed Project components, including the transmission line, access roads, and substation. To mitigate impacts to Burrowing Owls, the Arizona Burrowing Owl Project Clearance Protocol will be followed (ABOWG 2007), and Burrowing Owl nests, if found, will be marked for avoidance.

Snowy Egret (*Egretta thula*)

Status: The Snowy Egret is considered a WSC in Arizona (AZGFD 1996).

Background: The Snowy Egret is a common year-round resident in southern California and southwestern Arizona and it is most abundant around the Salton Sea and along the Colorado River (Schram 1998). It is found in freshwater marshes, lakes, ponds, and rivers and in shallow coastal habitats, including saltwater marshes, bays, and estuaries (Small 1977). Its diet includes fish, aquatic invertebrates, and small vertebrates (Ehrlich et al. 1988). Threats to this species include stream channelization, clearing of floodplain forests, loss and degradation of wetlands, and some recreational activities that impact nesting sites (AZGFD 1996; NatureServe 2002).

Populations in Study Area: Suitable foraging habitat for the Snowy Egret is present along the route of the proposed San Luis 69kV transmission line, where it passes by agricultural fields, canals, or flooded fields. The AZGFD has mapped occurrences in the general vicinity of the project area (AZGFD 2002c).

Potential Impacts and Determination of Effects: Short-term impacts to foraging habitat for the Snowy Egret could occur from the construction of the proposed transmission line and SW-3 Substation. Because of their mobility and readiness to flee when disturbed, there will be no mortality of Snowy Egrets during construction.

State of Arizona Highly Safeguarded Plants

Sand Food (*Pholisma sonorae*)

Status: Sand food is currently listed as a highly safeguarded plant species by the ADA and as a sensitive species by the BLM.

Background: Sand food is a fleshy root parasite lacking chlorophyll, inhabiting drifting sandy soil and other sandy areas, in low desert. The plants are grayish white, mushroom-shaped, and their height depends on the degree to which blowing sand covers the scaly stem (Armstrong 1980, in CPC 2004). Sand food usually parasitizes a desert shrub host such as white bursage, desert eriogonum (*Eriogonum deserticola*), arrow-weed (*Pluchea sericea*), Emory's Psorothamnus (*Psorothamnus emoryi*), fan-leaf tiquilia (*Tiquilia plicata*), and Palmer's tiquilia (*T. palmeri*). The host plants do not appear to be depleted by *Pholisma* infestations, and *Pholisma* plants have been unearthed and weighed, with the weights exceeding those of the host plants (CPC 2004). Water is likely absorbed through the many stomata on the scale-like leaves (Yatskievych 1985, in CPC 2004). This water taken directly from the sand can then move into the host plant during times of drought stress. Therefore, the relationship between *Pholisma* and the host plant is not parasitic in the strictest sense. Dried stems may shrivel to less than 0.25 percent of original diameter, eventually disintegrating in sand (Armstrong 1980).

Populations in Study Area: Sand food habitat exists in the southern half of the proposed transmission line route, and records exist for plants in this portion of the project area (AZGFD 2004).

Potential Impacts and Determination of Effects: Habitat does exist for sand food within the project area. The project will require the removal of ground cover for new poles, access roads, and the SW-3 Substation, however, the total area disturbed will be minimal, and the Proposed Project should have minimal effect on sand food or its habitat.

Former Federal Species of Concern

Former federal species of concern have no federal protection, but were species under an earlier classification that are currently being monitored by the AZGFD for the USFWS.

Yuma Hispid Cotton Rat (*Sigmodon hispidus eremicus*)

Status: The Yuma Hispid Cotton Rat is a former federal species of concern that is now tracked by the State of Arizona as a WSC.

Background: The Yuma Hispid Cotton Rat is a subspecies of *Sigmodon hispidus.* The average length of head and body is between 5 inches and 8 inches. It has a long tail and large skull. The pelage is pale; sides are pale and ochraceous (Hoffmeister 1986).

Yuma Hispid Cotton Rats prefer dense grassy areas, such as fields and along roadside edges, brushy or weedy areas and cattails along the Colorado River and streams, ponds, or in irrigated fields, and desertscrub (AZGFD 1988). They are known to make surface runways along which small piles of cut grass stems may be found. They eat leaves, seeds, nuts, stems, and insects. Home range is unknown, but for other cotton rats, the home range is 100 to 200 feet across.

Yuma Cotton Rats are prolific breeders and breed throughout the year. Nests are typically built underground or under logs and rocks. Gestation lasts 27 days, and 5 to 7 offspring are born. Cotton Rats can have several litters a year and are sexually mature at 2 to 3 months of age (AZGFD1987).

Populations in Study Area: Suitable habitat for the Yuma Hispid Cotton Rat is potentially present along the route of the proposed San Luis 69kV transmission line, where it passes by agricultural grass fields or other mesic fields with good cover. The nearest confirmed occupied habitat is at the lower Colorado River, approximately 3 to 4 miles away.

Potential Impacts and Determination of Effects: The project will require the removal of ground cover for new poles, access roads, and the SW-3 Substation, but the project would not impact the Yuma Hispid Cotton Rat or its habitat.